California Energy Commission

Clean Transportation Program

FINAL PROJECT REPORT

Los Angeles County Regional Electric Vehicle Supply Equipment Training and Development Program

Prepared for: **California Energy Commission**

Prepared by: **Los Angeles County Internal Services Department**

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PREFACE

Assembly Bill (AB) 118 (Núñez, Chapter 750, Statutes of 2007), created the Clean Transportation Program. The statute authorizes the California Energy Commission (CEC) to develop and deploy alternative and renewable fuels and advanced transportation technologies to help attain the state's climate change and clean air goals. Assembly Bill 126 (Reyes, Chapter 319, Statutes of 2023) reauthorized the funding program through July 1, 2035, and focused the program on zero-emission transportation.

The Clean Transportation Program has an annual budget of about $100 million and provides financial support for projects that:

- Develop and deploy zero-emission technology and fuels in the marketplace.
- Produce alternative and renewable low-carbon fuels in California.
- Deploy zero-emission fueling infrastructure, fueling stations, and equipment.
- Establish workforce-training programs and conduct public outreach on the benefits of alternative transportation fuels and vehicle technologies.

To be eligible for funding under the Clean Transportation Program, a project must be consistent with the CEC's annual Clean Transportation Program Investment Plan Update. On October 1, 2021, the CEC released Grant Funding Opportunity GFO-21-602, "Inclusive, Diverse, Equitable, Accessible, and Local Zero-Emission Vehicle Workforce Pilot" to support training in zero-emission vehicle industries and priority communities. In response to GFO-21-602, the recipient submitted an application which was proposed for funding in the CEC's notice of proposed awards on February 22, 2022, and the agreement was executed as ARV-21-058 on June 24, 2022.

ABSTRACT

The Regional Electric Vehicle Supply Equipment Workforce Training Pilot, completed by the County of Los Angeles Internal Services Department with funding from the California Energy Commission (CEC), aimed to address a shortage of skilled workers able to plan, install, and maintain electric vehicle charging stations, in alignment with California's broader zero-emission vehicle goals, the Governor's 2035 sales mandate, and climate equity priorities. The Pilot's workforce development outcomes are essential to accelerating electric vehicle supply equipment deployment and expanding clean transportation access across the state. The project targeted both employed and unemployed individuals at various levels in their career, from entry-level to advanced-level workers. The training took place from February 2023 to May 2025. The in-person training informed the development of a Train-the-Trainer workshop, a training for community college instructors to equip them with the knowledge and resources in developing courses at their respective colleges. Electric vehicle supply equipment courses are being developed across five community colleges as a result of the training.

In total, 206 individuals completed the training, improving their knowledge and skills of electric vehicle supply equipment and charging stations. Many went on to work directly on installation projects, and others expect to use the training in the future. The Regional Electric Vehicle Supply Equipment pilot demonstrates two important facets of training: the importance of combining classroom and lab experience, and the importance of recognizing that in this new and growing field, all individuals regardless of where they are in their career path need information and training in order to support the transition to a clean transportation system.

Keywords: workforce training, zero-emission vehicle (ZEV), electric vehicle (EV), electric vehicle supply equipment (EVSE), EV charging stations, charger installation, charger maintenance, site design, permitting, workforce development, California Conservation Corps (CCC), Department of Economic Opportunity (DEO), America's Job Center of California (AJCC), Cerritos College, Train-the-Trainer, webinar series, Los Angeles County, Clean Transportation and Energy Program (CTEP), Internal Services Department (ISD), IDEAL ZEV Workforce Pilot, California Energy Commission (CEC), clean transportation, sustainability, workforce readiness, community colleges, disadvantaged communities.

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EXECUTIVE SUMMARY

In May of 2022, the County of Los Angeles Internal Services Department-Clean Transportation and Energy Program secured funding from the California Energy Commission for the Regional Electric Vehicle Supply Equipment Workforce Training Pilot (the Pilot). The Pilot aimed to address a shortage of skilled workers able to plan, install, and maintain electric vehicle charging stations.

The County of Los Angeles continues to have the highest registration rate of new electric vehicles in the state. To meet the electric vehicle charging needs of our residents, in its 2019 Sustainability Plan, the County set a bold goal that 70,000 charging stations would be available to the public by 2035, with 15,000 charging stations located at County-owned facilities. The County Sustainability Plan also recognized the importance of a just transition to a green economy that protects and supports low-income job seekers and current workers, especially those who reside in disadvantaged communities. The workforce does not exist to meet County goals to plan projects, install, and maintain charging stations, and significant investment and regional support is needed to train entry level workers and upskill the existing workforce to achieve the County's sustainability goals.

To achieve these goals, the County requested $499,530 for a Los Angeles Regional Electric Vehicle Supply Equipment (EVSE) Workforce Training Pilot. The County proposed pilot training to increase the number of advanced, mid-level, and entry-level workers trained on EVSE infrastructure, from high-level managers in decision-making roles to craft service workers. The aim of the Pilot was to deploy and improve training that would benefit individuals in different phases of their career including individuals new to EVSE project planning, installation, and maintenance.

Partners developed an EVSE Installation Training, an EVSE Service and Maintenance Training, and a series of seven webinars. Each of the training courses was offered as a combination of classroom instruction and practical labs using equipment to install and test EVSE. Six cohorts completed training on one or both topics. Once tested with the cohorts and updated based on their feedback, the training was shared with community college instructors through a Train-the-Trainer workshop. The workshop prepared college instructors with the knowledge and resources needed to develop courses at their respective colleges. Two webinars focused on the same topics as the training (EVSE Installation and EVSE Service and Maintenance) were created and recorded to support the curricula developed by the college instructors. Five webinars were developed, presented live, and recorded to provide details about site planning to prepare managers and decision-makers with the information needed to plan successful EVSE projects.

The Pilot increased access to training resources for over 700 individuals in the Los Angeles County region and exceeded the training target by 107 percent, training 206 individuals. The project achieved its objective, providing training to individuals at various stages of their career, and in a variety of skilled-job types. Thirty-nine employed individuals including electricians,

electrician technicians, and project managers from the County, various cities, community colleges, utilities, and small businesses attended EVSE Installation and Maintenance Training. Eighty-six entry-level or unemployed individuals participated, including seventy-two California Conservation Corpsmembers and fourteen under- or unemployed individuals recruited by the Rio Hondo America's Job Center of California. Twelve community college instructors from seven colleges completed a Train-the-Trainer workshop to prepare to develop their own courses. Beyond in-person training, 70 individuals joined live webinars, with another 517 viewing the recordings.

The Pilot enabled The County of Los Angeles Internal Services Department to complete a multi-phased EVSE workforce training program to build out the pipeline of skilled workers needed to accelerate charger deployment in Los Angeles County. The Pilot not only expanded a skilled labor pool but also created accessible, lasting, online resources and established replicable training that strengthens California's long-term capacity to meet its zero-emission vehicle targets.

CHAPTER 1: Project Description and Partners

1.1 Background

The County of Los Angeles continues to have the highest registration rate of new electric vehicles in the state. To meet the electric vehicle charging needs of our residents, in its 2019 Sustainability Plan[1], the County set a bold goal that 70,000 charging stations would be available to the public by 2035, with 15,000 charging stations located at County-owned facilities. The County Sustainability Plan also recognized the importance of a just transition to a green economy that protects and supports low-income job seekers and current workers, especially those who reside in disadvantaged communities. The workforce does not exist to meet County goals to plan projects, install, and maintain charging stations, and significant investment and regional support is needed to train entry level workers and upskill the existing workforce to achieve the County's sustainability goals. To achieve these goals, the County requested grant funding for the Los Angeles Regional Electric Vehicle Supply Equipment (EVSE) Workforce Training Pilot (the Pilot).

1.2 Project Description

The County of Los Angeles (LA) Internal Services Department was awarded $499,530 from the California Energy Commission to increase the workforce in LA County to install and maintain electric vehicle charging stations. The goal of this project was to increase the number of advanced-, mid-, and entry-level workers trained in electric vehicle supply equipment (EVSE) infrastructure, from high-level managers in decision making roles to installation and maintenance workers. The target recipients for the training were electricians, electrician assistants and technicians that do not work with live wires, project managers, and inspectors from Authorities Having Jurisdiction. The target goal was to train 20 entry-level workers and 60 mid- and advanced-level workers during the grant period. The objectives to attain the goal were to:

- Enhance EVSE knowledge and technical skill sets of existing workers to support with job security and advancement.
- Provide specialized EVSE training to underrepresented populations through existing California Conservation Corps, which leads to entry-level jobs in high-demand positions in the region and more broadly.
- Train community college instructors to effectively deliver EVSE curriculum at their respective college.

Three different topical areas for the training were identified: EVSE Installation, EVSE Service and Maintenance, and EVSE Site Planning. The first two topics were set up as stand- alone courses with an individual syllabus designed to be used in-person for classroom and lab instruction in a community college setting. The third topic, EVSE Site Planning, was the focus of five, one-hour live and recorded webinars. After seeing the success of the EVSE Site

1 Los Angeles County Chief Sustainability Office, et al. 2019. "OurCounty Sustainability Plan." Report. Los Angeles County. Accessed November 25, 2025. Available at https://ourcountyla.org/wp-content/uploads/2019/07/OurCounty-Final-Plan.pdf.

Planning webinars, two more webinars were added to supplement the EVSE Installation and EVSE Service and Maintenance courses at the community colleges.

1.3 Project Partners

The County's Clean Transportation and Energy Program housed in the Internal Services Department (ISD-CTEP) partnered with Cerritos College Alternative Transportation Technology and Energy Program (ATTE), the California Conservation Corps (CCC) Energy Hub in Norwalk, California, and the County's Department of Economic Opportunity (DEO)[2].

Cerritos College Alternative Transportation Technology and Energy Program

Cerritos College ATTE collaborates with industry and educators alike in designing programs that meet the workforce needs of entities aligned to advanced transportation and renewable energy. Cerritos College is also the training partner for the California Conservation Corps Energy Hub in Norwalk, CA. Cerritos College ATTE developed the syllabus and training, determined training prerequisites, provided guidance on the training material, compiled resources for college instructors, assisted in recruiting trainees, created certificates for trainees, and screened sub-contractors for the webinar development. Cerritos College Career and Technical Education Instructors provided the training to all of the in-person training cohorts.

California Conservation Corps, Norwalk Energy Hub

The CCC provided space for each of the training sessions, and Corpsmembers that completed the training assisted the instructors with classroom logistics for subsequent trainings.

Department of Economic Opportunity

The County's DEO has developed industry-recognized training programs with several educational partners in the region in the electric vehicle (EV) sector. DEO manages 19 LA County American Job Centers of California (AJCC), which service the workforce needs of the community. DEO selected the Rio Hondo AJCC to lead the effort to recruit under and unemployed individuals in the training, enroll candidate trainees in prerequisite courses, and identify job placements. The Rio Hondo AJCC is located in a CalEnviroScreen 4.0 designated disadvantaged community and recruits individuals who live in disadvantaged and SB 535 low-income communities[3]. Cerritos College ATTE delivered two training cohorts for AJCC recruits, and AJCC attempted to identify job opportunities for participants.

1.4 Contractors

ISD-CTEP additionally contracted two companies to create the webinars.

Black & Veatch

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2 The County's Department of Economic Opportunity was previously named Workforce Development Aging and Community Services (WDACS) at the time of the grant application and award.

3 "Disadvantaged communities" are those communities defined by the California Environmental Protection Agency and include communities within the top 25 percent scoring areas under CalEnviroScreen, areas of high pollution and low population (such as ports), and lands under the control of recognized tribes. "Low-income communities" are defined as communities that are at or below 80 percent of the statewide median income or communities with median household incomes at or below the threshold designated as low-income by the Department of Housing and Community Development.

The Black & Veatch team creates technical training series to improve workforce and decision maker development. The company has a depth of experience with EVSE, having installed 30,000 charging stations at over 2,000 sites. Black & Veatch subcontracted S Curve Strategies and provided the leadership and expertise to deliver five webinars on EVSE Site Planning.

S Curve Strategies

The S Curve Team has 15 years of experience in transportation electrification consulting, EV infrastructure program development, and curriculum design for utilities and public agencies. S Curve Strategies developed the first five webinars on EVSE Site Planning in partnership with Black & Veatch and provided two additional webinars on EVSE Installation and EVSE Service and Maintenance.

Chapter 2: In-Person Training

2.1 Overview

This chapter describes the development and delivery of the EVSE Installation and EVSE Service and Maintenance Training sessions and the Train-the-Trainer workshop. In partnership with Cerritos College ATTE, a training was developed through the feedback of County electricians, project managers, and California Conservation Corps members. The training was piloted, refined, and ultimately delivered to multiple groups, including County staff, other employed workers throughout LA County, Corpsmembers, and unemployed or underemployed individuals. This chapter outlines the training design process, participant experiences, challenges, and survey findings that highlight the Pilot's impacts.

2.2 EVSE Installation and EVSE Service and Maintenance

2.2.1 Training Development

ISD-CTEP provided input to Cerritos College ATTE on the topics for the training. Cerritos College utilized the input and expertise of the ATTE Director and Cerritos College's instructor to draft an outline and syllabus for each training. ISD and Cerritos additionally responded to input from each cohort that completed the training and made modifications and additions to the content.

Cerritos College established three prerequisites: First Aid, Cardiopulmonary Resuscitation (CPR), and Occupational Safety and Health Administration (OSHA) 10 Construction certifications. Cerritos College intentionally built redundancy into the EVSE Installation and EVSE Service and Maintenance syllabi. The content on the first day focused on basic principles of EVs, EVSE, and electrical and construction safety. Cerritos College considered this overlap necessary to ensure participants who enrolled in only one training received the foundational content, allowing each training to be offered independently.

The EVSE Installation Training was 40 hours and included the following topics: introduction to electric vehicles, introduction to EV charging, basic safety review, construction equipment and tools, configuration and layout basic safety review, EVSE styles, electrical code, blueprints, electrical and electronic principles, load calculations for electricians, and conduit bending.

The EVSE Service and Maintenance Training was 24 hours and included the following topics: introduction to electric vehicles, introduction to EV charging, basic safety review, charger communications, charger manufacturers, EVSE communications, EVSE styles, EVSE maintenance, clothing, tools, test equipment, troubleshooting, and charger commissioning.

For the training for unemployed and underemployed individuals, the County's Department of Economic Opportunity determined that they would recruit and enroll trainees from the Rio Hondo AJCC because it was the closest to the CCC Norwalk training site. The AJCC assisted trainee candidates in enrolling in CPR, First Aid, and OSHA 10 Construction, and covered the costs for them to complete the certificates.

2.2.2 Training Implementation

Cerritos College held training in February, June, and October 2023, and May and June 2024, with a total of six cohorts. Four cohorts included employed individuals from the County, a

county contractor, cities, community colleges, and a utility. Electricians, Electrician Helpers, Electrician Supervisor, Maintenance Workers, Maintenance Managers, Foremen, and Facilities Planning Managers were among those trained. Two cohorts were made up of unemployed or underemployed individuals that were recruited by the Rio Hondo AJCC. Additionally, through its ongoing partnership training Corpsmembers at the CCC Norwalk Energy Center, Cerritos College trained 72 Corpsmembers during the grant period. Photos of trainees learning to use a compactor, trencher, and testing meter are shown in Figure 1.

Figure 1. Trainees with Compactor, Trencher, and Testing Meter

Source: County of Los Angeles

2.2.3 Training Results

As of June 2025, 29 of the 72 trainees were still active in the California Conservation Corps. Of the 43 who separated, 24 entered jobs or military service, and at least 7 of those positions could involve EVSE-related work. While long-term tracking remains limited, these results suggest the training provided Corpsmembers with exposure to clean energy pathways and may support future workforce participation in the EVSE field.

A trainee survey captured feedback from individuals who completed the electric vehicle charging station workforce training program funded through the grant. Respondents included County employees, California Conservation Corpsmembers, and unemployed or underemployed individuals who successfully completed the curriculum.

The results show that three respondents are currently employed in a job involving electric vehicle charging stations, while five are not working in the field. For those already employed, they all indicated that the training helped them perform better in their current roles, highlighting its practical value in preparing workers for hands-on industry tasks. Specific tasks mentioned included reviewing drawings, participating in site inspections, rerouting power for a charger, replacing 15 chargers, and installing 4 new chargers. Additionally, four respondents reported that they would include the training on a job application, demonstrating that the program provided credentials participants felt were worth sharing with potential employers.

Some participants have already seen a positive impact from skills gained during the training. The Electrician Supervisor and Senior Electrician at a County Medical Center used what they learned to make modifications to an installation project. Details about the charging stations, load drops, and practice completing load calculations enabled the team to recognize that they would need more power to install charging stations in a medical center parking lot. They made the necessary adjustments, and then electricians and electrician technicians that also completed the training successfully installed 70 charging stations.

Most respondents reported completing between 40 and 64 hours of training, while the remaining two completed between 20 and 40 hours. Interest in the electric vehicle charging field remained strong following program completion, with six respondents expressing ongoing interest in pursuing employment in this industry. When asked about investing in additional education, five said they might be willing to pay for non-credit or credit courses at community colleges, indicating an interest for continued skill development and formal credentials. Despite this interest, none of the respondents reported pursuing additional electric vehicle training outside of this program, suggesting this curriculum was their primary exposure to the field. An overview of the respondents' feedback is shown in Figure 2.

Figure 2: Training Impact Summary

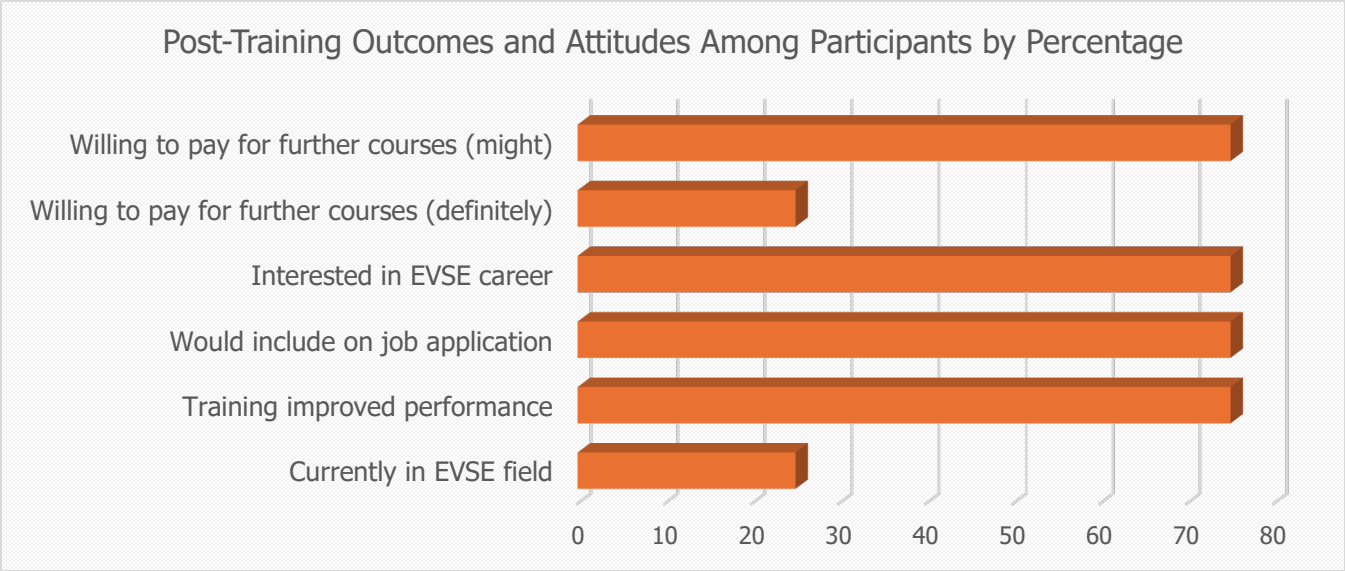

Chart showing the post-training outcomes and attitudes among participants.
Source: County of Los Angeles

2.2.4 Lessons Learned

Content better for entry-level skill development

The content for the EVSE Installation Training was best suited to entry level workers with no prior experience. Electricians and electrician technicians already possessed similar skills and knowledge to what was offered in the course. As a result, when the EVSE Installation training was delivered to County employees in October 2023, the content moved quickly, and participants were able to complete the five-day course in just two days. By the end of the second day, County electricians were leading electrician technicians and project managers in installing charging stations. The lesson learned was that electricians did not need this training as they already had the skills and experience to carry out most of the activities.

Interviews conducted after the October training revealed that participants wanted more focus on hands-on skill-building, such as conduit bending, load calculations, and interpreting site plans. Cerritos responded by incorporating these elements into the sessions for the unemployed and underemployed trainee cohort, and later into the Train-the-Trainer workshop.

Electrician Supervisors requested a different kind of offering, one focused on core skills such as preparing for the state electrician certification exam. The Cerritos instructor proposed a 32-hour continuing education course on the National Electric Code (NEC) Book, but ISD-CTEP determined this was inconsistent with the grant's EVSE-specific focus. Because Cerritos could not offer training that was both aligned with the grant requirements and tailored to the needs of County Electricians, ISD-CTEP decided not to offer another EVSE Installation Training to employed individuals.

More in-depth training needed for job placement

When developing the pilot for the under- and un-employed cohort, the County's Department of Economic Opportunity expressed concern about 64-hours of training not being enough to lead to a job and referenced training that lasted three months as a better foundation to prepare individuals for an entry-level job. DEO insisted that at a minimum the two trainings should be offered back-to-back as if it was one training. ISD-CTEP raised the concern that there would be repetition because the first day of the two trainings was nearly identical. DEO indicated its preference to offer the training as written in the syllabus, because the repetition would be helpful to reinforce concepts for individuals newly exposed to the topics.

Rio Honda American Job Centers of California, in connection with the County DEO, reached out to potential employers and developed a flyer. AJCC contacted local contractors provided by ISD as well as larger companies that operate charging stations like EVgo and ChargePoint. One trainee made it to the job interview stage, but was not able to answer technical questions, and was not offered the job.

The survey findings suggest several considerations for future training efforts. While most participants remain interested in working in electric vehicle charging, relatively few have transitioned into employment in the field. Building stronger pathways to employment, such as partnerships with hiring employers, internships, and career fairs, may help increase job placement outcomes. Finally, since many respondents leveraged the training in job applications but did not frequently discuss it in interviews, adding career readiness modules, such as resume development and interview preparation, may further enhance the program's workforce impact.

2.3 Train-the-Trainer Workshop

2.3.1 Training Development

Cerritos College gathered feedback from each cohort and updated each training's daily plans based on input from the cohorts. More time was dedicated to reviewing site plans, load calculations, and conduit bending. After the training sessions were complete, Cerritos College adapted the eight days of training into a two-day workshop for community college instructors. The content included: electrical and construction safety, introduction to electric vehicles and charging stations, hand tools, power tools, load calculations, conduit bending, connecting charging stations, and testing charging stations using different types of meters and software.

Cerritos College required a prerequisite that participating instructors were licensed electricians. In instances when a licensed electrician was participating, they could be joined by a colleague who did not meet the criteria. Institutions with similar programs were targeted for outreach and instructors were recruited by email and announcements online.

2.3.2 Training Implementation

Cerritos College recruited 12 instructors from seven community colleges to participate in the two-day Train-the-Trainer workshop. Cerritos College held the training at the California Conservation Corps Norwalk site in August 2024. The faculty from the following community colleges attended the training: LA Trade Technical College, Long Beach City College, Rio Hondo College, Fullerton College, LA Southwest College, Cerritos College, and West LA College. Photos from the Train-the-Trainer workshop are shown in Figure 3. A list of safety and testing equipment used during the training sessions is available upon request.

Figure 3: Train-the-Trainer Workshop

College instructors participating in Train-the-Trainer workshop.

Source: County of Los Angeles

2.3.3 Results

After the training, instructors at five colleges began efforts to develop courses. Rio Hondo College and Fullerton College are incorporating elements of the EVSE installation into existing courses and writing new stand-alone courses. Long Beach City College is creating a non-credit course. LA Southwest is creating a course that will be proposed as part of its Apartment Management program. LA Trade Tech used the materials provided to develop three new college credit courses. LA Trade Tech additionally developed and submitted a new low-unit Certificate of Completion to the State for approval. The college instructors confirmed the topics covered in the training were applicable to the courses they were developing.

2.3.4 Lessons Learned

There were benefits and challenges to requiring Train-the-Trainer participants to be licensed electricians. It limited the number of colleges and instructors that were eligible for the course. Cerritos offered the workshop again in Spring of 2025, but only one eligible instructor signed up, despite multiple rounds of announcements and recruitment efforts.

As a positive, the participants were able to contribute their own experiences and expertise. The rich discussions during the hands-on labs and practice sessions allowed the instructors to generate new ideas about what to include in their courses.

Chapter 3: Virtual Training

3.1 Overview

Site design, permitting, and regulatory requirements were originally intended as the topics for a third training developed by Cerritos College. The intended audience differed from the first two trainings in that the target audience is advanced-level workers who might manage facilities, play a role in permitting, or be decision-makers on EVSE projects. Cerritos College proposed that the module be offered as a webinar, since it did not include a hands-on skill development component.

3.2 EVSE Site Design and Permitting Webinars

3.2.1 Webinar Training Development

ISD created a table of themes and topics based on input from ISD engineers, electricians, managers, and Cerritos College. LA County partnered with Black & Veatch and S Curve Strategies and delivered a five-part webinar series designed to equip electric vehicle charging project decision-makers with the knowledge needed to succeed. Hosted virtually on Zoom from February through May 2025, the series provided expert insights, best practices, and actionable strategies for deploying EV charging infrastructure efficiently and cost-effectively. The webinar titles and links to view them are included below.

- **Webinar 1: Strategic Site Selection – Best Practices for Charger Siting**
- **Webinar 2: Business Models and Financing**
- **Webinar 3: EV Charging Regulations, Ordinances, and Implementation**
- **Webinar 4: Permitting – Best Practices for Charger Siting**
- **Webinar 5: Site Design, Energization, and Operation**

3.2.2 Webinar Training Attendance

The series attracted 70 attendees, including facility managers, project managers, government agency staff, and higher education professionals. Following the original live viewing of the webinars, ISD and S Curve Strategies continued collaborating to share links and track views. S Curve Strategies hosts the webinars on its YouTube channel and provided the links to ISD. ISD has posted the links to view each recorded webinar on its website and has shared the links with the County's Department of Public Works and all of the individuals who were invited to the webinars, a total of 267 people.

The YouTube traffic source data shows that while most views are driven by the direct links we have shared (such as through email and our website), some traffic also came organically from YouTube searches and recommended videos. This is an encouraging sign, as it indicates that the content is beginning to gain visibility beyond our immediate network. Table 1 shows the number of attendees and views for each webinar as of October 2025.

Table 1: Total Webinar Attendance

Event	Registered	Attended	Webinar Views
Webinar 1	39	21	155
Webinar 2	32	13	107

Event	Registered	Attended	Webinar Views
Webinar 3	29	8	90
Webinar 4	31	14	55
Webinar 5	30	14	48
Total	**161**	**70**	**455**

Source: County of Los Angeles

3.2.3 Results

ISD created surveys using ArcGIS and sent a survey link and quick response (QR) code to everyone that received an invitation to attend the webinars. The email included the links to the webinars and downloadable presentations, so that individuals could view webinars they had not attended. A total of ten individuals responded to the post-series survey. There was a mix of respondents that attended a live webinar and viewed recordings. They represented ten organizations including nonprofits/other entities (2), government agencies (6), and private companies (2).

Respondents highlighted the relevance and quality of the content, with Part 1 - Strategic Site Selection and Part 3 - EV Charging Regulations, Ordinances, and Implementation sessions cited as the most impactful (90 percent each), followed by Part 5- Site Design, Energization, and Operations (80 percent) and Part 4 - Permitting Best Practices (60 percent). Business Models and Financing (50 percent) was also highlighted as particularly relevant for decision-makers seeking funding pathways. Respondents shared examples of what they gained from the webinars:

- The Permitting Best Practices webinar helped an attendee develop more realistic schedules
- The Site Design, Energization, and Operations webinar motivated an attendee to budget for an electrical contractor to provide operations and maintenance services
- Attendees got a better understanding of what needs to be included for contracts and purchase orders, and how to maximize efficiency and reliability

The series demonstrated value in supporting workforce development. More than half of respondents (60 percent) reported plans to hire or contract for EV-related personnel within the next 12 months, with roles such as project managers and electrical engineers identified as priority positions. Several respondents indicated they would be more likely to hire individuals familiar with the webinar content, demonstrating the program's role in advancing workforce readiness. Respondents also forwarded the links to 50 people within their organizations and 16 outside of their organizations, further demonstrating the need and value for the webinars. Feedback emphasized the importance of hands-on technical training in future offerings. While respondents expressed satisfaction with the overall program structure and content, 20 percent specifically requested more advanced technical topics, including EVSE commissioning and maintenance practices. Training topics identified for future sessions included charge management systems, load management, troubleshooting, and hydrogen charging technologies, reflecting growing demand for technical skill development. For future webinar series, participants recommended continuing to focus on technical and implementation-oriented content while integrating workforce development pathways and interactive opportunities for engagement with industry experts. Over 40 percent of respondents

expressed interest in receiving supplemental resources such as factsheets, case studies, and recorded sessions to extend learning beyond the webinars. Overall, these results indicate strong demand for ongoing training and resources to support the rapidly growing EV infrastructure workforce.

3.2.4 Lessons Learned

When first proposed, the EVSE Site Planning training was going to be developed by Cerritos College, but they identified two challenges to creating this training. First, the audience for the training does not align with the audience that Cerritos College typically trains or has in its courses. Second, EVSE regulations might change over time and frequently as the industry is still developing. As a result, they anticipated content written into a syllabus would not hold up over time, with major changes needed annually to keep up with regulations. In response to these challenges, Cerritos College sought an external content developer.

After seeing the quality and depth of the first five webinars, ISD contracted with S Curve Strategies to develop two additional webinars. They are designed to highlight and supplement key content from the Cerritos College syllabi and address identified gaps. These supplemental webinars were designed primarily as resources for community college instructors who completed the Train-the-Trainer series and are developing their own EVSE courses. The intention is that instructors can integrate the webinars into their curricula, providing students with additional context and practical examples during coursework.

- **Webinar 6: EV Charger Installations**
- **Webinar 7: EV Charger Service and Maintenance**

Unlike the first five webinars, these were recorded and posted to YouTube without having a live audience. ISD shared the webinar links with the community college instructors that completed the Train-the-Trainer and posted them on the ISD website. Webinar 6 had 34 views in the first month it was posted, and Webinar 7 had 28 views.

Chapter 4: Impacts and Recommendations

4.1 Impacts and Recommendations

4.1.1 Impacts

This project resulted in the development of seven educational webinars, a Train-the-Trainer workshop, and an in-person EVSE Training on two topics, Installation and Service and Maintenance.

The Pilot increased access to training resources for over 700 individuals in the Los Angeles County region and exceeded the training target by 107 percent, training 206 individuals. The project provided training to individuals at various stages of their career, and in a variety of skilled-job types. Thirty-nine employed individuals including electricians, electrician technicians, and project managers from the County, various cities, community colleges, utilities, and small businesses attended EVSE Installation and Maintenance Training. Eighty-six entry-level or unemployed individuals participated, including seventy-two California Conservation Corpsmembers and fourteen under- or unemployed individuals recruited by the Rio Hondo America's Job Center of California. Twelve community college instructors from seven colleges completed a Train-the-Trainer workshop to prepare to develop their own courses. Figure 4 shows a breakdown of the individuals trained by category.

Figure 4: Number of Individuals Trained by Category

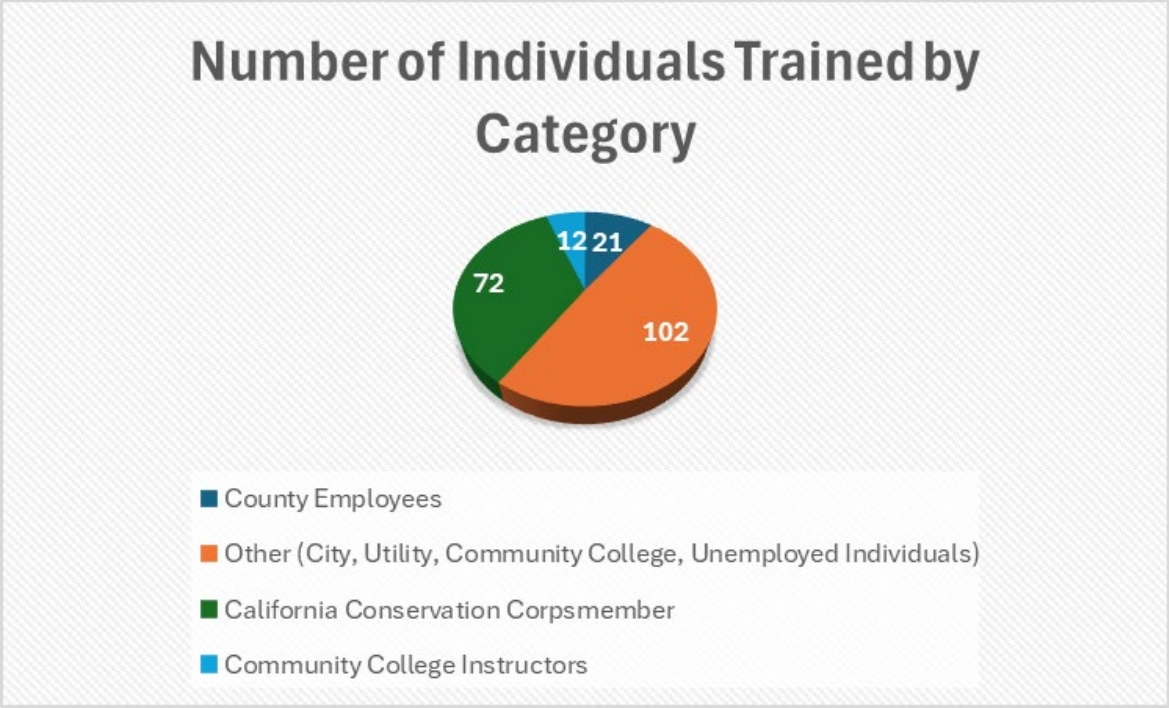

Chart shows the number of individuals trained by category.
Source: County of Los Angeles

Beyond in-person training, 70 individuals joined live webinars, with another 517 viewing the recordings in the first three months of being posted.

There are multiple ways that the reach of these initial efforts will continue. First, ISD will continue to raise awareness about the availability of the online webinars. Second, the feedback provided from each cohort has been used to improve the course Cerritos offers to CCC cohorts. Third, within the next year we expect five colleges will offer one or more courses that include or focus on EVSE. As new offerings become available, ISD will relay announcements to our training cohorts.

Participants from all cohorts expressed interest in more hands-on practice. Building more hours to hone skills during courses will prepare students to enter the workforce. Creating opportunities for students to interact with guest presenters who can answer questions or share how they overcame challenges will build student understanding and confidence.

4.1.2. Recommendations

The County's DEO and the AJCC recognized a need for longer training with more depth and breadth to demonstrate to potential employers that individuals were prepared to enter the workforce. The courses being created by the community colleges will offer longer exposure and greater depth to the concepts introduced by Cerritos. Several colleges including Cerritos College are also combining EVSE training with similar programs such as electrical, construction, and solar installation paths. By offering students a suite of clean energy and clean transportation knowledge and skills students will have breadth to be an asset to a variety of companies.

Mid- and advanced- workers benefited from the webinars and some of the aspects of the training but highlighted a need for specific skill development and opportunities to interact with professionals with experience. These individuals could benefit from continuing education offerings. There is especially a need to expose electricians and electrician technicians who do not have state licenses to training opportunities to advance their skills. County electricians found that a guest lecture from a County electrician that had completed installations combined with practicing load calculations enabled them to effectively make decisions about the type of EVSE equipment needed for their charging station project. More opportunities like this are needed, as more municipalities and institutions install their own charging stations.

ISD-CTEP and partners will continue to seek opportunities to build bridges between employees, training, and employers seeking skilled candidates. ISD-CTEP will fulfill this role by continuing to communicate with project vendors and partners about gaps in knowledge and skills and seek opportunities to connect them with resources developed through this grant and other offerings. Several of this project's partners are participating in LA Clean Tech Incubator's Green Jobs Partnership working groups, which will meet through 2028. Lessons learned from this project will be shared with the for-profit, not-for-profit, municipality, and community colleges participants.

ISD-CTEP and its partners will continue to work to develop a pipeline for skilled individuals to move into EVSE-related jobs. This project demonstrated that EVSE training on installation and service and maintenance can be improved over time, and the lessons learned can be shared and further developed into courses at area community colleges. Participation in live and

recorded webinars demonstrated there is a need for ongoing training. In-person training, train-the-trainer workshops, and training webinars can be scaled regionally and statewide.

Now that there is model, training requirements should be included in state and federal funding. Regional training should be aligned with other state funding. Webinars should be funded to keep the content updated.

GLOSSARY

Authorities Having Jurisdiction (AHJ) — Local or regional government agencies responsible for reviewing, permitting, and inspecting electric vehicle charging station installations for code compliance.

California Conservation Corps (CCC) — A state agency that provides young adults with paid training and work experience in environmental and energy-related fields. Corpsmembers participated in the EVSE training as entry-level trainees.

California Energy Commission (CEC) — The state agency established by the Warren-Alquist State Energy Resources Conservation and Development Act in 1974 (Public Resources Code, Sections 25000 et seq.) responsible for energy policy. The Energy Commission's seven major areas of responsibilities are:

1. Advancing State Energy Policy
2. Achieving Energy Efficiency
3. Investing in Energy Innovation
4. Developing Renewable Energy
5. Transforming Transportation
6. Overseeing Energy Infrastructure
7. Preparing for Energy Emergencies

Cerritos College Alternative Transportation Technology and Energy (ATTE) Program — The program at Cerritos College that designed and delivered the EVSE Installation and EVSE Service and Maintenance trainings and hosted the Train-the-Trainer workshop.

Clean Transportation and Energy Program (CTEP) — A division of the Los Angeles County Internal Services Department that manages the County's sustainability and electric vehicle initiatives, including workforce development, infrastructure deployment, and data analysis.

Direct Current Fast Charger (DCFC) — A type of electric vehicle charger that supplies direct current to the vehicle battery for rapid charging, typically used for fleet and public charging applications.

Department of Economic Opportunity (DEO) — The Los Angeles County department responsible for supporting workforce and economic development programs. DEO partnered on this project to recruit unemployed and underemployed individuals through the AJCC network.

Electric Vehicle (EV) — A vehicle powered by electricity, usually provided by batteries but may also be provided by photovoltaic (solar) cells or a fuel cell.

Electric Vehicle Supply Equipment (EVSE) — The hardware, wiring, and communication components that provide electricity for charging electric vehicles.

EVSE Installation Training — A 40-hour, hands-on course developed by Cerritos College that teaches participants to install charging stations safely and in accordance with electrical codes.

EVSE Service and Maintenance Training — A 24-hour course covering diagnostics, troubleshooting, and repair procedures for electric vehicle charging stations.

Internal Services Department (ISD) — The Los Angeles County department that administered the EVSE Training and Development Program and coordinated all partner activities.

Load Calculations — Electrical computations used to determine total power demand and capacity needs when designing or installing electric vehicle charging infrastructure.

National Electrical Code (NEC) — A standard published by the National Fire Protection Association governing the safe installation of electrical wiring and equipment, referenced throughout EVSE installation training.

Train-the-Trainer Workshop — A two-day workshop conducted by Cerritos College to prepare community college instructors to integrate EVSE curriculum, lab exercises, and safety components into their own programs.

Webinar Series — A five-part virtual training developed by ISD, Black & Veatch, and S Curve Strategies focusing on site selection, permitting, financing, regulations, and operations for EVSE deployment.

Zero-Emission Vehicle (ZEV) — Vehicles which produce no emissions from the on-board source of power (e.g., an electric vehicle).

APPENDIX A: Project Timeline

Timeline

- **Dec 2022**: Cerritos drafted syllabus for Module 1 – EVSE Installation
- **Jan 2023:** Cerritos drafted syllabus for EVSE Service and Maintenance
- **Feb 2023**: Cerritos held a beta EVSE Service and Maintenance training for 11 participants
- **Mar 2023**: ISD and Cerritos agreed that content focused on EVSE planning and permitting will be a series of standalone webinars rather than in-person class instruction and labs
- **Mar 2023**: ISD began purchasing training materials
- **May 2023:** CEC approved the syllabus for EVSE Installation and EVSE Service and Maintenance
- **June 2023:** Cerritos offered EVSE Service and Maintenance training to 14 employed mid- and advanced-level workers
- **Oct 2023**: Cerritos offered EVSE Installation and EVSE Service and Maintenance training to two cohorts of mid-level County employees
- **Oct 2023- Jan 2024**: Program paused while Cerritos and ISD negotiated next steps
- **Jan 2024**: ISD provided curriculum updates based on input from County electricians and managers that completed the training.
- **May 2024:** First training cohort of unemployed and underemployed individuals
- **June 2024:** Second training cohort of unemployed and underemployed individuals
- **Aug 2024:** Hosted the Train-the-Trainer workshop for community college instructors
- **Dec 2024-May 2025**: Black & Veatch and S Curve Strategies designed and facilitated five 60-minute webinars on Site Planning and Permitting.
- **Apr 2025-Jun 2025**: Cerritos attempted to recruit trainees for a second Train-the-Trainer, but did not receive enough eligible applicants
- **Jun 2025- Sep 2025**: Factsheets developed by Black & Veatch to supplement the webinars
- **Jul 2025-Sep 2026**: S Curve Strategies developed two additional webinars to supplement Cerritos Installation and Service and Maintenance Training