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Filer:	Spencer Kelley
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Zero-Emission Vehicle Workforce Training and Development Workshop

June 25, 2024

Welcome

Housekeeping

- Workshop is recorded on Zoom
- Presentations are available online at the Workshop webpage: https://www.energy.ca.gov/event/workshop/2024-06/clean-transportation-program-zev-workforce-training-and-development-workshop
- Virtual Participation via Zoom or telephone during the Q&A period
- Submit written comments to Docket No. 20-ALT-01: https://efiling.energy.ca.gov/EComment/ECommentSelectProceeding.aspx

Workshop Agenda

Part 1: ZEV Workforce Activities and Opportunities

- California ZEV Market Development Strategy: Workforce, GO-Biz
- Workforce Training and Development Programs and Updates
  - California Workforce Development Board
  - Employment Training Panel
  - California Air Resources Board
- California Energy Commission: Workforce Training and Development Project Highlights and Strategy
- Q&A

Part 2: Charger Maintenance and Repair Workforce Development

- Presentations
  - Electric Vehicle Charger Reliability and Accessibility Accelerator (EVC RAA)
  - ChargerHelp Perspective on Workforce Development for Charger Maintenance and Repair
  - Rivian: Overview of Training Practices
- Panel Discussion: Opportunities, Skill Gaps, and Training Best Practices
- Next Steps
- Public Comment

Commitment to Diversity

The CEC adopted a resolution strengthening its commitment to diversity in our funding programs. The CEC continues to encourage disadvantaged and underrepresented businesses and communities to engage in and benefit from our many programs.

To meet this comment, CEC staff conducts outreach efforts and activities to:

- Engage with disadvantaged and underrepresented groups throughout the state;
- Notify potential new applicants about the CEC's funding opportunities;
- Assist applicants in understanding how to apply for funding from the CEC's programs;
- Survey participants to measure progress in diversity outreach efforts

Diversity Survey

Scan the code on a phone or tablet with a QR reader to access the survey.

One Minute Survey

The information supplied will be used for public reporting purposes to display anonymous overall attendance demographics

Zoom Participants, please use the link in the chat to access the survey or scan the QR code on the left of the screen with a phone or tablet to access the survey

Survey will be closed at the end of the day

Survey Link: https://forms.office.com/g/Bx7iAgwE5V

California ZEV Market Development Strategy: Workforce

Gia Vacin, Deputy Director of ZEV Market Development
Governor's Office of Business and Economic Development (GO-Biz)

California Workforce Development Board and California Energy Commission Collaboration

Derek Kirk, Assistant Deputy Secretary of Climate
Labor and Workforce Development Agency (LWDA)

Collaboration on Increasing Economic Opportunities for all Californians

Partnership between CEC and CWDB

CWDB

CALIFORNIA Workforce Development Board

The Partnership: CWDB and CEC

- Shared Priorities
  - Increase employment opportunities to barriered populations
  - Identify programs to create a workforce in carbon neutral and renewable energy fields
  - Meet regularly to meet greenhouse gas emission reduction goals

- CWDB Engagement
  - CWDB has assigned liaisons to CEC to provide workforce expertise in workforce development strategies, policy and technical assistance, identify opportunities and resources

Workforce Updates

High Road Training Partnership: Resilient Workforce Program (RWP) New Awards for ZEV

- JVS- Jewish Vocational Services
  - 18-week Automotive Pre-Apprenticeship program (ATPAT) in partnership with City College of San Francisco (CCSF)
  - Focus is to add Techs experienced in carbon neutral vehicles
  - Will have MOU to place techs for apprenticeships then employment opportunities with San Francisco Municipal Transportation Agency (SFMTA)

JVS
TOGETHER WE WORK

- UAW- United Auto Workers: Center for Manufacturing a Green Economy
  - Partnership between UAW, Center for Manufacturing a Green Economy, and Sparkz
  - Sparkz will be opening a new EV battery manufacturing facility in Sacramento and will need up to 1,200 shop floor workers
  - The project will recruit, hire, and train new workers by the time the new facility opens.

UAW

Current High Road Training Partnerships in ZEV

- Gillig
  - GILLIG is the leading manufacturer of public transit buses for municipalities and cities in the US
  - With the Teamsters Local 853, they will build the plan for future HTRP training work and certification development
  - Recruit members to the Leadership Committee

- BYD-SMART
  - This project will bring together a major electric bus manufacturer and employer, BYD Coach and Bus, the International Association of Sheet Metal, Air, Rail and Transportation Workers (SMART) Local 105, workforce developers and educational institutions to develop a pre-apprenticeship training program for ZEV (busses)
  - Community Benefits Agreement between BYD, SMART Local 105, and Jobs to Move America, including targeted recruitment, hiring, and retention

Any Questions?

Electric Vehicle Infrastructure Training Program - Training and Certification Program

Robert Meyer, Director of Economic Development
California Employment Training Panel

Employment Training Panel

Electric Vehicle Infrastructure Training Program Fund Update

Robert Meyer
Director of Economic Development

June 25, 2024 | Sacramento, CA

ETP Background

ETP is a business and labor supported State agency that uses a **pay-for-performance contract** to reimburse the costs for employer-customized job skills training.

ETP does not:

- provide training
- mandate training topics for employers
- select or approve trainers

ETP will fund nearly $95 Million in training for FY2024/2025 under the core program.

ETP and Climate Initiatives

ETP uses core program funds to address climate policy workforce needs linked to equity goals.

- **RESPOND**: funds projects that mitigate the impact of natural disaster, originated with Drought in 2012.
- **Forest Workforce**: supporting workforce and economic activity linked to forest, housing and wood product utilization for rural and tribal communities.
- **ZEV**: employer customized job skills training supporting the development and deployment of manufacturing and infrastructure capacities needed for electric and hydrogen transportation.

EVITP Fund IA

The CEC and ETP are formalizing an **interagency agreement** that will increase the number of EVITP certified, state-licensed electricians to support the emerging and projected demand of publicly funded charging station infrastructure in California.

Goal: $3M in CTP funding will be used by ETP to offset the costs training and EVITP certification for a minimum of 3,000 State-licensed electricians.

EVITP FUND Objectives

1. Establish ongoing partnerships:
    - with EVITP, the CSLB, electrical apprenticeship programs, electrical contractors and the larger ZEV ecosystem.
2. Promote the IA to employers and electricians:
    - in rural and non-urban areas of the State.
    - In Disadvantaged and Low-Income Communities (DAC/LIC).
3. Collect data and analyze outcomes:
    - Ensure that a minimum of 50 percent investment in DAC/LIC.

Program Guidelines

ETP will use a modified pay-for-performance contract to offset the costs registration and participant costs related to the EVITP training.

All EVITP Fund contracts will be subject to the program guidelines which must be first approved by the Panel as part of the implementation process. Until approved, the following elements are presented as intended guidelines.

Program Guidelines

- **Multiple Employer Contractors (MEC)** eligible for ETP Core Program Funding will be eligible. Preference will be for organizations with an ongoing relationship to EVITP.
- Private non-profit employers, as well as non-profit and public employers may participate.
- Only State-Certified Electricians may be enrolled in the EVITP training included under this IA

Eligible Training

Eligible Training will be limited to the EVITP curriculum. Training needed for EVITP recertification may also be funded under this IA.

Certification will be a performance metric for trainees.

Applications will need to address projected demand and engagement of workers and employers in the following:

- Rural and Non Urban Regions, Disadvantaged Communities, Low Income Communities, and Tribal Communities

Reimbursement

ETP is reviewing reimbursement and potential cost models to meet the goal of the IA and to reduce the burden on trainees and employers.

The overall intent will be to fund the cost of EVITP course registration and any direct participant cost.

This differs significantly from standard ETP contracts.

Timeframes

The CEC approved the IA concept at its business meeting on March 13, 2024. ETP Team is organizing the following:

1. Review and edits to the approved IA needed for implementation.
2. Develop program guidelines for Panel Presentation targeted for July/August 2024.
3. Revise ETP contract templates and the Cal-E-Force system changes needed.

Targeting a August/September 2024 roll out.

Connecting to ETP

ETP staff will be providing additional support and information sessions in the weeks and months to come. Please contact us if you have any questions.

Elise Candelaria (415)265-8331
elise.candelaria@etp.ca.gov

Robert Meyer (916)737-4181
robert.meyer@etp.ca.gov

Additional Resources:

http://www.cslb.ca.gov/ and http://evitp.org/

California Air Resources Board: Updates on Workforce Activities

Natalie Reavey, Air Pollution Specialist and Desirey Wilson, Air Pollution Specialist
California Air Resources Board

CALIFORNIA
AIR RESOURCES BOARD

Zero-Emission Vehicle Equity Task Force

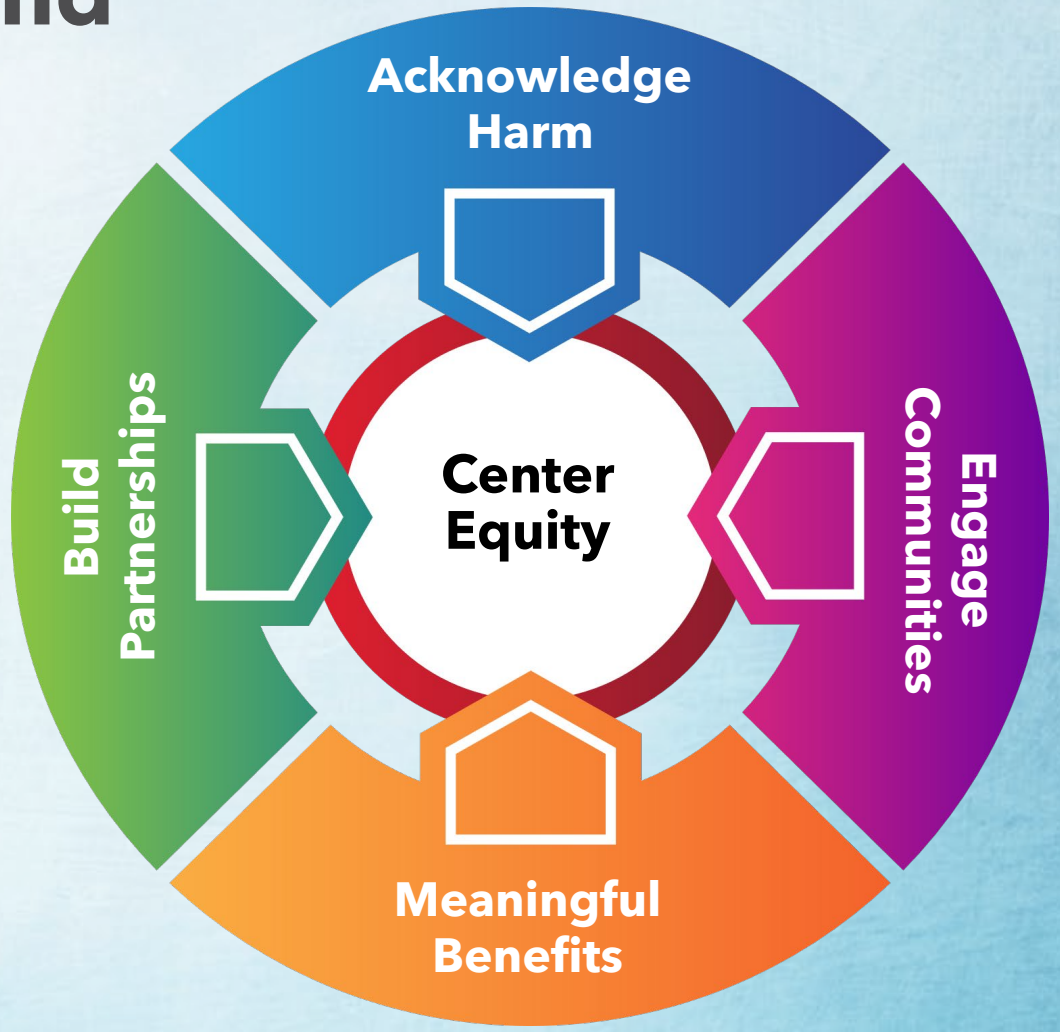
California Energy Commission
Clean Transportation Program – ZEV Workforce Training and Development Workshop

June 25, 2024

Zero-Emission Vehicle Equity Task Force: Background

Purpose: to develop strategies to expand communities' access to zero-emission vehicles and zero-emission mobility

Goal: to foster partnerships to develop and implement concrete, on-the ground projects, policies, or programs



CARB

Workforce Development Project Idea:

Connecting Automakers with Community Groups for Workforce Development

Objective: Facilitate partnerships between car manufacturers and organizations/agencies focused on job skills development.

Goal: Expand access to car manufacturers' training programs, enabling more individuals to gain valuable skills and improve their employability.

CARB

Key Voices Shared Information

Go-Biz ZEV Market Development Strategy

Gia Viacin, GO-Biz

CARB's FY 2023-24 Funding Plan

Stephanie Parent, CARB

CARB Projects Overview

Desirey Wilson, CARB

CEC Projects Overview

Larry Rillera, CEC

Workforce Development Overview

Jannet Malig, California Community Colleges

Breakout Rooms

Breakout #1: Charging Up the Future: Empowering Youth through EV Education and On-the-ground Experience

Facilitator: Heather Zappia, Making Hope Happen

Breakout #2: Building Stronger Futures: The Power of Coalition Building for Workforce Development

Facilitator: Ariel Fan, Greenwealth Energy

Breakout #3: Overcoming Barriers to Adoption: A frank conversation about the barriers to ZEV adoption, particularly in marginalized communities, and the practical steps that can be taken to overcome these challenges

Facilitator: Kameale Terry, ChargerHelp

CARB

Workforce Development Takeaways

- Concentrating on youth education within the EV space is paramount for cultivating a sustainable and informed future.
- Fostering community empowerment necessitates genuine partnerships, with economic prosperity serving as a pivotal factor.
- Automakers need more contacts and help with outreach in communities to get more participants in their workforce development programs.
- There is a need for more information sharing and collaboration.

Next Steps

- Next ZEV Equity Task Force meeting will be in the fall of 2024
- Continue to survey Task Force members to learn what topics they want to focus on
- There is interest in more workforce development topics
- Task Force can serve as a forum to share information and make connections

Thank You!

Website: Zero-emission Vehicle Equity Task Force

Contact us: ZEVequity@arb.ca.gov

CARB

Clean Transportation Incentives: Workforce Training and Development

- IDEAL ZEV Workforce Projects
- Adult Education and Vocational School ZEV Project
- Contract with the Foundation for California Community Colleges

California Energy Commission: Workforce Training and Development Project Highlights and Strategy

Jana McKinny, Energy Commission Specialist
Mabel Aceves Lopez, Associate Energy Specialist
California Energy Commission

Clean Transportation Program

Assembly Bill No. 8

CHAPTER 401

An act to amend Sections 41081, 44060.5, 44125, 44225, 44229, 44270.3, 44271, 44272, 44273, 44274, 44275, 44280, 44281, 44282, 44283, 44287, 44299.1, and 44299.2 of, to add and repeal Section 43018.9 of, and to repeal Section 44299 of, the Health and Safety Code, to amend Sections 42885 and 42889 of the Public Resources Code, and to amend Sections 9250.1, 9250.2, 9261.1, and 9853.6 of the Vehicle Code, relating to vehicular air pollution, and declaring the urgency thereof, to take effect immediately.

[Approved by Governor September 28, 2013. Filed with Secretary of State September 28, 2013.]

LEGISLATIVE COUNSEL'S DIGEST

AB 8, Perea. Alternative fuel and vehicle technologies: funding programs.

(1) Existing law establishes the Alternative and Renewable Fuel and Vehicle Technology Program, administered by the State Energy Resources Conservation and Development Commission, to provide to specified entities, upon appropriation by the Legislature, grants, loans, loan guarantees, revolving loans, or other appropriate measures, for the development and deployment of innovative technologies that would transform California's fuel and vehicle types to help attain the state's climate change goals. Existing law specifies that only certain projects or programs are eligible for funding, including block grants administered by public entities or not-for-profit technology entities for multiple projects, education and programs promotion within California, and development of alternative and renewable fuel and vehicle technology centers. Existing law requires the commission to develop and adopt an investment plan to determine priorities and opportunities for the program. Existing law also creates the Air Quality Improvement Program, administered by the State Air Resources Board, to fund air quality improvement projects related to fuel and vehicle technologies.

This bill would provide that the state board has no authority to enforce any element of its existing clean fuels outlet regulation or other regulation that requires or has the effect of requiring any supplier, as defined, to construct, operate, or provide funding for the construction or operation of any publicly available hydrogen-fueling station. The bill would require the state board to aggregate and make available to the public, no later than June 30, 2014, and every year thereafter, the number of hydrogen-fueled vehicles that motor vehicle manufacturers project to be sold or leased over the next 3 years, as reported to the state board, and the number of hydrogen-fueled vehicles registered with the Department of Motor Vehicles through April 30. The bill would require the commission to allocate $20 million annually.

- Transportation sector responsible for significant greenhouse gas emissions and public health impacts.
- Pollution burdens fall disproportionately on vulnerable and disadvantaged communities.
- AB 118 (2007) Clean Transportation Program created to invest in a cleaner, healthier transportation system.
- Up to $100 million per year.
- AB 126 (2023) reauthorized through July 1, 2035.

Funding

- Clean Transportation Plan Investment Plans (https://www.energy.ca.gov/programs-and-topics/programs/clean-transportation-program/clean-transportation-program-investment)
- Workforce cumulative awards: more than $40 million
- Available funds: $8.4 million

Fiscal Year	Workforce Allocation	Available
2019-20	$2.5	$0.0
2020-21	$2.5	$0.0
2021-22	$5.0	$0.0
2022-23	$5.0	$3.4
2023-24	$5.0	$5.0

Source: California Energy Commission

Active Projects

Source: Advanced Transportation and Logistics

- The Advanced Transportation and Logistics Initiative at San Diego Community College District
- Electric School Bus Training Project
- IDEAL Transportation Electrification Training Project

Inclusive, Diverse, Equitable, Accessible, and Local (IDEAL) ZEV Workforce Pilot Projects

- 14 Projects awarded a total of $6.5 million
  - High school and college students
  - Apprenticeship programs
  - Veterans
  - Low-income and disadvantaged communities
- Completed Projects
  - ZEV Sustainable Equitable Employment Destination (ZEV SEED)
    - ZEV technology and maintenance
    - Charger diagnostics and installation
    - Final Report: https://www.energy.ca.gov/publications/2024/zev-seed-project-zero-emission-vehicle-sustainable-equitable-employment

Source: Community Resource Project

Solicitation Updates

Source: California Energy Commission

Tribal Electric Vehicle Infrastructure, Planning, and Workforce Training and Development solicitation

- 26 applications
- Total requested: ~$46.7 million
- Notice of Proposed Awards expected in August

Zero-Emission Vehicle (ZEV) Workforce Training and Development Strategy

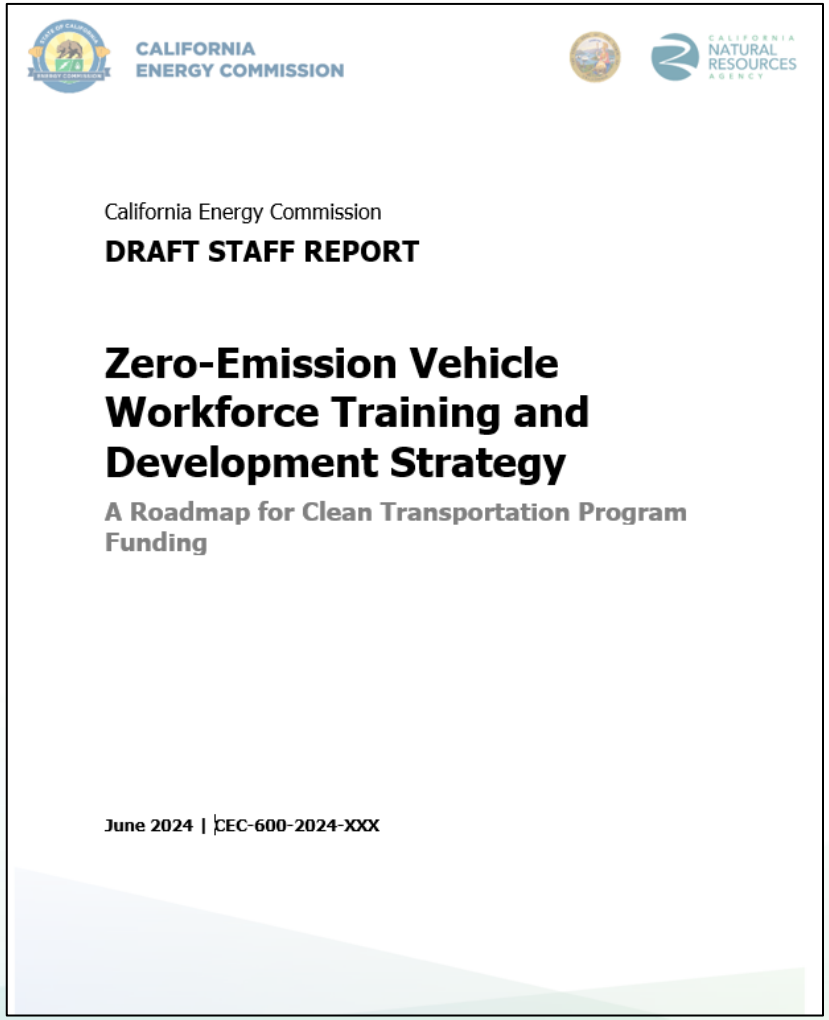
Purpose

1. Clarify the California Energy Commission's role in developing a robust workforce to support zero-emission vehicles and infrastructure.
2. Identify objectives and activities to build career pathways to support zero-emission vehicles and infrastructure.
3. Establish funding priorities and provide an actionable plan that reflects program goals.

Draft Staff Report available at:
https://www.energy.ca.gov/event/workshop/2024-06/clean-transportation-program-zev-workforce-training-and-development-workshop

Strategy Outline

- Chapter 1 – Purpose and Structure
- Chapter 2 – Program Context
- Chapter 3 – Program Objectives and Activities
  - Charging Infrastructure
  - Plug-in Electric Vehicles
  - Fuel Cell Electric Vehicles and Hydrogen Refueling Infrastructure
- Chapter 4 – Internal Activities
- Chapter 5 – Active Projects
- Chapter 6 – Next Steps



Source: California Energy Commission

Charger Maintenance and Repair Objective

Incentive Program for Charger Maintenance and Repair Training

- Priority: High
- Funding: Estimated $5 million

- To support:
  - Station uptime and reliability
  - Funding for charger repair
  - Early career pipeline

- Target audience:
  - Community colleges
  - Charger manufacturers
  - Charger service providers

Source: ChargerHelp

Workforce Assessment Objective

Electric Vehicle Charging Infrastructure Workforce Assessment

- Priority: Medium
- Funding: TBD
  - AB 2127 Electric Vehicle Charging Infrastructure Assessment (https://www.energy.ca.gov/data-reports/reports/electric-vehicle-charging-infrastructure-assessment-ab-2127)
  - Charger installation workforce:
    71,500 job-years

- To inform:
  - Charger manufacturing
  - Construction and installation
  - Service and maintenance
  - End-of-life
  - Geographical distribution

Job-roles	Light-Duty High (No New Build, No renewables)	MDHD	Sum (Job-years)
Planning and Design	12490	2,410	**14,900**
General Contracting	13080	1,800	**14,880**
Utility Linework	4220	450	**4,670**
Electrical Contracting	9340	620	**9,960**
Electrician	13320	2,330	**15,650**
Admin	5170	630	**5,800**
Legal	1000	300	**1,300**
Other	3800	560	**4,360**
Sum	**62,420**	**9,090**	**71,510**

Source: ET Community, "Workforce Projections to Support Battery Electric Vehicle Charging Infrastructure Installation" (2021)

Electric Vehicle Infrastructure Training Program (EVITP) Objectives

Increase the number of EVITP-certified electricians

- Priority: High
- Funding: $3 million
- Interagency agreement with the Employment Training Panel to certify 3,000 electricians

Host an EVITP Workshop

- Stakeholder feedback
- Actions to expand training

Internal Objectives

Publish the Workforce Training and Development Strategy

- Submit written comments by July 12th to Docket No. 20-ALT-01: https://efiling.energy.ca.gov/EComment/ECommentSelectProceeding.aspx

Workforce Website Updates

- Clean Transportation Program Workforce Training and Development https://www.energy.ca.gov/programs-and-topics/programs/clean-transportation-program/clean-transportation-funding-areas-3
- ZEV Workforce Portal https://www.energy.ca.gov/programs-and-topics/programs/clean-transportation-program/clean-transportation-funding-areas-4/zev

Workforce Training and Development Workshop – Today!

Objective on Workforce Guidance

Workforce Guidance for Solicitations

- Priority: Low
- Funding: N/A

  - ZEV Workforce Plans
  - Application evaluation
  - Addressing employment barriers
  - Community outreach and engagement
  - Evaluating jobs created

ELECTRIC VEHICLE (EV)

EV SUPPORT EQUIPMENT (EVSE)

TRAINING PLAN (draft)

Training Plan Participants

- LEAP (Rey Leon), EV Curriculum, EV Training Video Production, Participant Outreach
- Cerritos College (Jannet Malig), EV Curriculum, Training Workbooks
- Fresno City College (Marty Kamimoto), EV Curriculum, Training Workbooks
- ChargerHelp! (Kameale Terry), EVSE Training & Assessment
- Tzunu Strategies (Sergio Cuellar), Participant Outreach & Engagement, Training Workbooks
- Elivia Shaw, EV Training Video Production, Online Course Development

Training Location

John Palacios Community Center, 16846 4th Street Huron, CA 93234

Source: The LEAP Institute

Roadmap

Priority	Strategy Objective	Quarter 1 2024 - Milestones	Quarter 2 2024 - Milestones	Quarter 3 2024 - Milestones	Quarter 4 2024 - Milestones	Quarter 1 2025 - Milestones
High	**Workforce Training and Development Strategy**		Publish Draft	Public Feedback	Publish Strategy	
High	**Increase EVITP Certified Electricians**	Business Meeting	Program Development	Program Development	Kickoff Meeting	
High	**Charger Maintenance and Repair Training**		Public Input	Concept Development	Business Meeting	
Medium	**Workforce Training and Development Workshop**		June 25 Workshop			
Medium	**Charging Infrastructure Workforce Assessment**		Concept Development			
Medium	**Workforce Website Updates**		Post Website Updates	Ongoing Website Updates	Ongoing Website Updates	Ongoing Website Updates
Low	**EVITP Workshop**			Coordination with CPUC	Workshop Target	
Low	**Workforce Requirements for Solicitations**				Develop Template	Draft Survey

Questions so far?

Three ways to ask questions:

1. Use the raise hand function in Zoom
2. Zoom Phone Controls:
   *9 – Raise hand
   *6 – Toggle mute/unmute
3. Type questions in the Q&A Box

- Please state your name and affiliation.
- Keep questions under 3 minutes to allow time for others.

Part 2 – Charger Maintenance and Repair

Electric Vehicle Charger Reliability and Accessibility Accelerator (EVC RAA)

Brittani Gallagher, Air Pollution Specialist
California Energy Commission

Presentation Overview

- EVC RAA Program Background
- Program Requirements and Structure
- Expected Solicitation Timeline

Program Background

Electric Vehicle Charger Reliability and Accessibility Accelerator (EVC RAA) Program

- Established through Infrastructure Investment and Jobs Act (IIJA) via a 10% set aside of National Electric Vehicle Infrastructure Formula Program (NEVI) funding.
- Improve EV charger reliability by repairing or replacing existing non-operational EV chargers
- Caltrans awarded $63.7 million in January 2024
- CEC leading EVC RAA in partnership with Caltrans

Program Structure and Requirements

EVC RAA Program

- 3,516 eligible EV charging ports in California
  - Eligible ports limited to those on the Federal Highway Administration's (FHWA) Final List and Final List Addendum of eligible stations.
- $59.5 million available for awards
  - CEC expects to repair, replace, or install at least 1,302 charging ports. This figures includes the installation of additional ports as required for sites to be NEVI-compliant.

EVC RAA Program Requirements

- Each funded site must be brought up to NEVI standards found in 23 CFR 680.
  - 4 ports
  - 150 kW if within 1 mile of designated Alternative Fuel Corridor (AFC)
  - 97% uptime for 5 years
  - Buy America
- Justice40 covered program

EVC RAA Program Requirements

- Eligible Applicants
  1. Electric Vehicle Service Providers
  2. Installation and Maintenance Contractors (must apply for a minimum of 5 sites)
  3. Public entities that own 20 or more ports cumulatively on the FHWA's Final List and Final List Addendum of eligible stations.
- Projects must comply with Electric Vehicle Infrastructure Training Program and "Qualified Technician" requirements per AB 841 (Ting, Chap. 372, 2020) and § 680.106(j)
- Projects must be completed within 12 months from FHWA authorization

EVC RAA Program Requirements

- Eligible Expenses
  - Costs directly related to repairing/replacing Level 1, Level 2, or DCFCs listed on the FHWA's Final List and Final List Addendum of eligible stations.
  - Costs to make upgrades to comply with 23 CFR part 680 and other applicable Federal requirements, such as the Americans with Disabilities Act.

EVC RAA Program Requirements

- Ineligible Expenses
  - Repair/replacement work covered under a warranty.
  - Equipment/infrastructure that exceeds the NEVI Standards.
  - Operations and maintenance

Expected Solicitation Timeline

Activity	Action Date
Release Solicitation	Late Q3 2024
Pre-Application Workshop	No more than 10 days after solicitation release
Applications Due	Q4 2024
Anticipated Notice of Proposed Awards Posting	Q1 2025
Anticipated Energy Commission Business Meeting Approval	Q2 2025

Thank You!

ChargerHelp: Perspective on Workforce Development for Charger Maintenance and Repair

Kianna Scott, Senior Vice President of Workforce Development
ChargerHelp

Learning & Development at ChargerHelp!

chargerhelp.com

01.

About

ChargerHelp

Who We Are

ChargerHelp! was founded in 2020 with a vision to increase the reliability of EV chargers and a mission to remove barriers so that people in disadvantaged communities have access to opportunities in the operations and maintenance (O&M) of electric vehicle charger infrastructure.

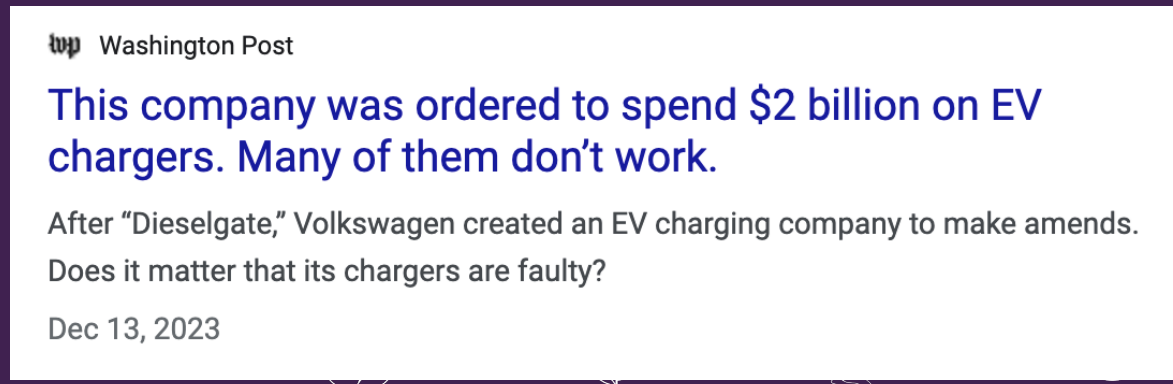
ChargerHelp! takes a unique approach to EV charging reliability by mixing field service observations and a technology platform that allows the Company to monitor chargers and diagnose common problems. Our technology leads to quick resolution of issues and gets chargers back online, while delivering EV charger owners insight into True Uptime and reliability of their chargers.

Problem

57% of drivers avoid buying EVs due to poor charging experiences (major car OEM study).

30% of EV charging stations are inoperable, with an average **60-day Mean Time to Repair (MTTR)** due to fragmented systems.

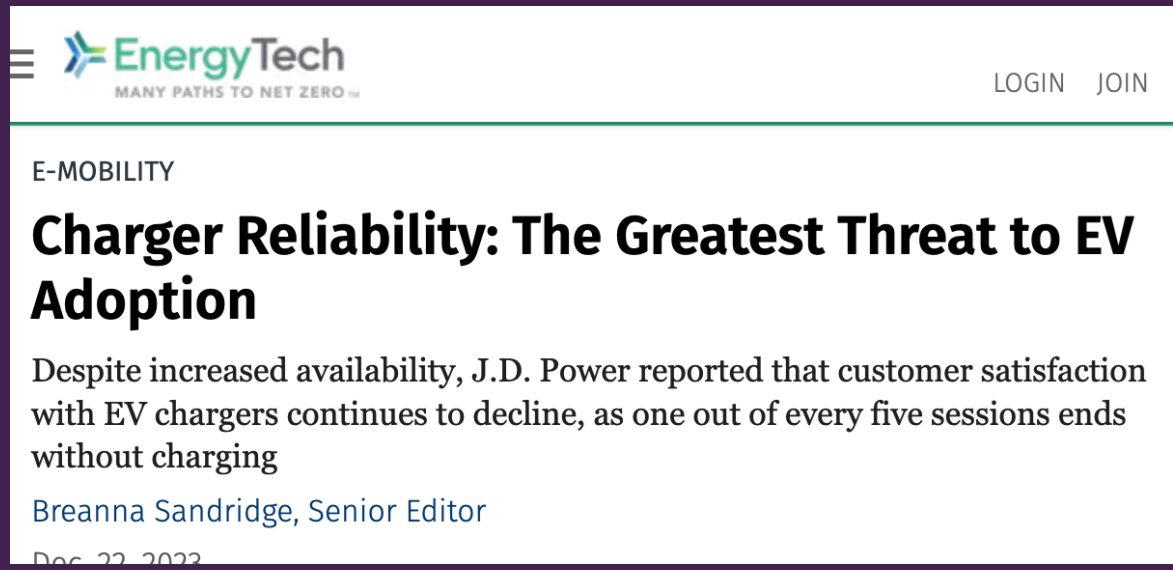
Unreliable infrastructure hinders EV sales, underscoring the need for better charging solutions.


Washington Post

This company was ordered to spend $2 billion on EV chargers. Many of them don't work.

After "Dieselgate," Volkswagen created an EV charging company to make amends. Does it matter that its chargers are faulty?

Dec 13, 2023


EnergyTech
MANY PATHS TO NET ZERO
LOGIN JOIN

E-MOBILITY

Charger Reliability: The Greatest Threat to EV Adoption

Despite increased availability, J.D. Power reported that customer satisfaction with EV chargers continues to decline, as one out of every five sessions ends without charging

Breanna Sandridge, Senior Editor

Dec. 22, 2023

EV Charging Infrastructure Issues

A 2022 field study in the San Francisco Bay Area concluded that more than **27% of charging stations were inoperable**.

A 2023 survey of the Los Angeles area EV charging landscape by the Wall Street Journal found a that **40% of charging stations had problems**.

JD Power finds that 20% of EV drivers nationally are unable to charge their EVs – mostly because of **inoperable chargers**.

How are your stations REALLY doing?

Offline for 32 days.

Network provider believed it was an underutilized site.

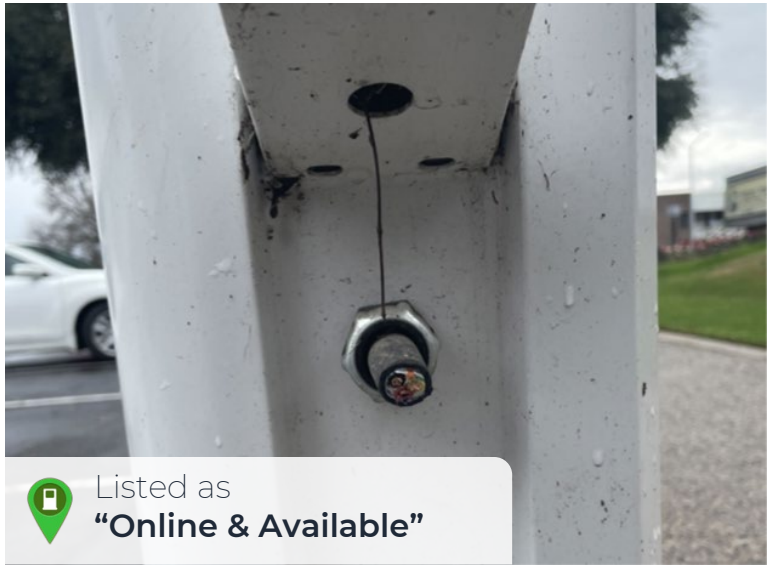
Listed as
“Online & Available”

Not used in 17 days.

Utility thought it was an underutilized site.

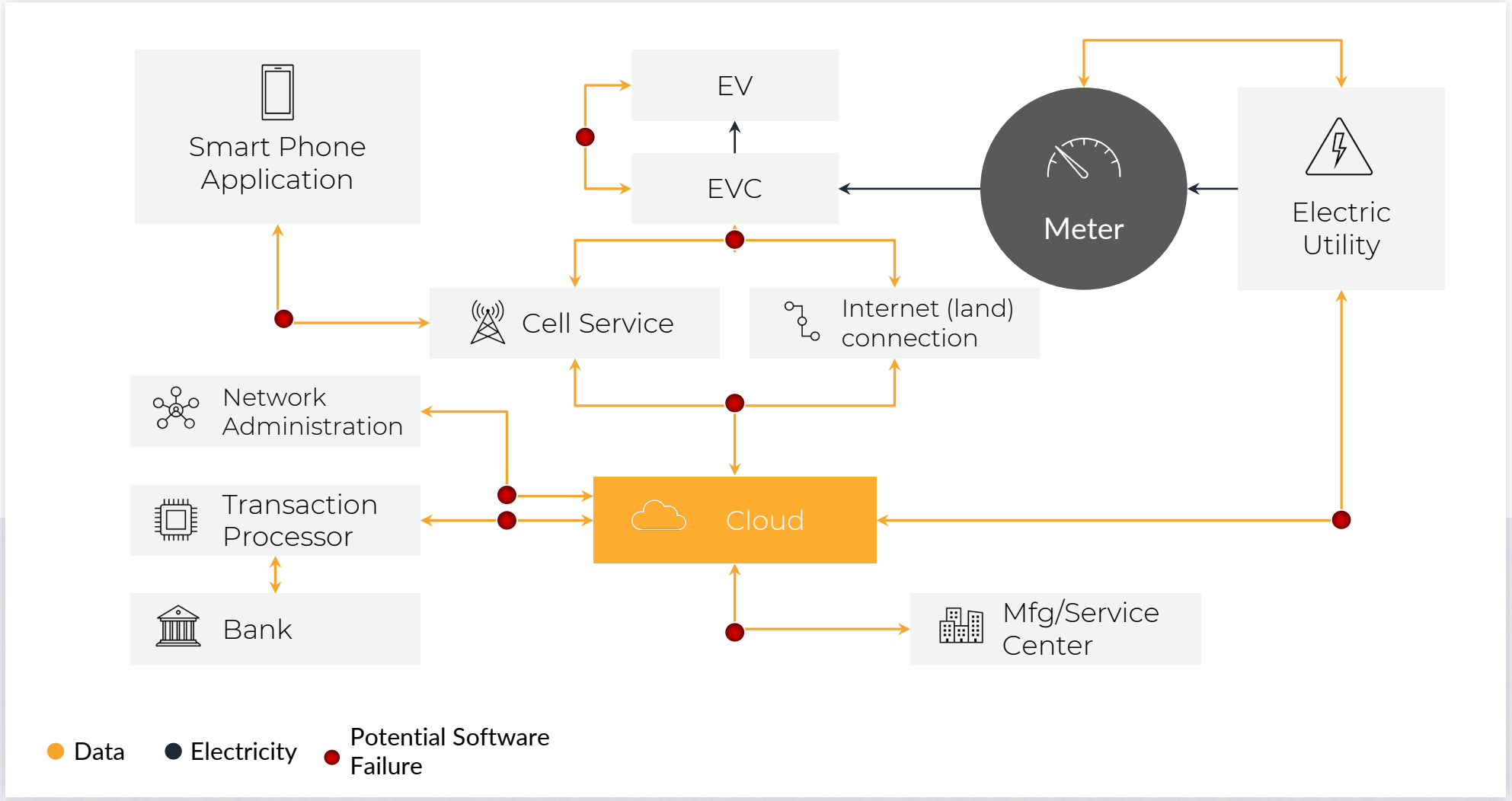
Listed as
“Online & Available”

This station has never been used...



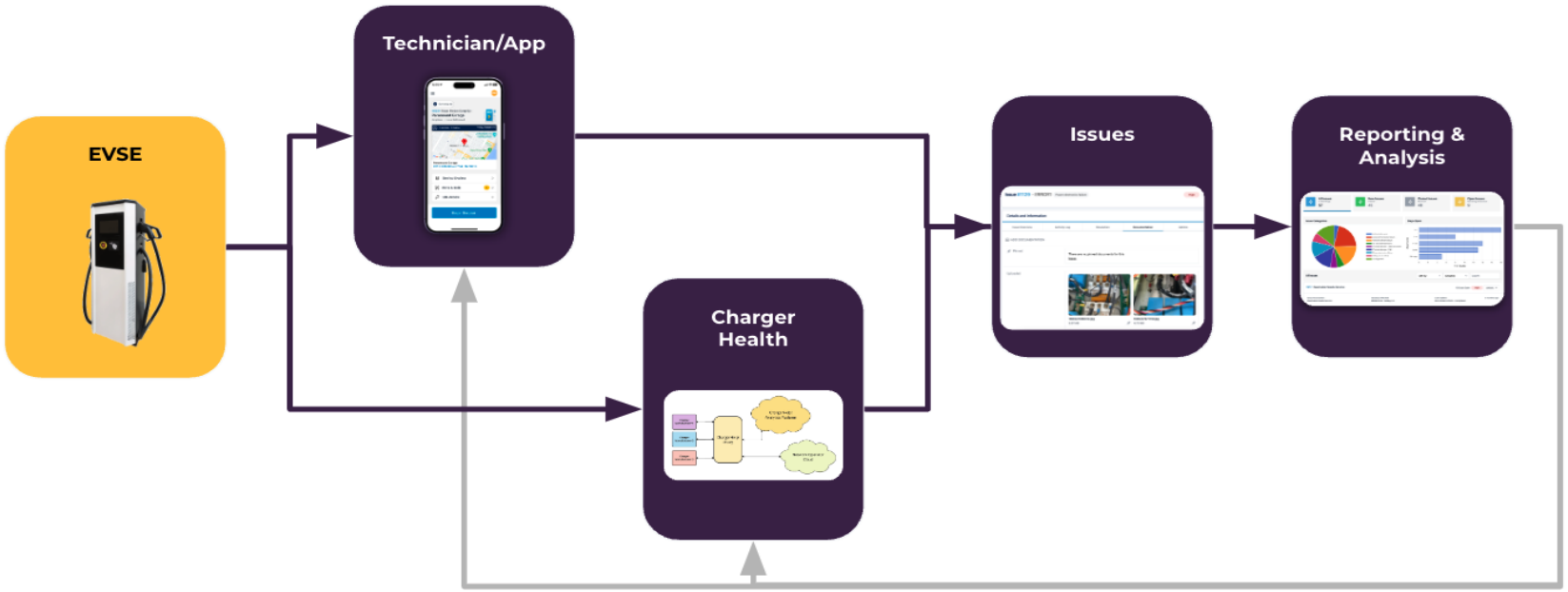
Listed as
“Online & Available”

At any given time, 30% of EV charging stations may not be working.



Our Solution: EMPWR Platform

We built EMPWR, an intelligent platform that unites EV charging systems using proprietary big data and system analysis, resulting in reduced Mean Time to Repair (MTTR) and high uptime.



The Stats:

Stations on EMPWR have a **1.7** day Mean Time to Repair (MTTR) vs a 60 day industry average and an average of **98.7%** uptime vs **70%** industry average.

ChargerHelp! Solves Industry-Wide EV Charging Downtime Problem through Big Data.

www.chargerhelp.com

- **Real-Time Issue Resolution:** Our proprietary software pinpoints EV charging system issues with precision, enabling fixes within moments instead of months.
- **Data-Driven Insights:** Continuous data aggregation and analysis provide clear visibility into system performance, identifying problem areas instantly.
- **Enhanced Reliability:** By rapidly addressing issues, our solution ensures higher reliability and customer satisfaction in EV charging infrastructure.

02.

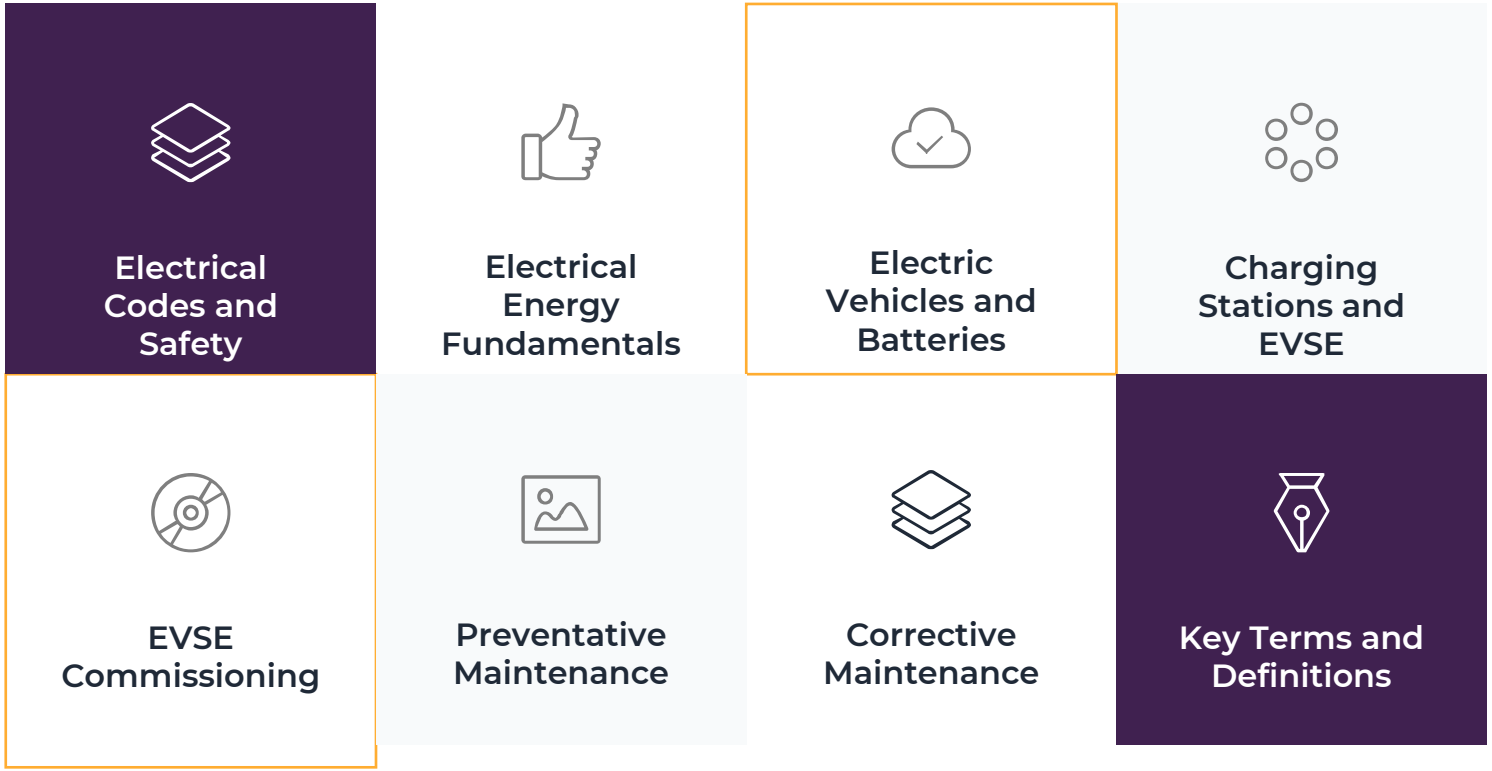
Curriculum

EVSE Curriculum

Curriculum Alignment with SAE

CH! curriculum is currently being formalized and finalized as the EVSE Body of Knowledge under SAE International. As the manufacturing and operational components of charging stations have grown in required technical knowledge and skill, SAE has collaborated with subject matter experts to create learning domains that best align with this shift. These domains serve to prepare training participants for the SAE EVSE exam that (when passed) results in a person becoming a trained and certified EVSE technician.

Competencies & Learning Objectives



Competencies & Learning Objectives Defined

- **Electrical Codes and Safety Standards** - An understanding of electrical codes, safety standards, and environmental regulations will ensure that technicians are able to perform their jobs safely and legally.
- **Electrical Energy Fundamentals** - Basic knowledge of electrical terms and concepts serves as the foundation for safe EVSE operation and maintenance.
- **Electrical Vehicles and Batteries** - Unlike their gas-powered counterparts, EVs run off of a battery and use an electric motor rather than an internal combustion engine. EVs are connected to EVSEs by charge cords that deliver charge to the battery.
- Key Terms and Definitions
- **Charging stations and EVSE** - Charging stations, also known as chargers or wall boxes, contain one or more EVSEs that supply EVs with electrical power.
- **EVSE Commissioning** - .Commissioning newly installed chargers is a core responsibility of EVSE technicians.
- **Preventive Maintenance** - Performing preventative maintenance tasks on chargers is a fundamental job of the EVSE technician.
- **Corrective Maintenance** - Repairing EVSEs when they are down is a fundamental task of the EVSE technician. This task involves the use of diagnostic tools and data analysis, and often involving coordination with a NOC on the back end.

03.

Training

Administration

EVSE Technician Training

Building a workforce for the EV future

Experts

ChargerHelp is the **first** company to solely focus on O&M of EVSE. Our trainers and technicians have worked with over **25 different EV Chargers** and Charging networks. Our curriculum and field experience contributed to the development of the SAE EVSE Technician Body of Knowledge.

Access

Online & In-person **training programs** accessible to participants at least 18 years of age with a High school diploma or equivalent and a 9th grade reading level.

Skills & Knowledge

EVs and Batteries, Electrical Energy Fundamentals, **Electrical Codes** & Safety, **EVSE**, Preventative Maintenance, Corrective Maintenance, Commissioning, Key Terms and Definitions.

EVSE Training Specs

- Our training, developed with SAE International, is designed to specifically ensure that maintenance technicians can operate safely and effectively, and understand the unique features of different EVSE makes and models.
- CH maintains close partnerships with leading EVSE manufacturers such as Tritium, Tellus, Rivian, Dunamis, and BTC Power, ensuring our trained technicians receive at least three manufacturer-specific trainings and certifications per year.
- CH-trained technicians go into the field with NFPA 70E and OSHA 10 safety certifications, ensuring they can conduct routine maintenance tasks competently and safely.
- Maintenance requires a different skill set than charging station deployment and installation - It is servicing an IOT asset. It’s a lot more like working with a computer.

Training Schedule & Class Information

Weeks at-a Glance (8am - 5pm)

WEEK 1:	**Safety Trainings & Certifications:** OSHA 10, NFPA 70E, LOTO, Defensive Driving, Ladder Safety **Domain 1:** Electrical Codes & Safety Standards
WEEK 2:	**Domain 2:** Electrical Energy Fundamentals **Domain 3:** EV's + Batteries **Domain 4:** Charging Stations + EVSE
WEEK 3:	**Domain 5:** Commissioning **Domain 6:** Preventative Maintenance **Domain 7:** Corrective Maintenance & Capstone Project

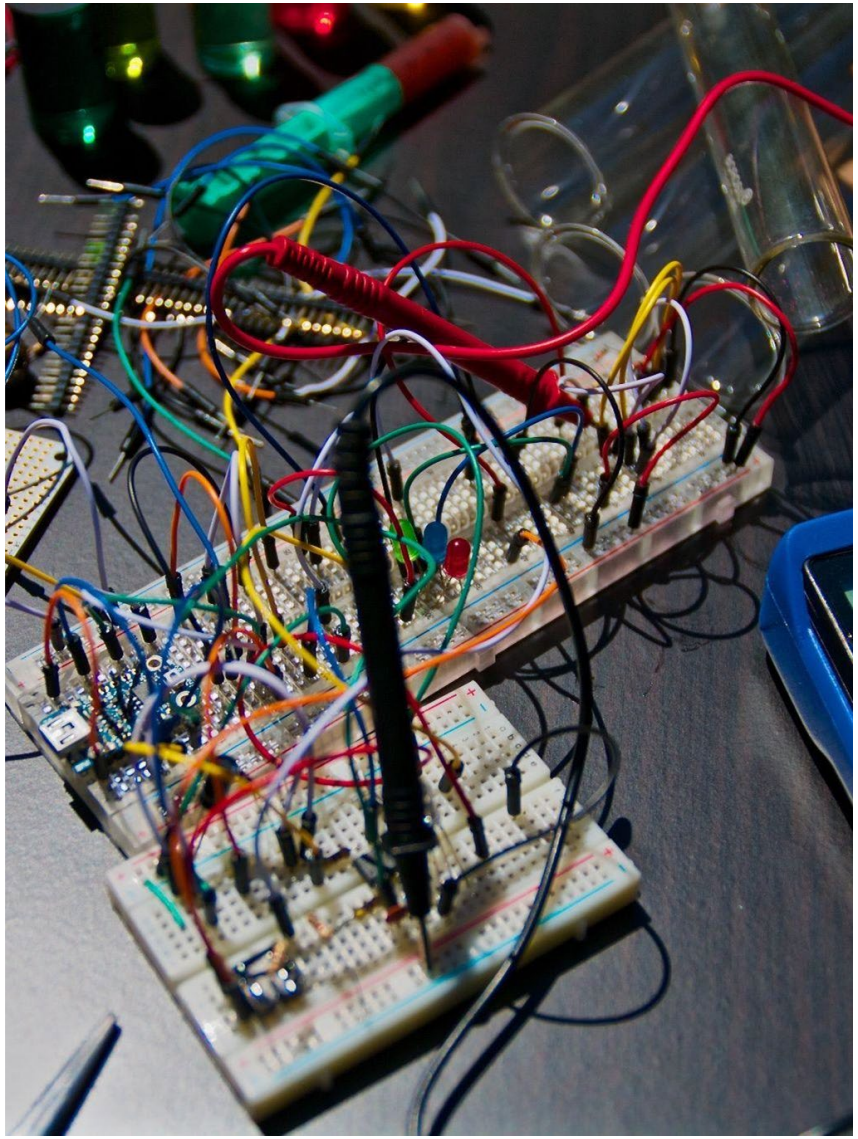
Class Size: 15 - 20 students

Minimum Requirements: Age 18, High School Diploma or Equivalent, 9th Grade reading level.

Training Space Philosophy

A Training Space that Supports Learning Outcomes

An effective learning space is designed to facilitate both safety and productivity, incorporating well-planned layouts that work to maximize learning outcomes. High-quality, durable materials and state-of-the-art equipment are essential, as is a flexible design that can adapt to the emerging research trends or impactful educational experiences.

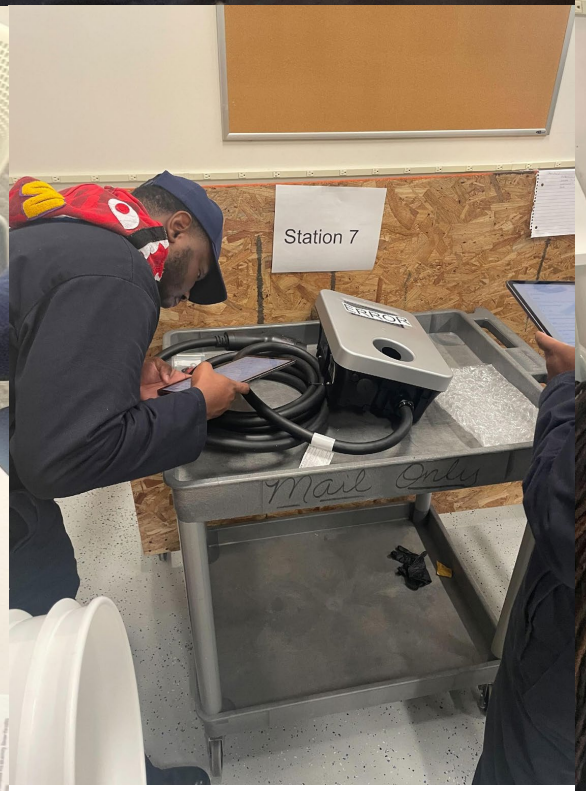



Station 2
Tourqin' Time


DANGER
DANGER


ON
SIEMENS
GENERAL DUTY
ENCLOSED SWITCH
60A 240VAC, 250VDC
DANGER
OFF


enel x


Station 7
Mail Only


Tourqin' Time
Goodwill

A few facts to consider.

1. The number of publicly available charging ports has also grown by over 70 percent, with 170,000 publicly available EV chargers across the country, putting us on track to deploy 500,000 chargers by 2026 – achieving the President's goal four years early.

1. The clean energy movement will produce upwards of 2.3 million new jobs; 70% of those jobs will NOT require a 4 year education. **SmarterHelp!** Will provide training towards stackable certifications that will increase employment viability for varying populations.

1. Qmerit, a company that provides installation services for EV charging and other electrification technologies for homes and businesses, estimates that the country's electrification push, including EV charging and solar panels will require at least 142,000 more certified electricians by the Biden Administration's 2030 deadline

Thank You

Rivian: Overview of Training Practices

Kelsey Johnson, Senior Lead Policy Advisor for Charging and Energy
Rivian

Charger Maintenance and Repair Workforce Development: Rivian's Approach

Kelsey G. Johnson, Sr. Lead Policy Advisor – Energy & Charging

25 JUNE 2024

Current products

R1S

R1T

Delivery 500 / 700

Rivian Adventure Network (Gen 1)

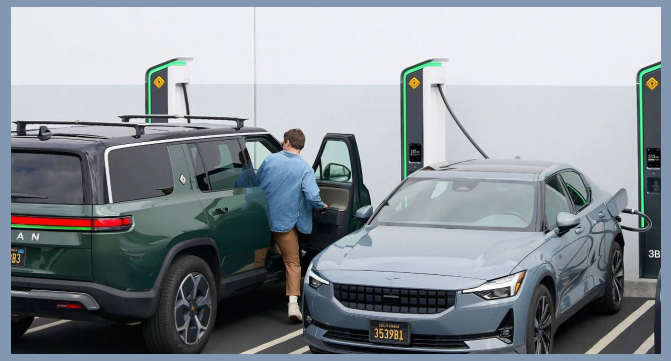
Waypoints

Future products

R2

R3

R3X

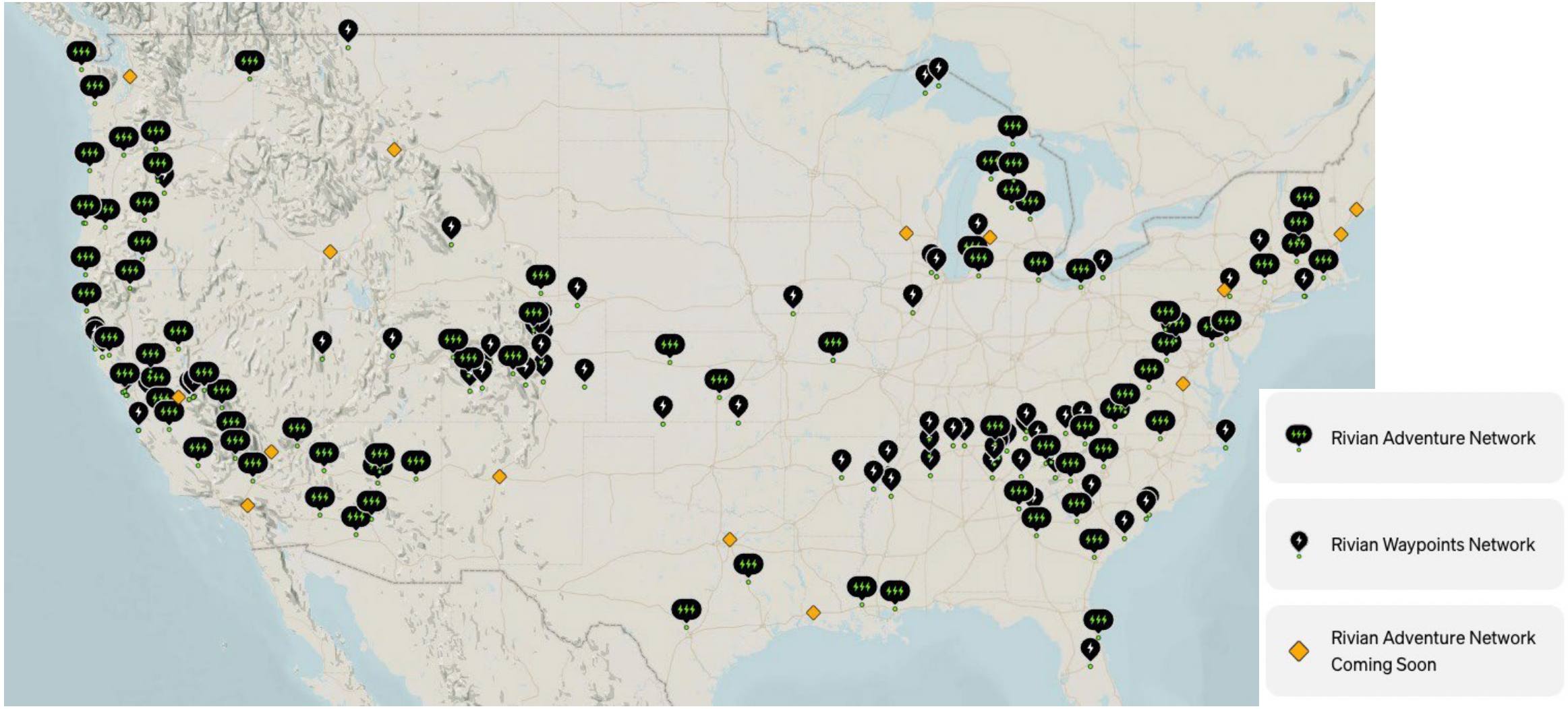


Rivian Adventure Network (Gen 2)

All-electric, US-based vehicle manufacturer, charging manufacturer, and charging network operator.

RIVIAN

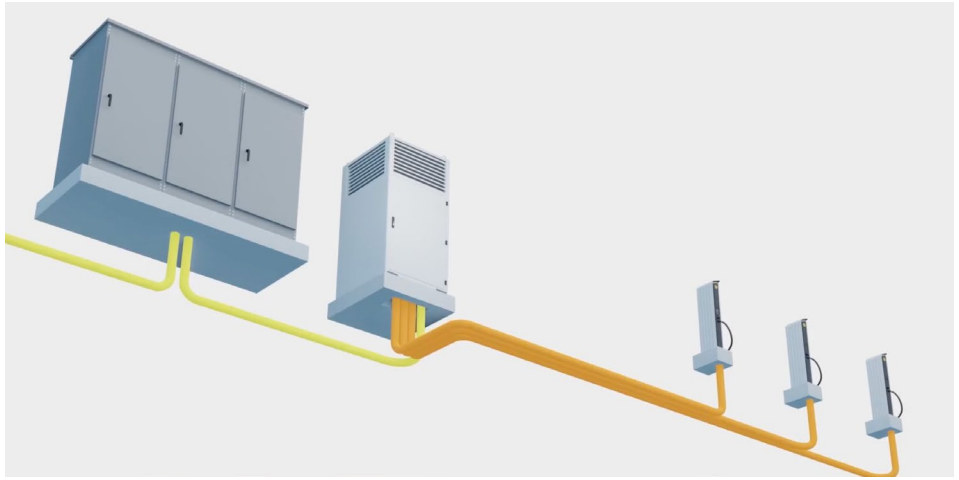
Rivian's Rapidly Growing Charging Network



RIVIAN

https://rivian.com/experience/charging

CGI Animation-based Online Training Library



In-person Technician Training

(Internal + 3rd Party Partners)

Maintaining high uptime is a team effort requiring a range of skillsets.

Technical Field Service

Field commissioning
Corrective maintenance
Planned maintenance
Field containments & campaigns

Field Engineering

Close the loop with engineering, manufacturing, & deployment to accelerate system improvement
Advanced field troubleshooting

Third-Party Partners

Corrective & Planned Maintenance
Registered Service Agents (RSAs) for Weights & Measures

Dispatch & Logistics

Field logistics
Technician dispatch
Parts planning & execution

Network Operations Center

Case management
Remote diagnostics & troubleshooting
Back-end commissioning
Firmware

RIVIAN

Investments in workforce training are critical.

Key principles to consider for a charger maintenance and repair workforce incentive program:

Each unique piece of charging hardware requires multi-dimensional maintenance and repair training across hardware, firmware, and software elements.

Each charging network will leverage a diverse set of maintenance and repair solutions to meet a range of business models and priorities – all should be considered.

Account for the ongoing evolution of the training tools and processes available to individuals and companies as the industry matures. Aim to increase accessibility to those tools and processes on an ongoing basis.

RIVIAN

Thank you.

kgjohnson@rivian.com

Panel Discussion: Opportunities, Skill Gaps, and Training Best Practices

Panel Member Introductions

Dave Eagle, Lead Instructor
21st Century Energy Center

Orville Thomas, Chief Executive Officer
California Mobility Center

Tor Larson, Vice President Trucks, Off-Road & Marketing
CALSTART

Elieen Tutt, Executive Director
Electric Transportation Community Development Corporation)

Josh Kelaher, Director of Service Engineering
Voltera

Discussion Questions

1. How can we appropriately match the (skills) level or type of training or certification required with the response needed for charger maintenance or repair?

2. What are the current gaps in workforce development within the charger maintenance and repair industry, and how can these gaps be addressed?

3. What can the state do to ensure a diverse and skilled workforce is available to meet the growing demand for charger maintenance and repair?

Next Steps from the California Energy Commission

ZEV Workforce Strategy

Public written comments by 5:00 p.m. July 12, 2024

- Submit written comments by July 12 to Docket No. 20-ALT-01: https://efiling.energy.ca.gov/EComment/ECommentSelectProceeding.aspx

Publish Revised Strategy – Quarter 4 2004

Public Comment

Public Comment

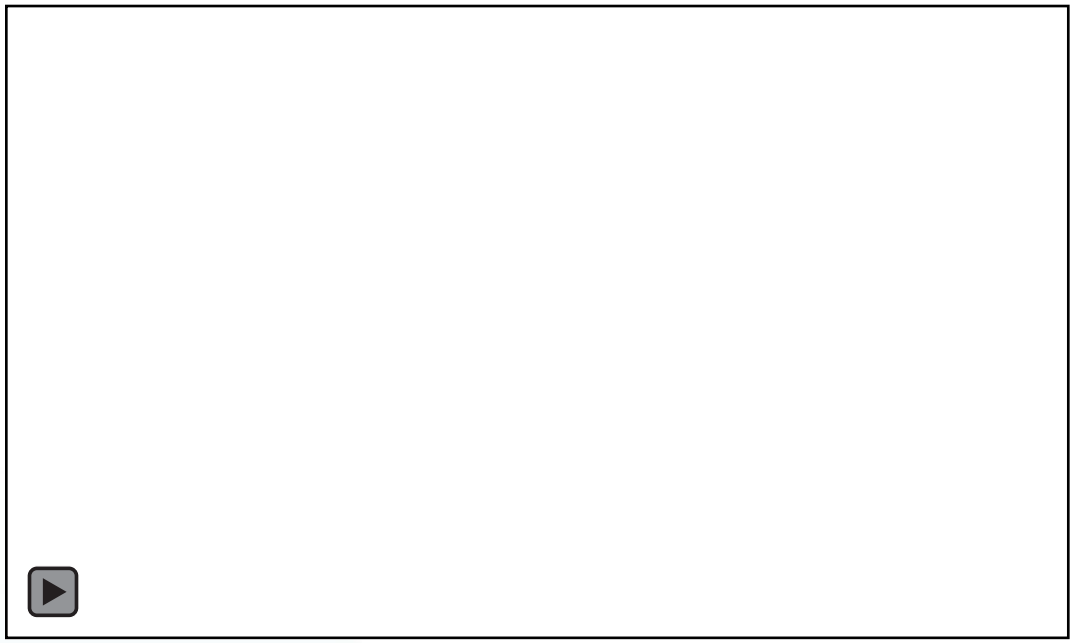
Instruction
- 2 minutes or less per comment

Zoom App/Online
- Click “raise hand”

Telephone
- Press *9 to raise hand
- Press *6 to (un)mute

When called upon
- CEC staff will unmute to open your line
- Please state your name and affiliation, if any

2-MINUTE TIMER



Thank You!