

Strong Workforce Program
Energy, Construction and Utilities
Regional Advisory Meeting Proceedings
Zero Emission Vehicles
August 27th, 2021 & September 17th, 2021
Virtual - Zoom

Introduction

The Los Rios Community College District, in partnership with Valley Vision, and in collaboration with Sierra College and Yuba Community College District, invests Strong Workforce funding to organize and convene Regional Advisories. The objectives of the Regional Advisories are to build strong relationships between employers, educators, and workforce that:

- Provide timely information on skills gaps and workforce needs, informing partners on major industry trend information;
- Improve the efficiency of the advisory process for educators and employers;
- Reflect a regional view of workforce needs and assets;
- Provide opportunities for more systemic, ongoing engagement that includes workforce partners in key industry sectors.

Regional Advisory meetings help inform decisions on needed investments and enhancements for Career Education (CE) programs to help fill the growing demand for middle-skill positions. This meeting proceedings report includes key findings, best practices, and minutes from the Spring 2021 Regional Advisory meeting focused specifically on careers in Energy, Construction, and Utilities.

Valley Vision supports a robust talent pipeline through our multiple 21st Century Workforce initiatives. We prepare our regional workforce for the future by addressing skills gaps, advancing research, aligning efforts and strengthening systems. Valley Vision's workforce efforts are supported by the Sacramento Employment and Training Agency (SETA), Golden Sierra Workforce Development Board (WDB), North Central Counties Consortium, Yolo WDB, City of Sacramento, local community college districts and others.

The Strong Workforce program provides Career Education opportunities to increase social mobility and fuel regional economies with skilled workers.

Key Findings

- California is a market leader in the electrical vehicle industry with nearly one third of the nation's electric vehicle charging stations in the state and home to many frontrunner companies serving the industry. As such, there is tremendous potential for positions within the ZEV industry in the Greater Sacramento Capital region.
- There is considerable opportunity for females in the Electrical Vehicle (EV) industry since positions with EV's are more technical including working with data and electrical systems. Females receiving training in the zero-emission vehicle industry are in high demand and typically paid 5% higher than their male counterparts.
- A frontrunner program at Rio Hondo College offers degrees in electrical fuel cell vehicles, alternative fuel cell vehicles and hydrogen fuel cell vehicles. The program was developed and is supported by grants. Colleges can build similar programs with a point person to seek out and apply for grants to build and sustain programming. There is high employment coming out of all programs and employer panelists indicate a critical need to source more qualified candidates.
- The electric vehicle industry is a diverse field including not only technical positions such as vehicle technicians, but also a wide spectrum of customer facing positions that continue to evolve. Communication to be able to translate the technical elements of purchasing, repairing and servicing zero emission vehicles is highly desired as the market for these vehicles continues to grow.
- Technical language used in the ZEV ecosystem of jobs could be introduced earlier in high school and community college curricula. This can build knowledge and interest in these careers and help prepare potential workers for customer facing jobs in the industry. Additionally, training on the foundational elements of energy and the grid can build exposure, understanding and interest. Exposing students learning computers and robotics in high school and community college to pathways in the ZEV industry can further develop the pipeline as these jobs require more data analysis and computer skills than their fossil fuel counterparts.
- Opportunities to diversify the pipeline of students entering this field include CTE matriculation, dual enrollment with high school programs and expanding internship opportunities. Students from disadvantaged backgrounds benefit from seeing they are enrolled in college before graduating from high school. When students see they are ahead with CTE matriculation, students are more likely to continue with the community college pathway. Partnering with K-12, charter schools, and nonprofit partners have the opportunity to further diversify the talent pipeline and ensure the highest pollution-impacted neighborhood residents have access to quality jobs in the ZEV space.
- Soft skills or professional skills are highly desired including communication, critical thinking/problem solving, customer service and a continuous learning mindset. Communication is the most important attribute to be successful in this industry.

Meeting Proceedings – Part 1

Welcome and Introduction

The advisory began by introducing Orion Walker, Regional Director of Employer Engagement, Energy, Construction and Utilities in the Greater Sacramento Region and Jeff Briggs, Regional Director of Employer Engagement, Advanced Manufacturing, Greater Sacramento Region. Both Regional Directors offered to be a resource for those who are interested in connecting with community colleges to learn about related programs in the Manufacturing, Energy, Construction and Utilities Industries and for continued employer engagement.

Trends and Opportunities

Chris White, Senior Manager of Frontier Energy, a widely respected energy consulting firm, and Communications Director for the California Fuel Partnership, presented information on trends and opportunities in the ZEV (Zero-Emission Vehicle) sector. White emphasized the **diversity of job opportunities available in ZEVs** with **customer facing positions** being a significant portion of the near-term opportunities. She also emphasized the opportunities for women in the field, with many positions needing communication, data analysis and information technology skills over the traditionally considered vehicle repair positions. White continued, noting that the pivot from fossil fuel vehicle technicians to zero-emission vehicle technicians is a change to a data intensive career, rather than simply the addition of new skills. White mentioned traditional vehicle technicians work with their hands, using senses like smell and sound to diagnose the need for repairs. In the ZEV world, data forensics is huge, including data analysis such as hooking up a computer and running diagnostics to look for rhythms in data to figure out why there is a performance issue instead of touching, feeling or smelling when working on non-electrical vehicles. White indicated a pathway for computer and robotics students in high school and community college to ZEV careers.

White highlighted the importance of **teaching the language of ZEVs** in both high school and community college. The sooner these terms are introduced and normalized in the language, the more we are preparing future workers for jobs in this ecosystem including customer facing positions. She also highlighted a need to focus on introducing ZEV language to English learning communities to prepare them to consider positions within the field.

White also highlighted the need for **multidimensional learning**. This involves students with technical degrees such as engineering learning how to communicate what they do, how they do it and why, and non-technical college students learning from engineers. Chris White concluded by stating that communication is the most important attribute needed to be successful in this industry.

Policy Drivers Around Electric Vehicles: The Current Landscape

Federal Policies

- The Bipartisan Infrastructure Deal is the first national investment in EV charging infrastructure and includes dedicated funding to install EV charging stations including along highway corridors with a focus on rural, disadvantaged and hard to reach communities.
- The Federal Energy Regulatory Commission (FERC) Order 2222 allows distributed energy resources (DERS) to participate in and support energy transmission systems including the electric grid of the future and promoting competition in electric markets.

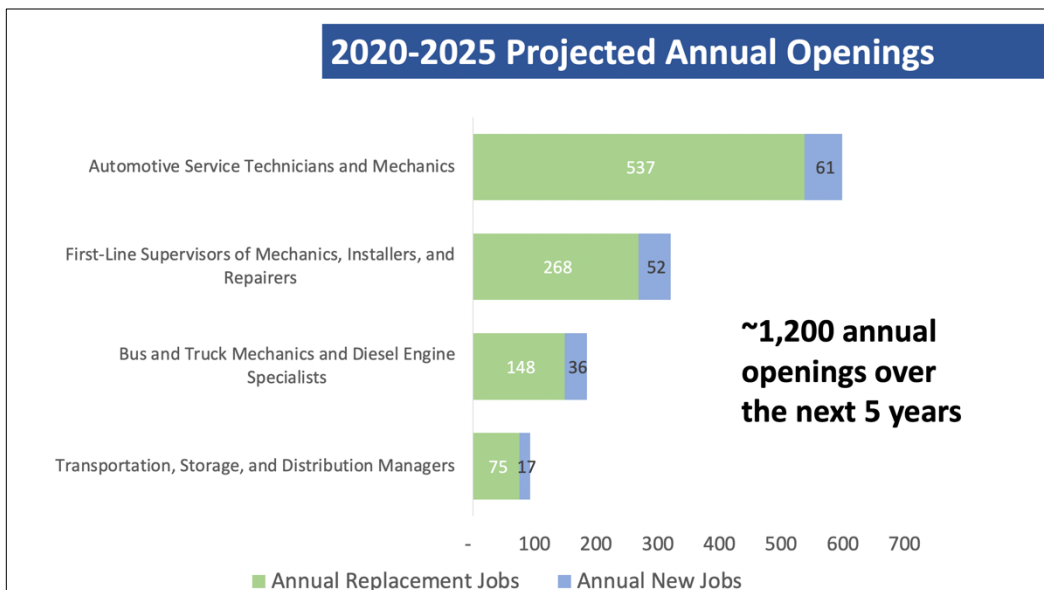
State Policies

- Senate Bill 100 (De Leon) ensures that 60% of California’s electricity is renewable by 2030 and sets a goal of powering all state agency and retail electricity sold in California with renewable zero-carbon resources by 2045.
- Senate Bill 49 (Skinner) requires energy efficient standards to manage energy loads in order to help maintain electrical grid reliability.
- Executive Order B-48-18 (Brown) set a target of putting 5 million Zero Emission Vehicles (ZEVs) on the road by 2030.
- Assembly Bill 2127 (Ting) requires the California Energy Commission to assess the electric vehicle charging infrastructure needed to meet the state’s goals of 5 million ZEVs by 2030 and found that California will need approximately 1.5 million charges for these ZEVs.
- N-79-20 (Newsom) established by 2035, all new cars and light duty trucks must be Zero Emission Vehicles, requires state agencies in partnership with the private sector, to accelerate deployment of affordable fueling and charging options, and requires support of new and used zero-emission vehicle markets to provide broad accessibility.

Training Assets and Occupational Information

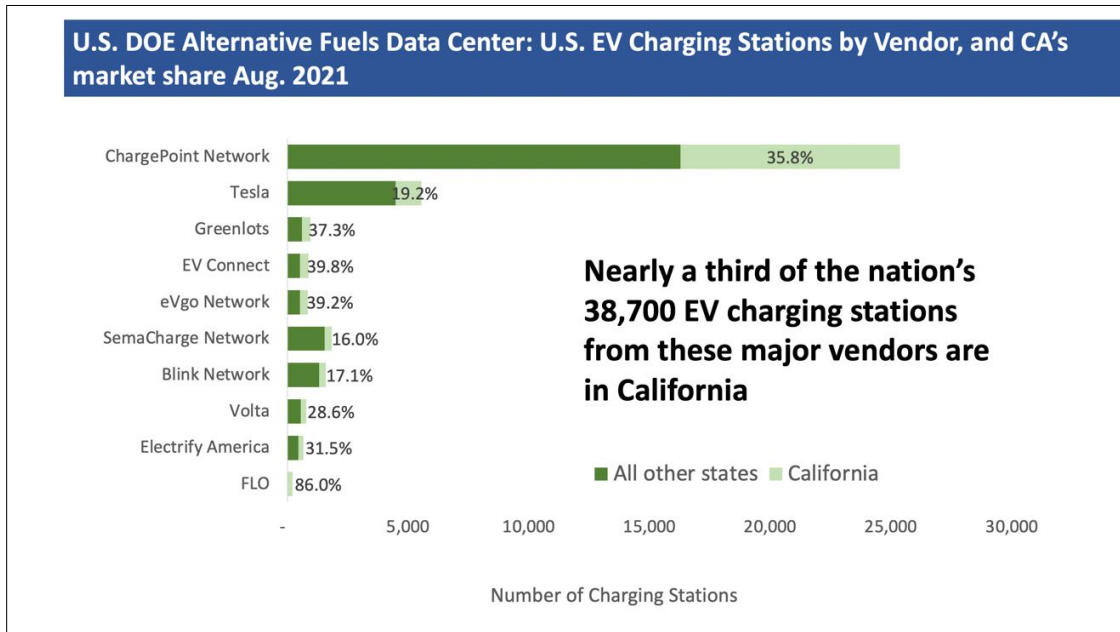
Aaron Wilcher, Research Director at the North Far North Center of Excellence presented Occupational, Electrical Vehicle (EV) Infrastructure and Program Data. The occupational data was primarily focused on Alternative Fuel Technicians and supervisor positions. In the Sacramento Region there are currently approximately 12,000 job openings in the following four occupational categories, with 1,200 openings projected over the next 5 years detailed in Figure 1.

Figure 1: Projected Annual Job Openings in the Alternative Fuel Vehicle Industry



The increase in Electric Vehicle (EV) infrastructure based on the aforementioned policy levers indicate potential in manufacturing, installation and repair of these stations. In March 2018, there were 4,823 EV charging stations in California. Since then, EV charging stations have tripled to 13,869 as of 2020. Figure 2 shows that nearly one third of the nation’s 38,700 EV charging stations are from major vendors in California.

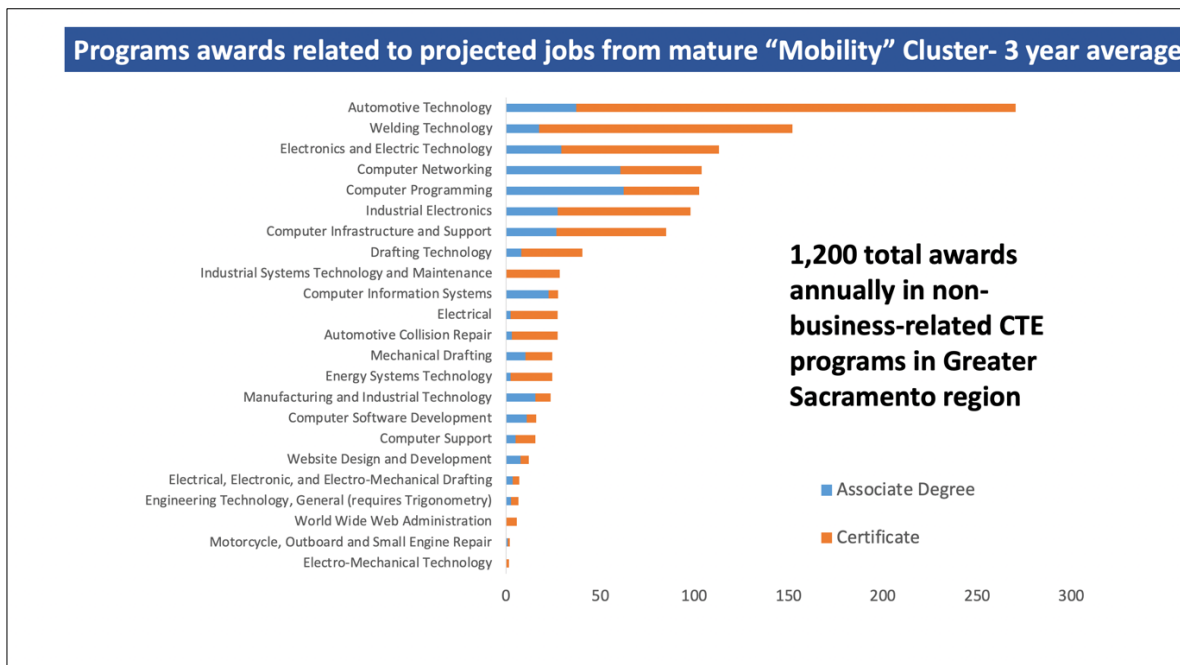
Figure 2. EV Charging Stations by Vendor and California's market share Aug. 2021



Program Data

A study by Centers of Excellence (COE) and the California Mobility Center showed that if research and development, manufacturing, incubator and economic development projects were scaled, the projected job openings could receive some support by existing community college programs. Figure 3 shows the existing programs that could support the projected job openings.

Figure 3. Programs Awards Related to Projected Jobs from Mature "Mobility" Cluster



Rio Hondo College Alternative Fuels Program

Professor John Frala is a professor at Rio Hondo College and runs their robust alternative fuel technology program. The program has won numerous awards and received recognition from various entities including the California Community College Association. Professor Frala has over 50 years of experience in the transportation industry and is nationally renowned for his work. His presentation focused on the electric vehicle programs at Rio Hondo College and the **shortage of electric vehicle training in California**.

Rio Hondo College offers degrees in Alternative Fuel Cell Vehicles, Electric Vehicle/Hydrogen Fuel Cell Vehicle/Electric Trucks and Tesla Start Technicians. The Tesla Start Tech program is the most popular and has graduated around 300 technicians in the last five years. The alternative fuel technology program at Rio Hondo College is almost exclusively supported by grant funding sought out and applied for by Frala. He stressed the **importance of having a point person** who looks for grants to create and support similar programs in other colleges. He is currently working with the National Science Foundation (NSF) to develop a female cohort Electrical Vehicle (EV) academy to meet the demand for females in the industry. The opportunity for females in the Electrical Vehicle (EV) industry is high because positions with EVs require less brawn and more technical skills including working with data and electrical systems. Professor Frala indicated all females graduating from his programs have received immediate employment offers and are typically hired with 5% higher wages. Frala also indicated the vehicle industry is losing 12% of its workforce due to retirement with training in the ZEV industry lagging behind. In addition, the training for installation and maintenance of ZEV infrastructure is not keeping up with demand.

Community-Based Panel Discussion

The panel discussion featured representatives from the following K-12 and community-based organization pipeline partners. The list of panelists included:

- **Kevin Dobson** - Founder and Executive Director, Capital College and Career Academy
- **Rachanee Jackson** - Student Coordinator, Green Tech Education and Employment
- **Morri Elliot** - Director, SAVA Charter School



- **Capital College and Career Academy**

Capital College and Career Academy is a new, college-infused high school that is focused on hands-on learning, which will be opening in the Fall of 2022. The school has dual enrollment agreements with American River College and Sacramento State and targets incoming 9th-grade students who are looking for a hands-on academic experience. The goal of CCCA is to graduate students with tangible, industry recognized credentials and hand on learning experiences making them more attractive to

employers and colleges than their peers. CCCA collaborates with a large number of industry partners throughout the region. The school is located in North Sacramento, a traditionally underinvested and high pollution impacted area.

- **Green Tech Education and Employment**

Green Tech Education and Employment is a community-based organization providing youth with emerging green collar skills focusing on building and design, construction, science technology, entrepreneurship skills and engineering. The primary demographic served by Green Tech are youth aged 16 - 24 years old with many coming from the Oak Park area of Sacramento. In addition to education, Green Tech connects students with field trips to obtain hands-on experience at companies such as TESLA, Regional Transit station, Sacramento Tree Foundation and the power grid station in Folsom. Green Tech Education and Employment also offers computer literacy programs to improve the digital skills of Sacramento's underserved and underinvested community members.

- **SAVA Charter School**

SAVA has charters with Twin Rivers, Elk Grove and Sacramento City Unified School Districts and is part of Gateway Community Charters. With a focus on underserved youth, the average student entering SAVA Charter Schools is a year behind in their graduation trajectory and reads three years below their grade reading level. Additionally, 30% of students have a learning disability. The goal of SAVA Charter School is to re-engage underserved youth with Career Technical Education programs while providing mentoring and support. Their primary pathways are in automotive and construction and the school is working with SMUD on beginning ZEV classes this Fall.

Hands on Learning to Engage Students

The panelists talked about the importance of providing hands-on learning experiences to students to get them engaged and interested in these types of positions. As representatives of pipeline education programs serving traditionally underinvested students, pipeline programs with these and likeminded partners can become feeder opportunities into the ZEV ecosystem of jobs to ensure inclusivity.

Common Barriers to Participation or Completion of Job Training

- Training needs to be brought within very near proximity of underinvested populations to ensure consistent attendance and overcome the **transportation** barrier, suggested within two miles.
- The **need for immediate income** leads students to not finish programs. Paid stipends or earn and learn models can help overcome this barrier and ensure students stay throughout the training to have access to higher paying careers in this field.
- Family challenges and personal development challenges including from Adverse Childhood Experiences (ACES) are brought into the classroom and can impact their success. success. Additionally, some face problems such as homelessness, food insecurity and legal issues. The panelists stressed the **need for supportive students** to help students persevere and graduate.

Career Exploration is Key

Many Career and Technical Education (CTE) programs provide a single focus pathway framework which limits students and disincentivizes **exploring multiple or interdisciplinary pathways**. Increasing collaboration with community colleges can be a great way for students to explore career pathways through dual enrollment or non-credit career exploration. While there is a lot of logistics and bureaucracy to establish these programs, students benefit from CTE matriculation and are more likely to continue with their education when **they are enrolled in college before graduating from high school**. Additionally, bringing college resources to their doorstep by including information about going to college, admission and financial aid process help students navigate the transition.

Conclusion

The meeting concluded by asking attendees to join the second part of the Electric Vehicle Advisory, which features an employer and industry panel.

Meeting Proceedings – Part 2

Welcome and Introduction

The second advisory on the Zero Emission Vehicle Industry occurred on September 17th. It featured keynote speaker Paul Lau, CEO of the Sacramento Municipal Utility District (SMUD), Kim Harrell, Interim Associate Vice President of Instruction, Economic & Workforce Development and Interim North Co-Chair at the North Far North Centers of Excellence, and a panel discussion with representatives from companies and industry.

Keynote Speaker: Paul Lau, Chief Executive Officer, Sacramento Municipal Utility District

Paul Lau highlighted how SMUD supports Los Rios Community Colleges in developing zero emission vehicle (ZEV) training programs in the region and provides curriculum support to community college partners. SMUD's board approved a 2030 zero carbon plan, which would remove carbon emissions from the power supply by the end of the decade. Paul stated that electrification of transportation and building sectors is vital to the zero-carbon emission plan since vehicles and buildings are the two largest emitters of carbon emissions in California. The Sacramento area has the 6th worst air in the country based on days of unhealthy air and unsafe levels of air pollution in the ozone layer. Electrification of vehicles will improve air quality and improve health outcomes, such as a reduction in childhood asthma rates. SMUD has committed \$44 million of funding to the Capital Region with 35% of the funding going towards making electric transportation accessible in underserved communities. This investment is crucial because racial minorities will bear a disproportionate burden of the effects of climate change.

SMUD has three initiatives to support and improve electric transportation in underserved communities:

- **E-mobility hubs** to engage community-based organizations and help them establish support for electric vehicles.
- **A sustainable community vehicle and infrastructure incentive program** to address equity and move electric vehicles into areas that will benefit the most from improved air quality.
- **Workforce development efforts to create jobs in the EV industry** - SMUD joined the Sacramento Metropolitan Air Quality District in Clean Cars for All efforts, which provides large discounts to people driving electric vehicles in underserved communities.

Additionally, **SMUD helped to support and launch the California Mobility Center**, which is a public-private entity focused on electric mobility innovation. It is projected that the California Mobility Center (CMC) will generate economic growth of \$2.5 billion in the Greater Sacramento Area and could also generate 8,000 jobs. Los Rios Community Colleges supports and partners with SMUD and the California Mobility Center.

Community College Collaboration and Changes

Kim Harrell of the North Far North Consortium (NFNC) provided information on regional community college changes and stated they have funds to create partnerships with organizations to create workforce training programs. She mentioned that NFNC has streamlined the curriculum development process and contract education programs which are short term and tailored to the needs of the employer. NFNC has proposed to develop an employer-facing asset map to make it easier for employers to determine which colleges are closest to them and the kinds of programs offered in these colleges. The asset map would provide one point of contact for employers to inform NFNC what their needs are. The community colleges are also moving more toward increased work-based learning experiences. New positions have been created, Assistant Directors of Employer Partnership (ADEPs), to work with employers to provide work-based learning experiences and job placement opportunities for students. This strategic shift will improve the pipeline to employment for students and information sharing with employers to ensure training programs are developed to best meet the skill and competency requirements of their continuing evolving talent needs.

Employer and Industry Panel Discussion

The panel discussion featured representatives from:

- **Matt Nootenboom** - Training Director, Sacramento/Shasta Butte Area Electrical Training Center & JATC
- **William Barrett** - Director of Sales and Business Development, ClipperCreek
- **Andy McCue** - Fixed Operations Manager, Lion Electric
- **Bobby Penn** - General Manager, Coil Electric
- **Armando Orozco** - Director, Facilities & Transportation, Stockton Unified School District



- **Sacramento/Shasta Butte Area Electrical Training Center & JATC**
Sacramento/Shasta Butte Area Electrical Training Center & JATC has 2,000 journey-level workers and 300 apprentices. Their role is to oversee training journey level workers in a five-year apprenticeship program. They serve individuals with prior or no prior experience. At the end of the program, the apprentices are qualified to be state licensed electrical technicians.

- **ClipperCreek**
ClipperCreek, located in Auburn, CA, is a leader in the design, engineering and manufacturing of EVSE (Electric Vehicle Supply Equipment) and accessories. Its workforce has expanded from 45 employees to over 80 employees, is growing weekly and expected to continue growth with availability in all positions.
- **Coil Electric**
Coil Electric is a service provider and installer of OEM and EVSE equipment and charging stations. They provide a full range of electrical services with a focus on renewable energy, supporting commercial, multi-unit dwellings and residential customers. Coil Electric has operations in Sacramento, the Bay Area and Los Angeles and are expanding to Washington, Oregon and Arizona. The company currently employs 30 electricians of various degrees throughout the state of California.
- **Lion Electric**
Lion Electric is an innovative manufacturer of zero-emission vehicles including manufacturing medium and heavy-duty electric vehicles. With headquarters in Canada, Lion has 900 employees across the U.S. and Canada including expanding and hiring 650 employees in the last year. Lion has a Sacramento customer service and repair center and they continue to expand operations with additional manufacturing and customer service centers planned.
- **Stockton Unified School District**
Stockton Unified School District currently has a fleet of 77 buses, and recently brought on 12 EVs. Armando previously worked at **Twin Rivers Unified School District** in Sacramento with the largest electric bus fleet in North America with 40 buses. The school districts face challenges with hiring mechanics and training existing employees to service and manage an electric bus fleet.

Interdisciplinary Nature of Positions

Employers reported needing **interdisciplinary candidates with expertise or aptitude in electrical, information technology and customer service**. These individuals are very difficult to find with the need to be able to simultaneously know the technical aspects of electrical and technology while also being able to interface with customers effectively. Panelists indicated it's almost like they are looking for two or three different people as these skill sets don't usually go together. Being able to **train across disciplines** in high school and community college could help create more qualified candidates. Including programming with electrical training is valuable. Soft skills and customer facing skills are highly desired.

Hiring For Aptitude

Because of the **lack of training and certificate programs** most panelists have adapted to hiring individuals who can demonstrate aptitude and a desire to continuously learn. The panelists agreed finding applicants with relevant experience are in **very short supply** and currently make up the largest hiring gap. Several employers had adopted internal training mechanisms to help fill the void of qualified candidates. Panelists also indicated the need for employment candidates to have a continuous learning mindset and ability to problem solve.

Equity, Algebra and Apprenticeships

Outreach to a wider demographic has surfaced challenges. To qualify as an apprentice, individuals need to have a high school diploma or GED and algebra with a C or better. In addition, they need to pass national standardized assessment testing which requires passing an **algebra component that has proven to be the greatest barrier to entry**. In addition to algebra, critical thinking, independence and the ability to make decisions on your own at a job site are essential for electrical apprentices. **Expansion of internships can be a useful tool** to diversify the candidate pool for these positions.

Lack of Candidates

All panelists agreed a lack of candidates was a primary concern. Sac JATC indicated they take as many applicants as can pass the pre-assessment tests. Other companies indicated a challenge finding qualified candidates and knowing the need will continue to increase.

Partnering to Expand the Pipeline

The panelists had the following suggestions on what community colleges and workforce system partners can do or develop in response to what is changing in the industry:

- **Expanding and creating a robust electrical program in community colleges**
- **Reaching out to prospective employers for input and collaboration**
- **Expanding internships and on the job training opportunities**
- **Allowing employers to come in and speak at the colleges**
- **Introduce students to the basics of electrical vehicle technology and the grid and expose students to the ever-changing technology**
- **Company visits either in person or virtually to allow students to building relationships with the different companies**

Conclusion

The attendees were given contact information of community college representatives and Renee John, Project Leader at Valley Vision. The contact information is listed below:

- **Kim Harrell**, Associate Vice President of Instruction, Economic & Workforce Development, Interim North Co-Chair NFNRC - kim.harrell@crc.losrios.edu
- **Orion Walker**, Regional Director, Employer Engagement, Energy, Construction and Utilities, Greater Sacramento Region - walkeror@butte.edu
- **Jeff Briggs**, Regional Director, Employer Engagement, Sacramento State, Advanced Manufacturing, Greater Sacramento Region - jeffbriggs@sierracollege.edu
- **Renee John**, Project Leader, Valley Vision- renee.john@valleyvision.org