TAKING THE HIGH ROAD IN THE EV LOGISTICS TRANSITION:

WORKFORCE DEVELOPMENT STRATEGIES FOR THE INLAND EMPIRE AND BEYOND

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EXECUTIVE SUMMARY

The transition to Electric Vehicles (EV) or Zero Emission Vehicles (ZEV), part of the broader clean energy transition, promises to improve environmental and public health by reducing harmful air pollution caused by diesel and gas emissions. This report examines the workforce implications of these potential benefits, along with challenges and pitfalls related to this transition within the freight logistics sector of California's Inland Empire (IE), one of the largest logistics hubs in the US. Drawing from a combination of policy analysis, workshop proceedings, co-authors' previous research, and original interviews and discussions with stakeholders, including workers, unions, regulators, utilities, community-based organizations, educators, and technical experts,[1-4] we argue that public and private initiatives to electrify medium-duty and heavy-duty (MD/HD) trucks must combine high environmental standards with principles of equity and good labor standards to ensure that this transition will lead to secure, family-sustaining careers and benefit all workers, including women, immigrants, workers of color, and LGBTQ+[5] workers.

To achieve this, we recommend the expansion of programs aligned with the core principles of California's High Road Training Partnerships (HRTPs), which are state-supported, industry-driven workforce programs that prioritize job quality, worker voice, and economic equity. Official HRTPs have specific criteria set by the California Workforce Development Board (CWDB), but they are not without flaws. This report therefore emphasizes best practices within California's logistics industry more generally while highlighting equity-oriented apprenticeship and pre-apprenticeship programs that are not necessarily HRTPs but nonetheless align with HRTP core principles. We use the term HRTP-aligned to describe workforce initiatives that meet the spirit and core principles of California's HRTP model — including equity, high job quality, and worker voice — even if they are not formally recognized or funded as HRTPs by the CWDB. We discuss the actual and potential roles of Community Workforce Agreements (also known as Project Labor Agreements) and Community Benefit Agreements in creating HRTP-aligned training initiatives; these are legally binding agreements forged between community and/or labor organizations, employers, and policy-makers.[6] We then briefly highlight other workforce development and green economy initiatives by unions and worker centers that support the development of a more equitable and sustainable economy in the Inland Empire.

More specifically, to ensure the EV transition delivers its promised environmental, health, and economic benefits equitably, we recommend the following:

KEY RECOMMENDATIONS

1. **Tie public EV-related funding and subsidies to high labor standards, including requirements for living wages, benefits, local hiring, worker voice, and safety protections.**

2. **Establish government procurement policies that include high labor standards (e.g. wage floors, skill standards, local hiring) for EV-related infrastructure projects.**

3. **Expand and strengthen HRTPs and HRTP-aligned apprenticeship programs to prepare workers for EV and green economy jobs.**

4. **Ensure long-term, stable public funding streams (federal, state, and local) to support EV infrastructure, job training, and worker protections.**

5. **Integrate gender, racial, and immigrant equity principles into all EV workforce development programs to ensure that underrepresented groups benefit from new jobs.**

6. **Strengthen worker and community engagement in EV policy planning to address health, safety, and environmental hazards and community benefits associated with EV production, lithium battery extraction, and grid expansion.**

7. **Support displaced workers, especially from fossil fuel industries, through targeted retraining, transition assistance, wage subsidies, and skill certifications tied to high-road careers.**

INTRODUCTION

California is at the forefront of the national effort to transition to Electric Vehicles (EV) or Zero Emission Vehicles (ZEV), which is crucial for reducing air pollution and improving the overall environmental and public health landscape of the United States and beyond.[7] This paper explores the promises and potential pitfalls of this transition for workers in California, particularly those affected by the electrification of medium- and heavy-duty freight delivery vans and trucks (hereafter, MD/HD trucks)[8] in the Inland Empire (IE), and how to best prepare and train workers for this transition. The IE, which includes both Riverside and San Bernardino Counties, is one of the largest logistics hubs in the US and home to one of the largest and most extensive warehouse industries in California.[9] Partly due to the heavy concentration of freight transportation, including diesel trucks, San Bernardino and Riverside counties are among the most polluted counties in the nation.[10]

To ensure that this transition benefits all workers and creates a broad range of secure, family-sustaining careers, public and private initiatives to electrify MD/HD trucks must combine high environmental standards with principles of equity and good labor standards. State-led, industry-driven High Road Training Partnerships (HRTPs) offer a model of equitable workforce development and one possible path to fulfilling these goals. HRTPs, explained in greater detail below, are workforce development initiatives that align worker training with high-quality jobs[11] in growing industries, emphasizing equity, sustainability, and high labor standards. The California Workforce Development Board (CWDB) launched the HRTP initiative in June 2017 as a $10 million demonstration project to model partnership strategies across various sectors, including transportation, healthcare, and hospitality.[12] The newest HRTP, as of March 2025, is the HRTP Healthcare 2024–25 Grant, launched in late 2024 to support projects aimed at preparing more workers for high-quality healthcare jobs, particularly in underserved regions of the state.[13]

HRTPs emphasize systemic change through worker-centered job training, linking disadvantaged workers to high-quality jobs through collaborative training programs that facilitate upskilling and industry-community collaboration.

HRTPs thus provide models for best practices for training workers in new skills and linking them to high quality jobs, reflecting the state's continued investment in building an inclusive, future-ready workforce through industry-driven, worker-centered strategies.[14] Nevertheless, HRTPs are not a one-size-fits-all solution; their scalability, funding limitations, and employer engagement remain areas of concern. Other programs that embody HRTP principles but are not formally created by the CWDB as official HRTPs, such as equity-oriented union apprenticeship and pre-apprenticeship programs, show significant promise for a sustainable way forward.[15]

We argue that programs aligned with HRTP core principles offer an important mechanism for helping to ensure more equitable employment outcomes of the EV transition, based on evidence gathered from numerous secondary sources and informed by semi-structured interviews, formal presentations, and informal discussions with stakeholders (workers, unions, regulators, utilities, community-based organizations, educators, and technical experts) at two daylong, in-person workshops convened by the authors and our collaborators[3, 4]) and previous research.[1, 2]

This report first reviews federal and state policies shaping the EV transition, then assesses the environmental and labor implications of MD/HD truck electrification. It highlights workforce initiatives – particularly HRTP-aligned or equity-oriented apprenticeship programs – that promote equity in logistics workforce development. We consider the potential benefits for the environment, public health, and workers of the electrification of MD/HD trucks, as well as potential health risks and pitfalls for displaced workers associated with this transition. We then argue that expanding training partnerships that align with HRTP principles within this transition would help to ensure equitable outcomes for local workers, including displaced workers, as well as women, immigrants, workers of color, LGBTQ+ workers, and others historically excluded from high-quality careers. Following this, we briefly review some of the promising training initiatives being carried out in California and the IE related to freight logistics, electrification, and green jobs.

Finally, we offer policy recommendations to ensure that the transition results in sustainable, high-quality jobs for all workers.

POLICIES AND INITIATIVES TO PROMOTE LOGISTICS ELECTRIFICATION

Federal and state policies have set ambitious goals for EV adoption. The Inflation Reduction Act (IRA) of 2022 and the Bipartisan Infrastructure Law (BIL) allocated billions in funding for EV infrastructure, including incentives for MD/HD electrification. Public programs have been designed for both large and small fleet operators, and some target owner-operated truck drivers, who make up 17% of California's commercial motor vehicle fleet.[16] Overall, these and other US federal and state programs have provided new incentives, regulatory mandates, funding, and services that have helped to spur the development, purchase, and use of electric vehicles, including MD/HD trucks (for a recent review of these, see endnote 7). Although ongoing legal and political challenges to federal environmental policies under the Trump Administration create uncertainties around federal funding streams, California nonetheless remains committed to various stringent EV regulations and incentive programs.

Among U.S. states, California has been at the forefront of policy efforts to promote

the EV transition.[7] California policy-makers, including legislators and the California Air Resources Board, have adopted a series of policies that mandate and help facilitate, through public funds and outreach, the phase-in of MD/HD electric trucks. In addition to other requirements related to Advanced Clean Trucks, Advanced Clean Fleets, and the Clean Truck Check program, the California legislature enacted Assembly Bill 98 (AB 98) in 2024,[17] which requires new warehouse developments to abide by California building codes, including Green Building Standards and requirements related to MD/HD truck charging readiness.[18]

Regionally, the South Coast Air Quality Management District (SCAQMD) oversees air quality in Los Angeles, Orange, Riverside, and San Bernardino counties, including the Coachella Valley. In 2022, SCAQMD adopted the Air Quality Management Plan (AQMP) as part of a State Implementation Plan (SIP), which the US Environmental Protection Agency (EPA) requires for areas that fail to meet National Ambient Air Quality Standards (NAAQS).[19] The plan aims to reduce smog-forming pollution by 2037 through the deployment of zero-emission vehicles (ZEVs) and low nitrogen oxides (NOx) technologies, using a mix of regulations and incentives.[20] It also includes emission reduction strategies for mobile sources, supported by incentive programs and partnerships with local, state, federal, and international entities.[20]

A key precedent for this SIP is the Warehouse Actions and Investments to Reduce Emissions (WAIRE) Program (Rule 2305).[21] Established through grassroots environmental justice advocacy, WAIRE seeks to cut nitrogen oxide and diesel emissions linked to warehouses, helping the region meet federal air quality standards and improve public health. Rule 2305 specifically applies to warehouses of at least 100,000 square feet of indoor space within a single building.[21] Under the rule, warehouse operators must earn compliance credits by either implementing direct emissions-reduction measures, such as investing in zero-emission trucks and charging infrastructure, or paying mitigation fees that fund air quality improvement programs.

While WAIRE represents a major step toward reducing freight pollution, its implementation has faced significant legal and industry pushback. In 2023, a coalition of business groups and warehouse operators sued the SCAQMD, arguing that WAIRE unfairly imposes financial burdens on logistics companies and interferes with state and federal trucking regulations.[22] Critics claim that small and mid-sized warehouse operators, particularly those leasing space, struggle to comply with the rule's requirements, as they lack direct control over fleet decisions.[23] Additionally, concerns remain about whether WAIRE's emissions reductions will be sufficient to meet EPA-mandated air quality targets and whether compliance fees are being effectively reinvested in frontline communities.

Despite these challenges, environmental and public health advocates continue to defend WAIRE as a critical tool for addressing the Inland Empire's severe air pollution and holding warehouse operators accountable for their role in regional emissions.[24, 25] Moving forward, ensuring transparent enforcement, increasing state and federal support for zero-emission truck adoption, and improving coordination between warehouse operators and fleet owners will be key to WAIRE's long-term success.

Other regional initiatives, such as those under the Joint Electric Truck Scaling Initiative (JETSI), are funded through multiple state agencies but not tied to specific legislation. These initiatives have also helped to promote logistics electrification. This project aims to deploy 100 Class 8 battery-electric trucks (BETs)[26] across Southern California.[27] In addition to advancing zero-emission freight, the project is expected to generate 239 long term jobs, including drivers and service technicians for BETs, charging equipment specialists, and distributed energy resource technicians. It will also generate 176 temporary jobs for the construction of charging infrastructure, covering design, engineering, construction, and project management. Additionally, the initiative will support indirect jobs, such as electricians, EVSE (Electric Vehicle Supply Equipment) specialists, software developers, and energy managers.

The Joint Electric Truck Scaling Initiative (JETSI) project also includes a comprehensive training component, with over 5,000 hours of Original Equipment Manufacturer-led instruction for fleet managers. This training covers route optimization based on vehicle range, traffic patterns, terrain, and charging dwell time, helping to minimize electricity costs by maximizing off-peak charging. Service technicians receive instruction on battery systems, advanced power management software, regenerative braking, and high-voltage electrical systems. Additionally, truck drivers transitioning from diesel big rigs are trained in battery-electric truck operations and safety procedures, including regenerative braking techniques, which can extend vehicle range by 5–15% with proper training.[28]

Beyond public funding, additional funding for the EV transition is provided through private funding by corporations, foundations, and legal settlements, such as the Volkswagen (VW) Environmental Mitigation Trust. This trust allocates $423 million for California to mitigate the excess NOx emissions caused by VW's use of illegal emissions testing defeat devices in certain VW diesel vehicles. Along with other activities, it funds "scrap and replace" projects for heavy-duty trucks and other vehicles.[29]

Together, public policies and private initiatives have played a crucial role in advancing the electrification of MD/HD trucks by establishing air quality regulations, funding mechanisms, outreach programs, and infrastructure support.[7] However, critics argue that these efforts may not go far enough in several

key areas. Concerns remain about whether air quality regulations are stringent enough to achieve meaningful emissions reductions,[30] whether the electric grid and related infrastructure upgrades will meet demand,[31, 32] and whether financial and logistical support for small fleets and independent trucking operators is adequate.[3]

Additionally, labor advocates emphasize the need for stronger workforce development standards to ensure that the transition creates equitable job access and high-quality, well-paying jobs.[33]

Further complicating matters, the current Trump administration has actively sought to roll back federal policies and funding for climate and clean energy initiatives. However, these efforts are expected to face legal challenges from state governments, environmental organizations, and other stakeholders.[34]

Despite potential delays and California's need to adjust its regulatory approach in response to shifting federal policies, the EV transition is likely to continue, supported by previously awarded federal grants and ongoing state, regional, local, and private-sector initiatives.[35]

This raises an urgent question:
How can the EV transition in freight logistics be structured to not only reduce emissions but also create equitable job training opportunities and high-quality careers for all workers?

LOGISTICS ELECTRIFICATION IN CALIFORNIA AND THE IE: OPPORTUNITIES AND CHALLENGES

Opportunities for Improved Public Health in the EV Transition

The transition to Zero Emission Vehicles (ZEVs) in California is expected to significantly improve air quality and public health by reducing carbon emissions and air pollutants. San Bernardino County and Riverside County currently remain in "Severe Nonattainment" for ambient air quality under US Environmental Protection Agency (EPA) standards, particularly for tropospheric (ground level) ozone (O_3), According to the EPA's design values, ozone levels in the region range from 0.111 ppm to 0.162 ppm, exceeding the federal standard. The South Coast Air Basin and San Joaquin Valley are the only two areas in the entire US designated as being in "Extreme Nonattainment" for ozone, with design values of 0.163 ppm or higher.[36] Central and Southern California score poorly for particle pollution as well. Imperial County, Riverside County, and East Kern County, for instance, currently fall into the EPA category of "Serious Nonattainment" for PM_{10} (particulate matter 10 micrometers or less in diameter), placing them among the worst areas for particle pollution in the country. According to the American Lung Association's 2024 State of the Air report, the counties of San Bernardino and Riverside came in first and second place, respectively, for being the most polluted U.S. counties in terms of their ozone and

particle pollution. Between 2020 and 2022, San Bernardino had an average of 175.2 days of unhealthy ozone pollution, nearly half the year. San Bernardino and Riverside counties also ranked tenth and twelfth, respectively, for the worst annual particle pollution levels in the nation based on national ambient air quality standards.[10]

These air quality issues can be traced back to trucking. Although only 12% of all MD/HD vehicles in California are Class 7[37] or Class 8[38] tractor-trailer trucks, these HD trucks alone are responsible for generating 35% of the state's total nitrogen oxides (NOx) emissions and over 70% of statewide NOx emissions from on-road mobile sources.[39] NOx pollution, caused by fuel burned at high temperatures, plays a major role in the production of tropospheric ozone, commonly known as "smog".[40] Ozone, in turn, attacks lung tissue, causing immediate breathing problems, the development of asthma, and increased risks of respiratory infections, pulmonary inflammation, and premature death.[41] From 2010 to 2017, Southern California saw a 10% increase in deaths attributable to ozone pollution.[39] According to the American Lung Association, ozone exposure is also linked to lower birth weights and decreased lung function in newborns and increased risk of metabolic disorders such as glucose intolerance, hyperglycemia, and diabetes. It also impacts the central nervous system and harms cardiovascular health.[41] The pollution caused by trucks in California thus contributes to serious health risks and public health hazards. More than 98% of Californians live in an area that has failed to meet national standards on at least one measure of air quality.[42] The impact of diesel truck emissions is felt most immediately where they are concentrated: near freight hubs such as ports, railyards, and warehouses, creating a disproportionate burden on the majority-minority Latinx, Black, and Indigenous communities that live and work in those areas.[30] Eighty-five percent of the residents living within half a mile of a warehouse are people of color, and therefore at the highest risk for health problems due to ozone and other pollutants.[43]

Along with efforts to further diversify the regional economy away from logistics,[1] the environmental and health benefits of the EV transition are projected to be substantial: In an optimal scenario – led by a national adoption of ZEVs – this transition could prevent approximately 150,000 premature deaths and equate to nearly $1.3 trillion in health and environmental savings through 2050 in the United States.[44]

Truck drivers, especially long-haul drivers, are also likely to experience health benefits from the EV transition due to the reduced exposure to diesel exhaust[45] as well as vehicular noise and vibrations.[46] Various studies provide evidence that truck drivers' exposure to vehicular vibrations within diesel trucks contributes to back pain and negatively affects their postural stability, balance, and touch sensation (e.g., see endnotes 47 & 48).

Potential Health Hazards in the EV Transition

While the EV transition offers significant health benefits, it also presents potential health risks and environmental hazards from which communities, the environment, and workers deserve protection. For instance, the extraction of lithium (the essential component of EV batteries) entails health and environmental impacts, including respiratory conditions (e.g. asthma and lung cancer), type 2 diabetes, and infectious diseases, and water pollution.[49] The production, transportation, and storage of lithium batteries also pose both significant health and environmental risks, as these batteries can overheat, cause fires, and release toxic fumes and hazardous materials. Numerous lithium-battery related fire incidents have already highlighted these dangers, exemplified by the 2025 fire that occurred at the Moss Landing Vistra Power Plant where lithium batteries were stored, which led to the evacuation of 1,200 people[50] as well as a series of fires involving truck drivers when they were transporting these batteries.[51, 52] Other health hazards for workers are associated with electric vehicle manufacturing[53] and electric grid installation. The latter include electrocution, explosions, and fires.[54] Electrocution can occur through direct contact with live electrical components or accidental contact with overhead or underground power lines, leading to severe injuries or fatalities. Explosions and fires may result from electrical faults, such as short circuits or equipment failures, which can ignite flammable materials or cause arc flashes. These incidents not only pose immediate dangers but can also lead to long-term health issues, emphasizing the critical need for stringent safety protocols and comprehensive training programs to protect workers in this field.

Opportunities for More & Better Jobs in the EV Transition

The EV transition is expected to create and transform jobs across multiple industries, including logistics. In the Inland Empire the logistics sector currently employs more than 250,000 workers (approximately 16.4% of the region's workforce in 2023), encompassing roles such as warehouse workers, truck drivers, rail workers, and delivery drivers.[1] Statewide, California had more than 193,000 jobs in the automotive sector (including vehicle manufacturing, car dealers, automotive parts, and repair and maintenance) as of 2019. Additionally, transportation services (including trucking, delivery and courier, postal service, and waste collection) employed more than 207,000 workers.[55, 56]

Research estimating the amount of jobs created through the overall ZEV transition varies. Energy and Environmental Research Associates "estimate that approximately 60,000 job-years will be needed from 2021 to 2031 to support California's EV goals and charging infrastructure needs".[57] Another study argues that, if EV sales rise to 50% of domestic auto sales by 2030 in the US, about 150,000 jobs in the auto industry, some of which include the manufacturing of MD/HD trucks, could be created through

policy measures to shore up US market share.[58] On the other hand, the 2035 report from UC Berkeley estimates that, although 500,000 direct jobs could be lost from 2020 to 2035 due to the overall EV transition, including jobs in the oil and gas sector, around 800,000 direct jobs could be generated. Considering indirect and induced jobs related to it, the estimated new jobs generated by the EV transition could, under certain conditions, increase to over 2 million.[44]

Although not exhaustive, Table 1 lists many of the jobs that are likely to be generated with the EV transition. The EV transition is also likely to further increase the demand for electrical workers,

TABLE 1: JOBS CREATED BY THE EV TRANSITION

Sector	Job	Description
Transportation	Vehicle Manufacturing	Operators, supervisors, and other positions in electric vehicle manufacturing plants.
	Automotive Repair and Maintenance	Mechanics, parts suppliers, supervisors, and other positions for electric vehicles repair and maintenance.
	Truck transportation	Electric truck drivers, including medium and heavy trucks, for land logistics, port logistics and airport logistics.
	Electrical workers	Electric workers for electric grid construction, maintenance, as well as electric chargers' installation and maintenance.
Research & Development	Scientific researchers	Material scientists & chemists that conduct research on EV batteries, materials, electric charging, etc.
	Engineers for development	Electric, mechatronic, industrial, and software engineers that design and develop EV technology.
Sales	Salespeople and Customer Service	Retail and supplies salesperson for EVs, chargers, and other related products, as well as customer service agents for customers.

This table was created by the authors by combining information from endnotes 55, 59, & 60.

especially those involved in upgrading and expanding the electrical grid.

New EV-related jobs are more likely to be good jobs if they are unionized. Unionized workers tend to earn higher wages and have greater access to employment benefits than non-unionized workers, controlling for other factors affecting compensation.[61] For example, within the transportation and warehouse industry, nationwide, union workers' average total compensation is $65.03 per hour, with $40.46 for wages and salaries. In contrast, average total compensation for non-union workers is $34.63 per hour, with $24.27 for wages and salaries per hour in June 2023.[62]

Unions, including the International Brotherhood of Teamsters, the International Brotherhood of Electrical Workers, and the United Automobile, Aerospace, and Agricultural Implement Workers of America (UAW) have been stepping up efforts to organize workers in the logistics industry and related manufacturing industries. For example, in 2024 the UAW announced that it would spend $40 million over the next two years in efforts to organize auto and battery workers, including those involved in manufacturing EVs.[63]

Potential Employment Challenges in the EV Transition

While some forecasts suggest net job growth in the clean energy transition, other studies highlight risks of wage reductions and job displacement, underscoring the need for robust workforce protections and transition assistance for displaced workers.

Job losses due to the EV transition are likely to be the most pronounced in communities that are heavily dependent on fossil energy production, especially coal, many of which are located in developing countries as well as under-resourced communities in the United States. Even where the number of direct energy jobs lost is small, the impact on local economies can be significant.64 Because new green jobs will not always be in the same sectors where employment is lost, displaced workers will require retraining and transition assistance. Public and private investments are required for the protection, support, and compensation of displaced workers in specific affected industries, such as those related to oil and gas, and in historically disadvantaged or underserved regions.[60, 65]

For example, according to survey research conducted by Parks and Baran,[65] after the closure of the Marathon oil refinery in Contra Costa County, 74% of laid-off unionized workers who did not retire found new jobs. However, these jobs were often lower-paying, with a median hourly wage reduction of $12 (from $50 at Marathon to $38), representing a 24% pay cut. This decrease was largely due to the loss of union representation and seniority, as only 43% of post-layoff jobs were unionized. Many workers reported worsening job conditions, including hazardous worksites, heavier workloads, and fewer advancement opportunities. Safety concerns were particularly pressing in

non-union workplaces, where workers had less power to raise issues without fear of termination. Ninety-one percent of surveyed workers expressed openness to job training, with 49% explicitly stating they would enroll in a training program. However, many workers emphasized that rather than retraining for new fields, they primarily needed skill certification to help verify their refinery experience to potential employers. They also called for targeted job search assistance, financial support, and access to high-quality jobs comparable to their previous positions.[65]

In 2022, Governor Newsom launched pilotprograms to financially support and retrain thousands of oil industry workers at risk of losing their jobs due to the transition. California's 2022-23 budget established a $40 million workforce displacement fund and a $20 million pilot program for training displaced oil and gas workers in Kern and Los Angeles counties to help cap abandoned wells. The Gender Equity Policy Institute estimates that two thirds of oil and gas workers[66] in California could move into new jobs without any retraining and that $68.9 million annually would be necessary to offer support to the retraining, relocation, and income subsidies of the other one third of oil and gas workers.[67]

Nevertheless, during the EV transition, additional effort must go into expanding employment and training opportunities for displaced workers as well as historically excluded workers to enter and succeed in the new jobs generated. Such efforts must

TABLE 2. GENDER, RACE, AND LATINO ETHNICITY OF EMPLOYED WORKERS, ALL OCCUPATIONS AND SELECTED DETAILED OCCUPATIONS, 2024.

Occupation	Women	Race and Ethnicity			
		White	Latino	Black	Asian
All employed workers	47.10%	73.60%	19.40%	12.80%	7.00%
Bus and Truck Mechanics and Diesel Engine Specialist	2.80%	87.00%	20.70%	7.00%	2.30%
Electrical Power-line Installers and Repairers	1.80%	88.70%	14.60%	8.00%	1.00%

Source: US Bureau of Labor Statistics.[68]

include targeted training programs and other initiatives designed to address the specific barriers for entry and advancement within skilled trades among women, LGBTQ+ workers, immigrants, and workers of color. White and male workers continue to be overrepresented among workers within skilled trades related to the EV transition while women and workers of color tend to be under-represented. For example, as shown in Table 2, only 2.8% of bus and truck mechanics and diesel engine specialists were women, 87.0% were White, 20.7% Latino, 7.0% Black, 2.3% Asian in 2024. Among electrical power-line installers and repairers, only 1.8% of workers were women, 88.7% were White, 14.6% Latino, 8.0% Black, 1.0% Asian. In comparison, among all employed workers, 47.1% were women, 73.6% were White, 19.4% Latino, 12.8% Black, and 7.0% Asian. Meanwhile, Blacks and Latinos were overrepresented among truck drivers and sales workers compared to their overall share of all employed workers, whereas only 7.9% are women and only 4.5% were Asian.[68] Researchers have also documented significant gender pay gaps in the salaries of key occupations within the logistics industry. For example, among workers employed as driver/sales workers and truck drivers, men have median weekly earnings of $1,062, compared to $771 among women.[69]

To promote greater equity in employment outcomes related to the EV transition, policy-makers, workforce trainers, and employers must integrate gender and racial equity principles into workforce development and labor policies. Ensuring that historically underrepresented workers have access to high-quality jobs in this transition requires intentional strategies that address systemic barriers to entry and advancement. The following sections examine how HRTP and HRTP-aligned programs – particularly those in the logistics sector and electrical trades – are advancing diversity, equity, and inclusion, and how further investment in these initiatives can help ensure a more just transition for all workers.

BEST PRACTICES FOR WORKFORCE DEVELOPMENT: HIGH ROAD TRAINING PARTNERSHIPS

For the EV transition to create high-quality, green jobs, public and private initiatives must uphold strong labor standards, including fair wages, reasonable working hours, and robust workplace health and safety protections. Ensuring that these jobs are accessible to all workers, including underrepresented groups – such as women, LGBTQ+ workers, and racial and ethnic minorities – requires collaborative efforts from policymakers, employers, labor unions, and community organizations.[60, 70]

One key strategy for achieving these goals is the expansion of HRTPs, a state-supported, industry-driven workforce development model designed to create equitable and sustainable career pathways. HRTPs differ from traditional workforce training programs because they

require direct employer engagement, prioritize worker voice, and emphasize systemic industry transformation.

Rather than simply training workers for existing jobs, HRTPs build industry-wide collaboration among employers, unions, and workforce organizations to improve job quality, foster economic mobility, and address climate and equity concerns.[12] Research finds that HRTPs allow workers to share their expertise and articulate their goals, setting new parameters for management.[14]

Cozzi & Motherway[64] emphasize that to achieve equitable outcomes in workforce development, employment creation should be:

- Targeted toward areas and communities impacted by declining industries or those historically disadvantaged by economic shifts; and
- Supported by government funding that prioritizes equity, inclusion, and job quality.

Similarly, the CWDB[12] identifies three core components that define High Road Training Partnerships (HRTPs):

- Grounded in Equity, Job Quality, and Climate Resilience – HRTPs prioritize equitable access to high-quality jobs, ensuring that historically marginalized workers benefit from economic shifts, including the clean energy transition.
- Industry-Driven – These partnerships actively engage employers to align workforce training with industry needs, ensuring that training programs lead to real, high-quality job opportunities.
- Worker-Centered – HRTPs emphasize the voices and expertise of workers, ensuring that training initiatives address workplace challenges, improve job quality, and enhance economic mobility.

Unlike traditional workforce training programs, HRTPs are collaborative, industry-driven partnerships that bring together employers, unions or labor organizations, and community-based partners to develop high-quality jobs and provide training or retraining opportunities. Their core objective is to create an equitable economy that values skills, innovation, and shared prosperity.

HRTPs are designed to ensure that:

- Workforce development programs reach historically marginalized communities, including workers of color and low-wage workers.[71]
- Jobs generated through the EV transition offer family-sustaining wages and comprehensive benefits.[72, 73, 74]
- Workplaces maintain strong health and safety standards and uphold worker voice, agency, and dignity.[74]
- Industries adopt business practices that promote racial equity and environmental sustainability while remaining competitive in the evolving economy.[74]

By integrating these principles, HRTPs provide a model for ensuring that workforce development efforts tied to the

EV transition prioritize high-quality, sustainable careers over low-wage, short-term employment. The expansion of HRTPs is thus a potentially important mechanism for ensuring more equitable workforce outcomes in the clean energy transition, including the shift to electric MD/HD trucks. HRTPs prioritize job quality, economic resilience, and worker empowerment, with some also emphasizing climate resilience and environmental sustainability.

As of February 2025, California's investment in HRTPs has shown continued expansion. The initiative, which began in 2017 as a $10 million pilot project, had grown to approximately $62 million in state funding by 2022. In the 2024–2025 state budget, an additional $28.5 million was allocated specifically for HRTPs in the health and human services sector.75 Furthermore, Los Angeles County has invested $26.3 million in HRTPs to support regional recovery and workforce mobility efforts.[76]

Recognizing the success and impact of these partnerships, Governor Gavin Newsom's 2025–2026 budget proposal includes continued funding for HRTPs, aiming to further integrate them into California's long-term workforce development strategy.[77]

HRTPs build upon decades of successful high-road workforce initiatives, drawing from models such as the Wisconsin Regional Training Partnership (WRTP), one of the largest and most well-established sectoral training consortia in the US. Developed by the Center on Wisconsin Strategy (COWS), WRTP was formally launched in 1992 as a coalition of unions and companies committed to creating high-performance, high-road workplaces. By 2001, the WRTP network had expanded to include over 100 firms employing more than 65,000 workers.[78]

A key innovation of WRTP has been its equity-oriented apprenticeship model, which extends work-based learning opportunities to historically excluded groups, including women and workers of color. One notable example is the Industrial Manufacturing Technicians (IMT) apprenticeship program, which was introduced in February 2013 to create pathways into advanced manufacturing careers for underrepresented workers.[79] Other equity-oriented apprenticeship and pre-apprenticeship programs have also been developed in other industries and locations, such as health care apprenticeships in Los Angeles. These HRTP-aligned apprenticeship programs promote equity by expanding training opportunities to historically excluded groups and by valuing participants' diverse lived experiences as assets for improving the quality of work within the industry.[15]

By applying these principles of HRTPs to the EV transition, policymakers, industry leaders, and labor organizations can help ensure that the shift to clean energy not only reduces emissions but also creates equitable, high-quality employment opportunities.

HRTPS AND HRTP-ALIGNED WORKFORCE INITIATIVES: MECHANISMS AND CASE STUDIES

While not all of the following case studies are officially designated as HRTPs by the CWDB, they embody HRTP principles by prioritizing worker voice, job quality, and equitable economic development. Many workforce training programs and labor initiatives, including equity-oriented apprenticeships, align with these goals even if they do not meet the formal HRTP criteria, often due to differences in funding sources, employer engagement, or industry structures. Expanding support for HRTP-aligned programs is essential, as they help bridge gaps in workforce development, particularly for historically underrepresented workers in logistics, electrical trades, and other sectors tied to the EV transition. By investing in both formal HRTPs and HRTP-aligned initiatives, policymakers, labor unions, and community organizations can work together to ensure that the clean energy transition leads to sustainable, high-quality employment opportunities for all workers.

While state funding has been vital to the creation of HRTPs in California, an important mechanism for expanding HRTP-aligned initiatives are Community Workforce Agreements (CWAs), also called Project Labor Agreements (PLAs), and Community Benefit Agreements (CBAs). CWAs and PLAs are pre-hire collective bargaining agreements that establish the terms and conditions for employers, contractors, subcontractors, and workers.

They often include a targeted or local hire provision designed to serve low-income or otherwise disadvantaged workers, making it mandatory for companies to train and hire disadvantaged workers from the community and to hire union labor.[60, 80] Similarly, CBAs are legally binding agreements between a developer and community representatives that establish specific public benefits that a particular developer will provide to the impacted community in exchange for the community's support, such as requiring that the development project provide job training opportunities for local residents or disadvantaged workers, living wage jobs with benefits, and establish new community funds and resources, such as affordable housing units or public parks.[6, 80]

An effective CBA is grounded in four core principles:

1. It is negotiated by a coalition that effectively represents the interests of the impacted community;
2. The CBA process is transparent, inclusive, and accessible to the community;
3. The terms provide specific, concrete, meaningful benefits, and deliver what the community needs; and
4. There are clearly defined, formal means by which the community can hold the developer (and other parties) accountable to their obligations.

Creating an effective CBA typically

requires building a strong and diverse coalition of community members around a common set of specific demands, legally binding agreements between this community coalition, policy-makers, and employers, and careful monitoring to ensure compliance.[6]

The following case studies illustrate how HRTP-aligned workforce initiatives are being implemented across different regions and industries. While they vary in structure and scope, they share a commitment to high-quality training, equitable job access, and worker empowerment.

West Oakland Job Resource Center (WOJRC): A Model HRTP-Aligned Initiative

The West Oakland Job Resource Center (WOJRC) was developed through a PLA to support equitable workforce development in the Port of Oakland and the redevelopment of the Oakland Army Base (OAB). While not formally designated as an HRTP, WOJRC embodies HRTP principles by fostering accessible training opportunities, equitable hiring practices, and pathways to unionized employment – key goals in the EV logistics transition. This initiative highlights how labor, community organizations, and local governments can collaborate to create structured pathways into unionized, family-sustaining careers, particularly for historically marginalized workers. By examining WOJRC, we can draw lessons on how similar workforce development strategies could be adapted and expanded in the Inland Empire to ensure that EV-related jobs are accessible, high-quality, and equitably distributed.

<u>Key components of the WOJRC program include:</u>

- Providing accessible training opportunities tailored to communities of color and low-wage workers;
- Creating pathways to family-sustaining jobs that offer fair wages, benefits, and career advancement; and
- Ensuring safe and healthy workplaces where workers have agency, voice, and dignity in their employment.

The WOJRC program was designed to support workforce development as part of the Oakland Army Base (OAB) Redevelopment Project and operations at the Port of Oakland. The program generates port-related jobs, ensuring that workers have the right to unionize with the Teamsters. WOJRC provides job seekers with training resources and technical assistance, helping OAB and port employers comply with the city's local-hire ordinance, which mandates that 50% of new hires come from the local community.[81]

Additionally, WOJRC is developing pre-apprenticeships that will directly link participants to Teamsters apprenticeship programs, connecting them to stable, union jobs. The program also integrates environmental and public health priorities by aligning its apprenticeship curriculum with the Maritime Air Quality Improvement Plan and the Truck Management Plan. These plans incorporate California Air Resources Board (CARB) regulations,

which aim to reduce greenhouse gases and diesel particulate matter from freight transportation.[81]

Beyond workforce training, WOJRC provides essential wraparound services, including a financial literacy program and a training initiative for formerly incarcerated parents. The latter helps participants enroll in pre-apprenticeship programs and offers case management support to facilitate their successful reintegration into the workforce. To address community concerns regarding MD/HD truck traffic and related environmental impacts, WOJRC collaborates with port officials, local residents, community organizations, and environmental agencies.[81]

This PLA was spearheaded by the coalition "Revive Oakland!", an influential cross-gender, multi-racial alliance that brought together labor unions, community organizations, religious groups, and youth organizations. Through its advocacy, Revive Oakland! successfully pushed for better jobs and fair hiring practices, particularly for underserved communities in Oakland.[82]

Port of Los Angeles Lashing Training Program: A Worker-Centered Initiative

Another notable freight logistics workforce program in California was developed by the Technical Work Group at the Port of Los Angeles to enhance training for ship lashers, which are workers responsible for securing cargo on large vessels. This initiative was led by members of the International Longshore and Warehouse Union (ILWU), whose leaders have firsthand experience performing these duties. This program is not formally an HRTP, but it demonstrates HRTP-aligned principles by integrating worker knowledge into training design, prioritizing safety, and improving job quality.

<u>Key elements of the program include:</u>

- Worker-driven curriculum development: The program was created by members of the ILWU in collaboration with industry experts.
- Standardized Knowledge, Skills, and Abilities (KSAs): Training ensures uniform competency levels among workers, improving job safety and efficiency.
- Industry collaboration: Employers, unions, and regulatory agencies were involved in shaping the program, fostering a sustainable model of training and job security.

The program builds upon a lashing training curriculum originally developed in British Columbia and adapts it to meet the specific needs of longshore workers at the Port of LA. As part of this effort, the ILWU, Pacific Maritime Association, and Port of LA convened a workshop with experienced lashing trainers to create a standardized framework for Knowledge, Skills, and Abilities (KSAs) essential to the role. During this process, trainers demonstrated their existing methods, contributing to a collaborative curriculum development process that emphasized worker expertise and practical knowledge.[83]

This initiative is widely recognized for embodying high-road workforce principles, particularly because it prioritizes worker participation in decision-making. By directly engaging union representatives and experienced laborers in designing and refining the training program, the initiative ensures that skill development aligns with industry needs, worker safety, and job quality.[83]

This initiative thus underscores the importance of union involvement in shaping workforce development, ensuring that skill-building efforts align with worker needs and industry safety standards.

The Inland Empire Electrical Training Center (IEETC)

Electricians' unions play a crucial but often overlooked role in workforce training for the clean energy transition, including the EV transition in logistics. The National Joint Apprenticeship Training Committee, a partnership between the International Brotherhood of Electrical Workers (IBEW) and the National Electrical Contractors Association, allocates approximately $100 million annually to joint labor-management training programs, ensuring workers receive high-quality technical education and hands-on training.[84]

The Inland Empire Electrical Training Center (IEETC) is a key joint labor-management training program, established through collaboration between IBEW Local 440, IBEW Local 477, and the Southern Sierras Chapter of the National Electrical Contractors Association.[84] The center provides training for electrical workers in solar energy, battery storage, electric grid systems, and workplace safety.

Among its apprenticeship programs, the most notable are the Inside Wireman and Sound and Telecommunications apprenticeships. The training center currently enrolls around 1,300 students, with an impressive completion rate of approximately 80%.[85]

IEETC apprentices undergo both classroom instruction and hands-on training under the supervision of certified electricians. The Inside Wireman apprenticeship requires five years of coursework and 8,000 hours of supervised job training, covering topics such as electrical theory, safety protocols, welding, cable splicing, and AC/DC circuitry. Similarly, the Sound and Telecommunications apprenticeship includes three years of instruction and 4,800 hours of on-the-job training. This program focuses on electronic systems, security cameras, and alarm systems. In addition to technical skills, apprentices earn competitive wages and receive benefits such as pension plans, health insurance, and vision and dental coverage.[86]

Although the electrical industry remains male-dominated, ongoing efforts aim to diversify the workforce through career readiness programs and partnerships with local organizations. IEETC Director Jon Rowe has spearheaded initiatives to expand access to electrical

apprenticeships by partnering with local school districts, including San Bernardino, Fontana, and Jurupa Unified School Districts. These partnerships recruit recent high school graduates and adult learners, providing them with pre-apprenticeship training to prepare for full apprenticeship applications. Beyond traditional electrical trades, IEETC is actively preparing workers for emerging industries, particularly those tied to the EV transition. Apprentices receive specialized training in battery systems, alternating current (AC) and direct current (DC) transitions, and solar panel installation and maintenance. Given that much of this work takes place in high-temperature environments, apprentices also undergo heat illness training to prevent work-related injuries. The IEETC emphasizes the importance of safety when training electrical workers. From the director's perspective, ensuring that workers do not put themselves in danger is the most critical aspect of their training because mistakes in electrical work can have severe consequences.[86]

Once apprentices complete their programs and become certified electricians, they have the opportunity to specialize further in fields such as EV infrastructure development and other clean energy sectors.

Tradeswomen Sisterhood: Expanding Access for Women and LGBTQ+ Workers

In a similar effort to close the gender gap in the electrical industry, IEETC partnered with the Cassandra Banks Foundation and Tradeswomen Sisterhood to develop a grant-funded readiness program for women pursuing careers in electrical work.[86]

Founded in 2016 by Vanessa Ingalls, Tradeswomen Sisterhood was established to increase awareness of unionized trade careers and promote equitable opportunities for women and LGBTQ+ workers.[87] The organization launched the Women's Initiative for Readiness in Electrical (WIRE)—a free pre-apprenticeship program designed to prepare women for careers with IBEW. In January 2024, WIRE trained its first cohort of 11 participants, consisting mostly of Latinas, along with LGBTQ+, Native American, and white apprentices. The 12-week program was divided into two phases:

1. Nine weeks of coursework and hands-on experience
2. A three-week intensive bootcamp designed to prepare participants for the physical demands of the trade.[88]

As lead instructor, Khadeejah Soper drew from her experience as an IBEW Inside Wireman to develop the WIRE curriculum, incorporating both technical training and workplace readiness skills, including sexual harassment prevention, anti-bullying strategies, and nutrition guidance. She described the significant progress among participants, highlighting how training helped women overcome their fears of working in the field:

"She's not scared of heights anymore because we taught her how to drive a forklift and we taught her how to drive an aerial lift." She added that this preparation ***"gives them more value on a job site and they are more likely to be kept longer than a regular apprentice."*** [88]

In addition to valuable technical and safety training, Tradeswomen Sisterhood provides comprehensive support services to help participants transition into IBEW apprenticeships. The organization partnered with IE Works to offer financial assistance, including $1,000 stipends for gas, childcare, food, and clothing. Participants also received stipends to purchase power tools, a free pair of work boots along with an additional stipend for a second pair, tutoring for entrance exams and mock interviews to prepare for IBEW apprenticeship applications.[88]

By targeting barriers to entering electrical work for historically underrepresented workers, Tradeswomen Sisterhood and IEETC demonstrate how HRTP-aligned programs can promote both workforce equity and the expansion of clean energy jobs. These case studies illustrate that successful workforce development in the EV transition depends on collaborative partnerships, worker-centered training, and long-term investment in high-road job pathways. Across the initiatives reviewed, programs succeeded when they directly engaged with unions and workers in the design and implementation of training, provided wraparound services to address barriers to participation, and build strong industry-labor-community partnerships. However, challenges also emerged: programs faced difficulties when employer engagement was weak, funding streams were fragmented, or support services were insufficient to retain participants from underrepresented groups. Expanding and improving HRTP-aligned programs – by centering worker voice, ensuring stable funding, and strengthening employer accountability – will be crucial to ensuring that the clean energy transition delivers good jobs and equitable outcomes for all workers.

PREPARING IE WORKERS FOR GREEN JOBS: OTHER PROMISING INITIATIVES

Other recent workforce initiatives in the Inland Empire have been working to expand job training and employment opportunities tied to the clean energy transition. One notable development is the establishment of the Inland Empire Technical Trade Center (IETTC), which aims to enhance organized labor's role in workforce development and job training. The IETTC intends to support the expansion of high-road job opportunities, particularly in industries linked to environmental and clean energy transitions. Its launch and continued growth aims to build upon the region's existing workforce development infrastructure, which includes workforce

development boards, community colleges, nonprofit organizations, unions, worker centers, and employers.[2, 4] By integrating these stakeholders, the IETTC is expected to strengthen training pipelines and improve workers' access to stable, high-quality careers. As of April 2025, the IETTC was in the final stages of its planning and development phase, with construction anticipated to begin in the near future.[89]

Many building trade unions in the Inland Empire have also stepped up their efforts to recruit young workers in the region by engaging in public outreach at local high schools and colleges. The largest recruitment event targeting young workers is the Inland Empire Apprenticeship Expo, which celebrated its fourth year in November 2024, during the US Department of Labor's Annual National Apprenticeship Week. The Inland Empire Apprenticeship Expo was designed to introduce community members to high quality and high paying careers in the skilled trades.[90] The event, hosted by the Moreno Valley College, involved more than 1,100 students from 32 high schools across 16 districts and approximately 200 community residents. This event is the largest apprenticeship expo in California where community members learn about trade industry jobs, career pathways, and training opportunities from local businesses and unions.[91]

Keith Gemmell, the Economic Development and Housing Director for the City of Moreno Valley and a key organizer for the expo, highlighted the impact the Expo has had on youth and the community at large:

"We're so proud that we've been able to literally impact lives...We're helping both our businesses and our young adults have opportunities to get the skilled workers and find quality jobs here for the Inland Empire." [91]

The event showcased over 270 job openings, of which 145 were from local businesses in Moreno Valley.[92, 93, 94] Participants learned about high-demand career opportunities in various industries ranging from advanced manufacturing, automotive, construction, cybersecurity, healthcare, information technology, and transportation. Among many others, participating organizations included Tradeswomen Sisterhood, Ironworkers Local 416, IBEW, and Homeboy Electronics Recycling.[95]

In 2024, organized labor played leading roles in the Inland Empire's Quality Green Jobs Regional Challenge Phase 2 Roundtable, convened by the Inland Empire Labor Institute and funded through a grant from Jobs for the Future and the Ares Charitable Foundation. This initiative, one of only ten projects selected for funding nationwide, brought together representatives of unions, community organizations, higher education

institutions, employers, and local governments in the region to develop strategies for developing pathways to high quality green jobs, especially union jobs in the zero transmission transportation, water infrastructure, and clean energy sectors.96 The project identified important financial, transportation, and housing barriers for IE workers, many of whom live in the metropolitan regions, to obtain job training and to succeed within emerging green jobs, which are often located in the desert. They also developed strategies and recommendations for overcoming these barriers to employment. Participants also shared information about new funding sources for the green economy and learned from model green job training, job readiness, and employment initiatives in other U.S. cities.[97]

The formation and expansion of worker centers in the region also provides additional opportunities for further expanding HRTPs related to the EV transition. For example, the IE Black Worker Center, could play a critical role in helping to train workers and promote equity through HRTPs within the clean energy transition. Already, the IE Black Worker Center has collaborated with other community organizations and employers to carry out a successful HRTP in the water and waste-water industries called IEWorks.[98] IEWorks helps to diversify the water and wastewater workforce through a 15 week pre-apprenticeship program. Due to the waste-water industry being predominantly white, the apprenticeship program targets workers from historically underrepresented communities such as Black workers, workers who are formerly incarcerated or system-impacted, and workers that experience income or environmental inequality in their communities. Participants not only gain knowledge on the skills required to enter the field, they also obtain college credit at San Bernardino Valley College, an Occupational Safety and Health Administration (OSHA-10) certificate, assistance in writing cover letters and resumes, and preparation for the California D1 Water Distribution Operator exam.[99] In addition, participants obtain training in worker-rights awareness and leadership development. To ensure that workers complete the apprenticeship program, the center provides participants with wraparound services, a $500 stipend, and mileage reimbursement. As a staff person from the center explained,

"We address some of those barriers, with wraparound services, with childcare, with stipends, with providing them with laptops if needed, and try to address the worker as a whole…we were able to nurture their needs of learning, but also prepare them for the workplace." [100]

After completing the program, most participants were successful in obtaining employment in the water and wastewater industry.[98]

More HRTPs and HRTP-aligned programs are needed to help to train Black workers, as well as other historically marginalized workers, for new, quality green jobs in the IE that are on the rise and expected to grow through the EV transition and other related environmental initiatives. For example, the City of Coachella was among the four California cities to be awarded the Transformative Climate Communities (TCC) Round 5 grant by the California Strategic Growth Council. The TCC grant provides disadvantaged communities[101] targeted funds to reduce local greenhouse gas emissions , increase public health resources, and economic opportunities through climate infrastructure projects.[102] The City of Coachella was awarded over $22 million to fund multiple projects under the "Coachella Prospera" plan, which was developed in collaboration with 11 community partners.[103] The initiative includes addressing climate change, increasing affordable housing, generating workforce development opportunities, and improving green spaces. More specifically, the Coachella Prospera plan, includes building 53 affordable housing units for seniors, planting 300 trees across the city, creating new sidewalks and bicycle lanes, building new amenities, installing solar panels on 155 single-family homes, initiating a zero-emission rideshare program, and bringing 75 e-scooters and 75 e-bikes to the city.103 Similarly, about $1.4 million of the allocated funding will be used in developing career pathways in climate related industries, such as solar installation, HVAC technicians, and electricians.[103]

The City of Riverside, California recently inaugurated its Office of Sustainability to implement sustainable practices while enhancing community prosperity. The office is committed to greener and cleaner environments by increasing access to nature, reducing greenhouse gas emissions, and developing an economy that prioritizes sustainability. In particular, the Office of Sustainability is working towards the Environmental Stewardship strategic priority. In 2020, the City Council approved the Envision Riverside 2025 Strategic Plan, which includes six strategic priorities. The Environmental Stewardship strategic priority seeks to promote climate solutions based in science to ensure clean air, safe water, and a green new economy. This strategic priority includes six main goals including: a zero-carbon electric grid, management of water resources, healthy air quality, waste reduction, natural land management, and community-wide carbon neutrality by 2040. The office aims to create sustainability as a way of life in the City of Riverside through innovative projects and strategic partnerships.[104, 105]

Cities such as Coachella and Riverside are leading the way forward for a more sustainable regional economy. Despite federal setbacks under the Trump Administration, efforts to decarbonize and make the IE economy more sustainable are likely to remain underway and spread as employers and local governments comply with new state and regional environmental regulations and seek to address concerns with air pollution, wildfires, water contamination, and other

environmental problems that have been growing amid the looming climate crisis. Expanding and strengthening HRTPs and equity-oriented union apprenticeship programs will be necessary to ensure both the success of this transition and equitable outcomes for IE workers.

LESSONS FROM IMPLEMENTATION: STRENGTHENING HRTPS FOR SUCCESS

While HRTPs aim to create equitable and sustainable career pathways, they have encountered challenges that offer valuable lessons for future initiatives in the green economy. Some HRTPs have struggled with limited employer engagement, leading to misaligned training programs that do not meet industry needs. Within freight trucking, an important obstacle for expanding HRTPs, and improving labor standards more generally, is the ownership structure of the industry, especially the prevalence of owner-operators, many of whom are misclassified drivers.[1, 106] Additionally, insufficient wraparound support services—such as childcare, transportation assistance, and mentorship—have resulted in lower program completion rates, particularly among participants facing significant socioeconomic barriers. For example, in the Inland Empire region, certain workforce development programs have faced difficulties in effectively connecting trainees to quality jobs due to inadequate coordination between training providers and employers.[2]

To enhance the success of HRTP-aligned programs in the electric vehicle (EV) transition and other green economy sectors within Riverside and San Bernardino counties, it is crucial to foster robust partnerships among employers, labor unions, community organizations, and educational institutions. Ensuring that training curricula are industry-driven and responsive to evolving technological advancements in the EV sector will improve job placement outcomes. Moreover, providing comprehensive support services can address barriers to participation and completion, promoting inclusivity and equity.[2] By learning from past challenges and implementing these strategies, HRTP-aligned programs can effectively contribute to a just and sustainable transition to clean energy in the Inland Empire.

CONCLUSION & RECOMMENDATIONS

The electrification of logistics in California's Inland Empire offers a once-in-a-generation opportunity to dramatically improve public health, create high-quality jobs, and advance racial, gender, and economic equity. However, without strong policies to protect workers and ensure equitable access to good jobs and training opportunities, the EV transition risks replicating and deepening existing inequalities. With poor air quality already causing thousands of premature deaths

and devastating vulnerable communities,[107] urgent action is needed to structure the EV transition on a "high road" that prioritizes environmental sustainability, justice, and dignity for all.

We offer the following recommendations to policy-makers, employers, as well as community and labor organizations involved in the EV transition:

KEY RECOMMENDATIONS

1. **Tie public EV-related funding and subsidies to high labor standards, including requirements for living wages, benefits, local hiring, worker voice, and safety protections.**
2. **Establish government procurement policies that include high labor standards (e.g. wage floors, skill standards, local hiring) for EV-related infrastructure projects.**
3. **Expand and strengthen HRTPs and HRTP-aligned apprenticeship programs to prepare workers for EV and green economy jobs.**
4. **Ensure long-term, stable public funding streams (federal, state, and local) to support EV infrastructure, job training, and worker protections.**
5. **Integrate gender, racial, and immigrant equity principles into all EV workforce development programs to ensure that underrepresented groups benefit from new jobs.**
6. **Strengthen worker and community engagement in EV policy planning to address health, safety, and environmental hazards and community benefits associated with EV production, lithium battery extraction, and grid expansion.**
7. **Support displaced workers, especially from fossil fuel industries, through targeted retraining, transition assistance, wage subsidies, and skill certifications tied to high-road careers.**

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