CREATE IE

SUMMARY REPORT
AUGUST 2023

On June 1, 2023, the **CREATE-IE** (**Collaborative Research to Expand and Accelerate Transportation Electrification in the Inland Empire**) workshop brought together a diverse group of participants to discuss the electrification of the Inland Empire's logistics industry. This workshop was the second in a series organized by Plug In IE and researchers from the across the natural sciences, social sciences, and humanities at University of California, Riverside. Participants included representatives from environmental justice, labor, and other community organizations, as well as community colleges, industry experts, and state regulatory agencies. The workshop took place at the International Brotherhood of Electrical Workers Local 440 Union Hall in Riverside, CA.

SESSION 1 PRESENTATION

IVETTE TORRES, COMMUNITY SCIENTIST & ANDREA VIDAURRE, SENIOR POLICY ANALYST
PEOPLE'S COLLECTIVE FOR ENVIRONMENTAL JUSTICE

The workshop began with a presentation by representatives from the People's Collective for Environmental Justice (PC4EJ) that focused on warehouse development in the Inland Empire, the transition to a zero-emissions economy, and concerns regarding hydrogen as a primary source of renewable energy in transportation. The presentation upheld the goal of promoting a just transition with the electrification of logistics.

- "Regardless of pros and cons, we cannot deny the real impact that exists" from the amount of diesel emissions released by the 50,000 trucks moving goods through the Inland Empire every day.
- PC4EJ's priority is "frontline environmental justice communities"—people who live and go to school adjacent to warehouses. More than 200 schools in the region are located within half a mile of a warehouse.
- Warehouses occupy over one billion square feet in the IE alone, plus an estimated 400 million square feet to be built out.
- Forty percent of goods that enter the US pass through the Port of Los Angeles and Long Beach, with many of them being distributed to the rest of the country through Inland Empire warehouses.
- There are some schools in the IE where 50 percent of students have asthma. The IE has some of the highest levels of exposure to diesel in the US: "There is no safe level of exposure to diesel."
- Diesel exposure is the tip of the iceberg. We need to look at the planning processes and patterns that lead to logistics development taking place in already vulnerable communities.

- "Community are the policy experts." California has zero-emissions policies because directly affected community members have pushed for them.
- The IE has received its first proposal for hydrogen access, in Colton. Community members have not accepted hydrogen being trucked into and stored in our communities. It's a safety and health concern.
- We have a beautiful natural environment in the IE, but we've covered it with cement boxes. How do we protect workers who are working in temperatures over 110°F in the summer? How do we remediate the land?
- A just transition is not just about replacing diesel trucks with electric trucks. It's a paradigm shift. We need to attend to workers and small trucking fleets. We need to take this opportunity to reassess truck routes, congestion, and the electric grid. We can work for a better quality of life.

SESSION 2 PANEL: FLEET & INFRASTRUCTURE REQUIREMENTS

CALIFORNIA AIR RESOURCES BOARD (CARB)

CARB's presentation focused on the new Advanced Clean Fleets (ACF) regulation, which passed in April 2023 with the following provisions, among others:

- Manufacturers of Class 2b through Class 8 vehicles will be able to sell only zero-emissions vehicles (ZEVs) beginning in 2036.
- Advanced Clean Fleets sets out transition timelines for three categories of fleets: Drayage, High Priority, and State and Local Government.
- High-priority fleets are those with 50 or more trucks and/or more than $50 million in gross annual revenue.
- High-priority and state and local government fleets can comply with Advanced Clean Fleets in one of two ways: (1) Starting in 2024, they can limit their new vehicle purchases to ZEVs while removing internal combustion engine vehicles at the end of their useful life beginning in 2023; or (2) They can meet conversion milestones on a set timeline established by CARB.

For more information about the Advanced Clean Fleets regulation, visit ww2.arb.ca.gov/our-work/programs/advanced-clean-fleets.

TRACY SATO, POWER RESOURCES MANAGER, SUSTAINABILITY AND ENERGY SOLUTIONS RIVERSIDE PUBLIC UTILITIES

- Riverside Public Utilities (RPU) is a public utility that operates outside Southern California Edison. It has its own generation contracts and distribution system.
- The City of Riverside is facing the same regulations and challenges in electrifying its fleets that commercial fleets face.
- Fleets that are electrifying require change management and a buildout of their knowledge base at every level, from drivers to CEOs.
- Fleets need to engage with RPU or the appropriate utility early to evaluate sites' electric circuits and determine if they can bear the load of multi-vehicle

charging. Large fleets have been requiring twice the capacity their sites currently have. Every site and customer is different.

- Fleets should consider metering to identify the most favorable rates.
- RPU is planning for transportation electrification in the following areas:
  - Resource system: Where are transmission and generation originating, and how can RPU ensure it isn't replacing diesel with "dirty" electricity? What do peak load and rate structures look like?
  - Distribution system: This requires more complicated, site-specific considerations, including upgrading or adding substations.
  - Long-term unknowns: A fleet operator might request specific upgrades today, but what electric load will the next tenant in that space require? Which businesses will want to build out charging infrastructure at their depot, and which will want to charge at off-site hubs? Which technologies will be adopted: hydrogen fuel cell electric or battery electric? Each type of vehicle has different impacts on the grid.

RON HUNT, DIRECTOR OF BUSINESS DEVELOPMENT
FORUM MOBILITY

- Forum Mobility is focused on California drayage—mostly Class 8 (heavy-duty) trucks that deliver goods from and to the ports. Most drayage truckers are owner-operators or small or medium fleets. They don't have the land ownership, lease terms, space, or resources to install charging infrastructure at the sites where their trucks are domiciled.
- Forum Mobility received more than $400 million in funding this year, primarily from CBRE Investment Management.
- In response to the need created by CARB's Advanced Clean Fleets timeline for drayage fleets, Forum Mobility is developing off-site charging depots. The company's first pilot, with Hight Logistics in Long Beach, has been running successfully since January 2023 and involves the provision of vehicles.
- Beyond the pilot, Forum Mobility is developing charging depots for use by multiple operators that will cater to both dwell charging (e.g., overnight) and opportunity charging (short-term, fast charging). Its first scheduled depot in the Inland Empire is scheduled to open in Fontana in mid- to late 2024, with additional IE depots potentially to be located in San Bernardino and Moreno Valley.
- In addition to CARB regulations, South Coast Air Quality Management District's Indirect Source Rule is pushing warehouse and fleet operators to adopt zero-emissions technologies under its WAIRE program. Yard trucks are a popular choice for electrification—but drayage and other trucks entering IE warehouse facilities can also be targeted for a zero-emissions offset. Forum Mobility is coordinating with warehouse operators to promote and accelerate the transition in the IE.

SUSAN LINWOOD, FOUNDER & CEO
CHARGEPODX

- ChargePodX is a new company in Riverside focusing on electric vehicle charging infrastructure.
- The company addresses the lack of adequately powered, permanent charging infrastructure, which lags behind the number of electric truck orders due to construction and supply chain delays.
- ChargePodX provides a plug-and-play model of electric vehicle chargers for fleets. Its entry-level option supplies 20 kilowatts of power at 208V/220V in a portable pod. Its heavy-duty mobile option supplies 90 kilowatts of three-phase power. It also offers a 360-kilowatt fast-charging, permanent cabinet charger. The company recommends that fleet electrification plans combine portable and permanent options for maximum flexibility.
- ChargePodX is providing its hardware for a local community college to use in training programs to address the need for an adequate electrician and technician workforce in building out EV charging infrastructure.

SESSION 3 PANEL: COMMUNITY IMPACTS—AIR QUALITY & WORKFORCE

DR. AARON KATZENSTEIN, DEPUTY EXECUTIVE OFFICER, TECHNOLOGY ADVANCEMENT OFFICE
SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT (SCAQMD)

- The Inland Empire is in extreme nonattainment for ozone levels by national air quality standards. NO_x emissions from diesel are a major contributor (85 percent) to the level of ozone in our atmosphere. Diesel exhaust also contributes to an increased risk of cancer for IE residents, especially along major roadways.
- California's grid must be sustained by 100 percent renewable energy sources by 2045.
- California's current grid capacity is approximately 80 GW. In projections by the California Energy Commission (CEC) and California Public Utilities Commission (CPUC), the state's grid will need to increase in capacity by 7 GW per year between 2023 and 2033. This is effectively a capacity increase of 100 percent within 10 years. What workforce will be needed to complete all of the installations that buildout will require?
- SCAQMD has the largest number of battery electric vehicle (BEV) and hydrogen fuel cell electric vehicle (FCEV) demonstration projects in the country. They've been involved in the development of about 40 charging stations for Class 8 trucks.
- Infrastructure is the biggest challenge to electrifying transportation—the distribution grid was not built for it. According to the CEC's latest Assembly Bill 2127 report, California will need 157,000 heavy-duty vehicle chargers by 2030.

AARON DYER, SENIOR ADVISOR, ELECTRIFICATION STRATEGY & PROGRAM DEVELOPMENT SOUTHERN CALIFORNIA EDISON (SCE)

- SCE's North Star is its 2019 white paper, *Pathway 2045*. The paper underscores the need to decarbonize California's grid and electrify transportation and buildings. These changes will require an estimated investment of $250 billion over the next 20 years.
- SCE estimates that 10 million jobs will need to be created nationwide to support decarbonization efforts, with 60 percent of those jobs requiring specialized technical training. In addition to SCE's historical support of four-year STEM programs, it sees an increasing need to support non-degree programs, including at community colleges and trade schools.
- In partnership with the International Brotherhood of Electrical Workers (IBEW), SCE started a scholarship program for lineworkers in 2021 at Los Angeles Trade-Technical College. Scholars receive their lineworker certification and are first in line for jobs. SCE also offers free workforce education and training programs at its two Energy Education Centers, in Irwindale and Tulare.
- SCE prioritizes hiring local contractors for customers' behind-the-meter work. Fifty percent of these installations are required to be done in historically underserved communities. For work on the grid, SCE has partnerships with IBEW and other unions.
- SCE is assessing where to direct workforce investments for the decarbonization transition, taking into account the wide range of emerging renewable energy businesses and technologies in Southern California—e.g., EV and battery startups, hydrogen infrastructure. There are many possibilities for bringing jobs to the region.

INLAND EMPIRE ELECTRICAL TRAINING CENTER (IEETC)

- The IEETC is part of the training arm of IBEW and the National Electrical Contractors Association (NECA). It serves IBEW locals 440 (Riverside County) and 477 (San Bernardino, Mono, and Inyo counties).
- There are about 4,000 members, with roughly 1,300 of them students. About 700 IBEW workers are currently working on solar and battery storage projects in the desert area extending toward the Arizona border.
- The IBEW apprenticeship program is five years long. "Training doesn't stop": Journeymen have to fulfill continuing education requirements.
- IBEW nationwide has adopted the EV Infrastructure Training Program (EVITP). With the dangers of working on high-voltage EV infrastructure, it's necessary to uphold high standards for training.
- IBEW also has community college partnerships to broaden its career pipeline.

SESSION 4 BREAKOUT GROUPS: VISIONS & STRATEGIES

Breakout group discussions revolved around challenges, opportunities, and best practices in three aspects of logistics electrification: community engagement, workforce development, and land use and infrastructure. Remarks summarized in this section represent the diversity of views among workshop participants and do not necessarily reflect the views of workshop organizers.

COMMUNITY ENGAGEMENT

- **Accessibility issues:** There is a need to combat misinformation among non-English speakers. • Interpretation for Deaf communities is often lacking. • Many people don't have email—going door-to-door and using social media effectively can help. • Meetings can't be only during the day on weekdays. • Offering food and childcare helps.
- **Land use:** Can charging stations serve multiple purposes to address community needs, such as promoting local business development?
- **Outreach and messaging:** There are so many unknowns that education is crucial. • Sprawl in the IE can make in-person outreach difficult; there is a need for third spaces where people can gather to share information informally. Community-based organizations and churches can help with this. • It's important to listen and learn from community members, not only dump information on them. • Money (incentives and savings over time for renewable energy technology and equipment) can be a universal language. • The fragmentation of the IE's media landscape makes it difficult to reach target audiences, such as independent truck owner-operators.
- **Collaboration:** It's important to create community alliances and cultivate trusted messengers. • Policymakers need to be attentive to the work that's happening on the ground.

WORKFORCE DEVELOPMENT

- **Being proactive is key:** We need to anticipate workforce needs before they arise. We can work backwards from regulatory deadlines.
- **Proprietary information:** Companies don't want to share complete information about their technology for use in training programs. This can be an obstacle to training technicians on ZEVs and charging stations.
- **Support from elected officials and public agencies:** City council members and local decision makers aren't well informed about how electrification will have an impact on their constituents. "Economic development" is often reduced to support for businesses.
- **Building equity into training and recruitment:** It's important not only to create jobs but to ensure that those jobs go to the most marginalized communities and groups—more women, more people of color, more workers from underserved communities. It can make a difference just to put a woman on a flier for training in a career that's historically male dominated.
- **Youth awareness:** Young people "don't want their grandpa's job," but they also don't know about the full range of options available to them.

- **Role of educational institutions:** High schools and community colleges can offer more information about electrification-related trades and present them as valuable career options. There are 116 community colleges in California; the system could push for real workforce benefits for our communities and could play a key role in offering training at scale.
- **Emphasizing all aspects of a just transition:** Uphold job quality standards, not just electrification. This is an opportunity to raise the bar for warehouse jobs. Community benefits agreements can help with this.
- **Learning from past experiences:** This isn't the first time we've experienced a major transition in the economy. We can learn from past transitions.

LAND USE & INFRASTRUCTURE

- **Timing:** Infrastructure needs to be rolled out faster. There are not enough charging stations for all the existing EVs. Vehicles are being supplied faster than infrastructure can be built. CARB's Advanced Clean Fleets (ACF) rulemaking hadn't passed before the last statewide Integrated Energy Policy Report (IEPR), so the changes that ACF will bring aren't yet part of the IEPR's long-term plan.
- **Supply and construction:** Electrical transformers can take months or years to be available. New substations may be needed, but urban areas don't necessarily have room for utility buildouts at that scale. Microgrids can be a solution, but state mandates that are meant to guarantee grid capacity make it a challenge to include microgrids as part of comprehensive planning.
- **Hydrogen:** Zero-emissions fleets will need to include hydrogen fuel cell electric vehicles (FCEVs). FCEV truck technologies and fueling infrastructure will also need to grow.
- **Building new relationships:** Fleet operators have not previously had to collaborate with their utilities for transportation needs the way they now do. Both fleet operators and utilities, as well as electrification equipment and service providers, need to work through problems for which there are no models to follow.
- **Supporting alternatives:** Rail could be a more sustainable option that removes vehicles from the road altogether. The state of California, however, has limited power to shape the rail industry.
- **Zoning and permitting:** There needs to be more coordination between state and local agencies on land use.
- **Governance:** A broader administrative body must be created or identified to manage and coordinate technology, infrastructure, and workforce development across levels of governance and regions within the state.
- **Costs:** The transition shouldn't be absorbed by communities (residential ratepayers). The private sector and the state should bear the costs.
- **Infrastructural diversity:** The future will probably look like a mix of depot charging and charging hubs. Hydrogen will come into play because it eliminates concerns about the time required to charge batteries.

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The workshop and this report were a collective effort of Plug In IE (Natalie Carranza and Athena Tan), the Inland Empire Labor Institute (Hillary Jenks), and UC Riverside faculty and researchers (Juliann Emmons Allison, Matthew Barth, Kanok Boriboonsomsin, Marissa Brookes, Catherine Gudis, Fernando David Márquez Duarte, Arun Raju, and Ellen Reese) affiliated with the following entities: Bourns College of Engineering: Center for Environmental Research & Technology (CE-CERT) ▪ College of Humanities, Arts, and Social Sciences: Departments of History; Political Science; Society, Environment, and Health Equity; and Sociology; and Labor Studies and Public History programs ▪ Office of Sustainability ▪ Inland Empire Labor and Community Center.

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