



# Zero Emissions Roadmap 3.0





**LOADING  
ZONE  
FOR  
ZERO EMISSION  
VEHICLES  
ONLY  
10 MINUTE LIMIT  
ENFORCED 24 HOURS**



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**ZERO  
EMISSION  
VEHICLE  
COMMERCIAL  
LOADING**



# Letters

## Message from Mayor Karen Bass

As Mayor of Los Angeles, I am proud of the work we are doing each and every day to ensure the equitable transformation of our city to a clean and just economy, ensuring that as we make our air healthier, we are also creating green job opportunities available to all Angelenos.



The Transportation Electrification Partnership's Roadmap 3.0 provides a set of goals and specific actions for the City, the Partnership, and all involved stakeholders to band together around in order to achieve our shared vision of welcoming the world in 2028 to the region.

In the first five years of TEP, we've already demonstrated how much we can achieve when we work together.

- Our municipal utility, the Los Angeles Department of Water & Power (LADWP), met its prior goal of having 10,000 electric vehicles (EVs) charging stations in the City by 2022—and met this goal two years ahead of schedule. We now have more than 29,000 charging stations to serve Angelenos, and we're continuing to build out this number to ensure ample charging throughout our City.
- Together with TEP, the Los Angeles Department of Transportation is piloting the creation of curb zones dedicated for zero emission vehicles only, to foster the transition to zero emission last mile deliveries in the heart of downtown.
- Given the grave health impacts that diesel truck traffic has on communities living alongside busy freeways like the I-710 corridor, TEP has championed the need for stakeholders to come together to invest in charging infrastructure dedicated to Class 8 battery-electric trucks serving the San Pedro Bay Ports. Together, the Port of Los Angeles, LACI, LA Metro, and other regional and federal partners are now investing to build the first public drayage charging depot on Port of Los Angeles property.

Together, with our TEP partners across local government, state regulatory agencies, utilities, automakers, labor and beyond, we are forging a path to electrification that will create a more equitable and sustainable Los Angeles for all.

Sincerely,  
Karen Bass,  
Mayor, City of Los Angeles

**“I am proud of the work we are doing each and every day to ensure the equitable transformation of our city to a clean and just economy...”**  
–Mayor Karen Bass

## California Air Resources Board Chair Liane Randolph



For decades, California has been an environmental leader with landmark regulations that have spurred transportation innovation and put a zero emissions future within sight.

The work is multi-pronged, however, because tackling problems as big as climate change and air pollution requires everyone to play a role. Here in Los Angeles, the Los Angeles Cleantech Incubator and its Transportation Electrification Partnership (TEP) have stepped up to set a vision for the region that a better, healthier future is possible and necessary for everyone. At the state, local and regional level, TEP has advocated for policies that increase and accelerate the deployment of more environmentally-friendly transportation solutions. TEP has convened a broad and diverse group in the region who have come together to offer the people power needed to push for action and to implement solutions on the ground. Thanks to their work, the Los Angeles and the greater Southern California region is implementing zero-emissions programs that put tools like electric shuttles, vehicles and bikes in low-income neighborhoods, so that no one is left behind in a clean air future.

Importantly, TEP has put an achievable goalpost in place that leverages the upcoming 2028 LA Olympic Games to continue building on zero-emissions transportation successes to leave a legacy of sustainability behind. In their vision, Los Angeles will lead the state – and the nation – in ensuring that mobility options are zero emissions, accessible to all, and robust enough to meet the everyday needs of residents.

I look forward to ongoing collaborations toward a healthier California and Los Angeles.

Liane Randolph,  
CARB Board Chair

**“...tackling problems as big as climate change and air pollution requires everyone to play a role.”**  
–CARB Board Chair Liane Randolph

## California Energy Commissioner Patty Monahan



As California continues to feel the acute impacts of climate change, at the California Energy Commission (CEC) we understand the urgency for immediate action and the magnitude of the task at hand to transform the transportation landscape of our state. Thanks in part to TEP's bold goals and leadership, we are well on our way.

I am proud to serve as an advisor to a Partnership that is a model for the kind of broad-based collaboration needed to bring about a change of this magnitude, making the critical infrastructure investments now that will benefit the LA region in the long term.

The Partnership's nation-leading regional targets have set the stage for many firsts on the path to our electric future, and this updated version of the Roadmap ensures those investments won't be the last. The CEC is proud to have supported LACI and TEP partners in producing a first-of-its-kind investment blueprint for charging infrastructure along the I-710 corridor, which has helped the Partnership secure significant funding for the Port of LA's first public drayage truck charging station. And we look forward to working with LACI and TEP to continue accelerating the deployment of charging infrastructure for goods movement.

Those of us whose agencies are stewards of energy, transportation and the economy in California are grateful for TEP's leadership and the willingness of all the partners to roll up their sleeves to address the nitty-gritty details critical to making clean transportation a reality in LA. While there is much yet to be done, I join in saluting our partners in TEP for showing us the road ahead.

Sincerely,  
Patty Monahan  
California Energy Commissioner

**“The Partnership's nation-leading regional targets have set the stage for many firsts on the path to our electric future...”** – CEC Commissioner Patty Monahan

## LA County Supervisor Janice Hahn

Clean air is an absolutely important issue for all of us, especially those who have had to shoulder the burden of our transportation system and the harmful air pollution it creates. Some say we have to choose between clean air and good jobs, but I know we can and should have both.



As the County Supervisor representing our Ports and our Southeast LA Communities, and as a Director on the LA Metro Board, I have moved us toward a zero emissions transportation future. We can and should move goods and people in ways that protect the health of our communities, reduce emissions, and create green jobs.

The County of Los Angeles supports the work of the Transportation Electrification Partnership and the goals outlined in this Zero Emissions 2028 Roadmap. The bold targets it sets are necessary to get us to a zero emissions future here in LA County and across the country.

I look forward to working with LACI and know that together we will lay the groundwork for a future that serves the health and welfare of all those in our communities.

Sincerely,

Janice Hahn, LA County Supervisor

**“Some say we have to choose between clean air and good jobs, but I know we can and should have both.” –Supervisor Janice Hahn**

## Co-Chairs Drew Murphy and Matt Petersen

Five years ago we formed the Transportation Electrification Partnership to accelerate transportation electrification through unprecedented regional collaboration. We set bold targets that were seen as crazy in 2018, yet they were key to demonstrating bold commitments to reduce our pollution in a region that is known for cars, dirty air, and being an entry point for 40% of the nation's goods. Since then, the Partnership has been a model for going further faster together. Given that Los Angeles is California and the country's largest auto market, our targets serve as a glide path to achieving the state's 100% EV sales goal by 2035 and President Biden's 50% EV sales goal by 2030.



As Co-Chairs of TEP, we are so proud of the momentum this Partnership has created, demonstrating political will for great ambition, including Governor Newsom's zero emission vehicle executive order in 2020; creating the nation's first Zero Emission Vehicle Equity Advocate in state government; delivering innovative pilots – including the first EV car share program dedicated to public housing residents, leading to state and federal legislation to scale this successful model – meeting the needs of disadvantaged communities; deploying the nation's first Zero Emission Delivery Zone; securing \$100 million in the state budget for zero emissions drayage truck charging infrastructure; and committing \$10 million for the first public charging depot for drayage trucks at the Port of LA. And our Partnership is serving as a model through piloting the nation's first zero emissions delivery zone, leading to the first city climate innovation challenge with 9 cities looking to reduce emissions from e-commerce.

While we celebrate the significant progress that has been made, we know we have much further to go to accelerate equitable climate action before the world arrives in the Los Angeles region for the 2028 Olympic and Paralympic Games. That is why we are going big with bold new targets to improve air quality and mobility for those most affected in our region. We are committing to the nation's most ambitious electric school bus goal of 45% on the road and 100% sales by 2028 and setting our ports on a pathway to success by announcing interim targets for drayage electrification ahead of 2028. This Roadmap 3.0 builds on our successes and learnings to lay out a clear vision for how together we will take action through policies, pilots, and key infrastructure investments to hit these targets.

Join us and let's continue the good work!

Sincerely,

Drew Murphy  
CEO, Edison Energy

Matt Petersen  
President & CEO, Los Angeles Cleantech Incubator (LACI)

**“...we are going big with bold new targets to improve air quality and mobility for those most affected in our region.”**

**–Co-Chairs Drew Murphy and Matt Petersen**



# About the Partnership



The Transportation Electrification Partnership (TEP) is an unprecedented multi-year public-private partnership of local, regional, and state stakeholders committed to accelerating transportation electrification and zero emissions goods movement throughout the Los Angeles region in advance of the 2028 Olympic and Paralympic Games. It does so by pursuing bold targets, pilots, initiatives, and policies that are equity-driven, create quality jobs, and grow the economy.

Established by LACI in 2018, the Partnership released Roadmap 1.0 that same year, organized around the principal goal of reducing GHGs and air pollution in Los Angeles County by an additional 25 percent beyond existing commitments set for 2028. To achieve this goal, in 2019 the Partnership released Roadmap 2.0 that identified a clear pathway of ambitious, but achievable targets and a three-pronged call to action.

- Accelerating the adoption of light-duty passenger electric vehicles (EVs) to be 30 percent of all vehicles on the road, and at least 80 percent of all vehicles sold by 2028
- Shifting over 20 percent of all trips in single occupancy vehicles to zero emissions public and active transit by 2028
- Ensuring all public investment into goods movement infrastructure advances zero emission solutions, and ensuring the I-710 is the first goods movement corridor in the nation with ample charging infra-structure to support the transition to 40% zero emission drayage trucks by 2028 and 100% by 2035

Over the past 5 years, the Partnership has continued to grow and make significant progress towards its ambitious, yet achievable regional electrification goals.

The Leadership Group is the governing body of the Partnership with top principals representing each organization, and includes key entities needed to accelerate zero emissions mobility and goods movement in the region.

The Leadership Group is complemented by a growing and influential Advisory Group, comprised of public and private sector representatives essential to achieving the Partnership's goals and targets, including: leading automakers, industry organizations, local governments, public sector agencies, startup companies, and labor organizations.

In 2023, the Partnership welcomed an External Advisory Council to provide expertise and leadership to help advance the initiatives, pilots, and policies to achieve the 2028 Zero Emissions Roadmap targets. Members of the Council include:

- Chair - Mary Nichols, former Chair of the California Air Resources Board (CARB)
- Becky Dale, VP Sustainability LA28
- Adrian Martinez, Deputy Managing Attorney, Earthjustice

As TEP celebrates five years together, we recognize Alumni members that have contributed to the ambition and progress in LA and beyond:

- AMPLY Power (later BP Pulse Fleets)
- BYD Motors
- Engie Impact
- Greenlots (later Shell Recharge Solutions)
- Itron
- Nissan North America
- Proterra
- South Coast Air Quality Management District
- Southern California Public Power Authority
- Tesla

## TRANSPORTATION ELECTRIFICATION PARTNERSHIP

### LEADERSHIP GROUP



### ADVISORY GROUP FOUNDING PARTNERS



### ADVISORY GROUP ASSOCIATE PARTNERS



### ADVISORY GROUP SUPPORTING PARTNERS



# Going Further, Faster, Together

## 5 Years of Accelerating Zero Emissions Transportation for Los Angeles and Beyond

Over the last 5 years, TEP and its members have proven that by working together through this unprecedented regional partnership, we can indeed go further and faster. By setting bold, ambitious targets for different sectors while aligning with guiding principles (including ensuring equitable access and benefits) in a region with the US' largest auto market, biggest port operations, and worst air pollution, TEP is demonstrating and building political will in Greater Los Angeles as well as at the state and federal levels.

TEP's regional goals and targets—the most ambitious in the nation— have informed and shaped today's policy, funding, and regulatory landscapes. Since releasing its Roadmap 2.0 in 2019, TEP has demonstrated political will while directly and indirectly influencing critical state and federal policies and investments to advance equitable EV deployment.

- **Developing and putting forth a comprehensive \$150 billion federal stimulus package in April 2020** – one month after the COVID pandemic hit – for investments in zero emission transportation that helped shape and inform portions of the Infrastructure, Investments and Jobs Act (IIJA) and the Inflation Reduction Act (IRA) by jump starting dialogue with members of Congress, key stakeholders, and later the Biden transition team and Administration. Over 100 organizations, companies, and local governments in 30 states endorsed the proposal.



- **Demonstrating regional political will to support bold action at the state level** – with TEP's 2028 targets serving as a glide path – for Governor Newsom's 2020 Executive Order setting targets for 100 percent sales of new light duty passenger cars and trucks – as well as heavy duty drayage trucks – to be zero emission by 2035.

- **Advancing equity via policy as well as business model and technology pilots:**

- Upon learning from frontline and environmental justice (EJ) organizations of the need for greater coordination across state agencies to ensure that zero emission vehicle (ZEV) programs are equity-centered and support underserved Californians, LACI sponsored State Senator Lena Gonzalez' SB 1251 to create the nation's first Zero Emission Vehicle Equity Advocate. Once hired, the Advocate will facilitate connections between community groups and agencies; help to align equity definitions and metrics, make recommendations on new funding and programs, and evaluate progress towards equitably achieving the State's ZEV goals.
- **Implementing two successful EV car share pilots with dedicated charging** in Pacoima and Rancho San Pedro, disadvantaged communities that lack accessible transportation options. As a result of those pilots, LACI worked with Congresswoman Barragán to introduce federal legislation to create a national program to fund EV car shares plus charging at affordable housing developments.

- **Advocating for funding and advancing innovation for zero emissions drayage and goods delivery:**

- **Leading a statewide coalition of labor, ports, EJ groups, cities, and others to secure \$100 million** in the 2022 state budget for zero emissions drayage truck charging infrastructure.



- **Leveraging a \$1.5M federal 'earmark' through Congresswoman Barragán, TEP secured an additional \$9 million from the Mobile Source Air Pollution Reduction Review Committee (MSRC), the Port of Los Angeles (POLA), and LA Metro for the first public drayage truck charging depot at POLA.**

- **Creating the nation's first voluntary zero emission delivery zone** in Santa Monica to unlock technology and business model innovations.



- **Piloting, with the Los Angeles Department of Transportation (LADOT), curb zones dedicated for zero emission vehicles only, in the heart of downtown LA.**



- **Creating a National Zero Emission Delivery Cities Climate Innovation Challenge** in partnership with C40 and Climate Mayors for participating cities across the country to implement innovative first and last-mile solutions to reduce emissions from goods movement.

- **Key Partner Wins**



- **The California Air Resources Board (CARB) adopted historic regulatory requirements for electrification across the light, medium, and heavy duty sectors to achieve the Governor's targets.**



- **The California Energy Commission (CEC) committed to invest a historic \$2.9B in zero emissions infrastructure by 2026, supporting light, medium and heavy-duty vehicle deployment to help achieve state goals.**

- **CEC's Clean Transportation Program** which allocates over \$100 million a year to fund critical incentives for purchasing EVs and installing infrastructure was successfully reauthorized until 2035.

# What is the Zero Emissions 2028 Roadmap Version 3.0?

As TEP marks five years of the Partnership and recognizes how far California and the nation have come thanks to the leadership of our elected officials and others, our Zero Emissions 2028 Roadmap 3.0 reaffirms our commitment to achieve an additional 25 percent reduction in GHG emissions and air pollution by the time the world arrives in the LA region for the 2028 Olympic and Paralympic Games.

## What is in the Roadmap 3.0

Based on extensive discussion and input across the Partnership, this version of the Roadmap:



Increases our public and workplace charging target from 84,000 to 129,000 to reflect new commitments from our partner the Los Angeles Department of Water and Power (LADWP) and growing demand as a result of state EV sales requirements.



Sets a new nation-leading school bus electrification target of 45% of school buses on LA County roads and 100% of school bus sales to be electric by 2028.



Illustrates where the Partnership has made progress and where we need to accelerate action.



Highlights greater ambition and new commitments from some of our partners.



Identifies key strategic opportunities to enact the Roadmap's guiding principles and achieve our bold targets.

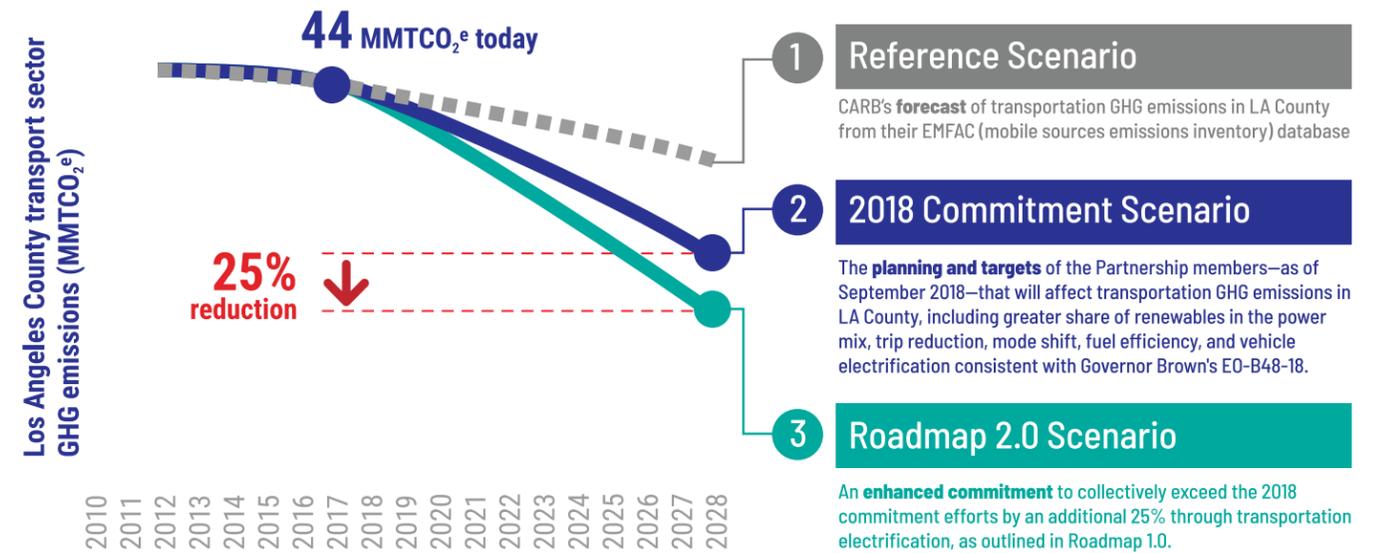


Details the policy actions, convenings, research, pilots, and partnerships TEP will pursue in the next two years—which are critical years to set in motion the investments needed to bring our shared 2028 vision to reality.



# Where We Need To Go

TEP's targets were developed to achieve an additional 25 percent reduction in greenhouse gas emissions and air pollution - through accelerating transportation electrification - by the time the world arrives in Los Angeles for the 2028 Olympic and Paralympic Games.



# Tracking our 2028 Roadmap Progress: People Movement



TEP is launching an Online Dashboard to track the LA region's progress towards the targets the Partnership has set. It illustrates calculated progress and investments driving that progress. Check it out and follow along at [ZERoadmap.org](https://ZERoadmap.org).



## Light Duty

### VEHICLES

While passenger vehicles are the largest emitting group of transportation vehicles and there are over 6 million cars in LA County alone, today the region is making good progress towards meeting our Roadmap's light duty private vehicle and charging infrastructure targets. In 2023, **25% of all new vehicle sales in LA County are electric and close to 5% of cars on the road are EVs.** This is a significant increase from 2018 when TEP was first formed and just 6.12% of new-car sales in LA County were EVs and only .75% of the vehicles on the road were electric.



### CHARGING

There are more than 29,000 public and workplace chargers throughout LA County, which is approximately 35% to our original goal of 84,000 chargers by 2028. This new version of the Roadmap increases that goal to 129,000 chargers. These public charging investments will also be essential for reaching our shared car targets.



## Local Transit

### LA METRO BUSES

44 of LA Metro's 2000 buses are electric, approximately 2.38% of our 100% electrification goal.



### LADOT BUSES

Approximately 7.48% of LADOT's 350 buses are electric.



ON TRACK BEHIND

# People Movement: Partnership Wins

The Partnership has focused its efforts on equitable ZEV and charging infrastructure deployment and pursuing innovative mode shift models to facilitate shared mobility and active transit.

- Advocated for the successful reauthorization of the California Energy Commission's Clean Transportation Program which allocates over \$100 million a year to fund critical incentives for purchasing EVs and installing infrastructure.



- Launched a popular e-bike lending library pilot together with East Side Riders Bike Club in Watts, Willowbrook and Compton.



- Designed and implemented two successful EV car share pilots with dedicated EV charging in disadvantaged communities (DAC) - in partnership with Pacoima Beautiful for the larger Pacoima community; and in partnership with the Housing Authority of the City of Los Angeles to serve the residents of the Rancho San Pedro affordable housing development.
- Introduced with Congresswoman Barragán federal legislation, based on the Rancho San Pedro EV car share pilot, to create a national program to fund EV car shares plus charging at affordable housing developments; introduced companion state legislation with State Senator Lena Gonzalez.



- Inspired LADOT in 2021 to accelerate its initial goal for a fully electrified bus fleet by 2030 to 2028; secured commitments from Culver City and Santa Monica to set targets for 100% bus electrification by 2028.
- Hosted a Congestion Pricing Charette with BMW Group to advance the region's understanding of congestion and pollution pricing, develop shared principles and values to undergird their implementation, and understand ways to address equity, privacy, and public and political support.

# People Movement: TEP Partner Wins

## EV Infrastructure



The City of LA has installed 60 DCFC (Direct Current Fast Charger) stations in public parking lots and 700 L2 (Level 2) Chargers on city street lights.



LADWP has installed over 20,000 electric vehicle charging stations within the City of LA. Over 500 of them are publicly available DCFCs.



Southern California Edison (SCE), through its innovative Charge Ready Transportation program, has successfully installed a total of 3,000 light-duty charging ports to date, providing a reliable and convenient charging network for EV owners across the region.



PCS Energy has installed approximately 22,000 chargers in Multi-Unit Dwellings (MUDs).



In 2023, BMW of North America expanded its smart charging service ChargeForward nationally across the lower 48 states. The innovative smart charging feature provides customers with incentives for aligning their vehicle charging with times when renewable energy is highest on the grid.



BMW of North America is also part of a group of seven major global automakers that announced a joint venture to build out a fast-charging network across the U.S. in urban and highway locations. The joint venture will include the development of a new, high-powered charging network with at least 30,000 chargers. The first stations are expected to open in the U.S. in the summer of 2024.

LA County has installed 1,075 Level 2 EV charging stations as well as 12 DCFC.

Of those stations, 574 chargers are available to the visiting public and 168 chargers are dedicated to the County fleet to support their fleet electrification plans.



Over the past three years, Culver City has issued EV charging station permits to residential and commercial properties, who collectively installed over 110 EV charging stations citywide.



The Electrify Santa Monica Rebate Program offers a standard rebate of

\$1,500 and an income-qualified rebate of \$3,000 for EV Chargers in multifamily homes. Santa Monica currently has 178 standard Level 2 chargers that are owned and operated by the City, and 28 DCFC that are owned and operated by EVgo. The City also maintains a map of EV charging locations as a resource to residents and EV drivers looking for a charge.



# People Movement: TEP Partner Wins

## Workforce Development



LACI's Green Jobs Workforce Programs provide technical training, industry recognized certifications, career coaching, case management, and job retention services to help underrepresented groups succeed in the green economy. Our EV Infrastructure Project Management program trains students in product development, EVSE maintenance, software development & IT Support, EV maintenance, and basic service, while their interpersonal skills are enhanced by problem-solving, teamwork, communication, listening, and creative development.

Voltera has purchased multiple properties in the region to support rideshare electrification, including in Santa Monica and downtown L.A., with sites anticipated to launch in 2025.



## Electric Buses

LA Metro transitioned to an all-electric bus fleet on the popular Metro G (Orange) Line in the San Fernando Valley. Working towards its 100% electric fleet goal, Metro has ordered 95 additional electric buses, and 1000 are authorized for purchase.



## Shared Cars

Uber is committed to being a zero emission platform by 2030 in North America and other major global cities. More Uber trips in ZEVs occur in Los Angeles every quarter than any other city in North America.



In October 2023, Waymo launched its Waymo One Tour, giving Angelenos the opportunity to experience Waymo's ride hailing service at no cost. Over the coming months, the Waymo One Tour is making its way through the region to various neighborhoods, or 'tour stops,' where people eager to experience the future of transportation will have an opportunity to receive a temporary code to try its rider-only service. Tickets unlock the ability to ride in the service area of the current tour stop for one week. All rides will be free and available around the clock. At Waymo's first stop in Santa Monica and Venice, more than 1K Angelenos and visitors received tickets to ride in a Waymo One; thousands of trips took place.

## Active Transit

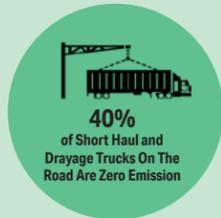
The Electrify Santa Monica Rebate Program offers a \$500 rebate for e-bike purchases.



In 2023, Pasadena Water and Power operated a \$500 e-bike rebate pilot program that was able to give out 93 e-bike rebates. The pilot program results will go to the Pasadena City Council with a recommendation to adopt this rebate as an ongoing incentive program.

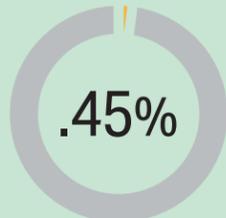
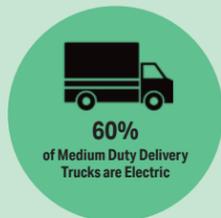


# Tracking our 2028 Roadmap Progress: Goods Movement

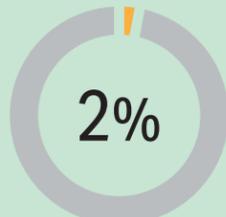


## VEHICLES

Today, 1.5% (200 of 14,636) of short haul and drayage trucks are electric. Similarly, only .45% of medium duty delivery trucks are electric.



However, thanks in part to TEP's strong advocacy and support, CARB adopted a first of its kind Advanced Clean Fleets rule requiring 25% of box trucks and package delivery vehicles to be zero emission by 2028 and 100% of drayage trucks be zero emission by 2035.



## CHARGING

There are 1,816 chargers in the LA region dedicated to goods movement.

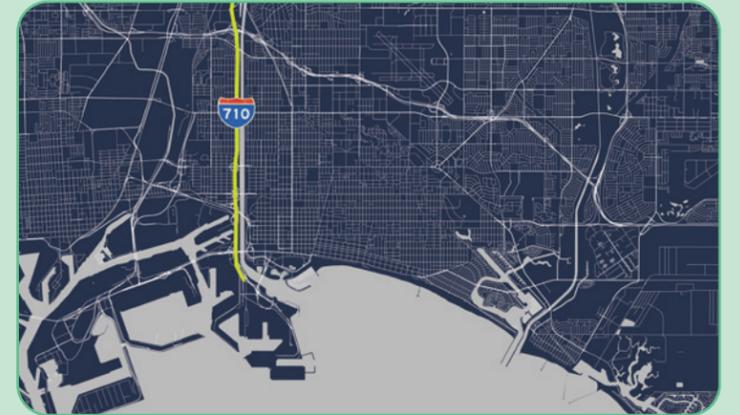
ON TRACK BEHIND

# Goods Movement: Partnership Wins

The Partnership has focused its efforts on identifying the policy, business model, and funding solutions necessary to rapidly deploy a sufficient quantity of chargers so the goods movement industry can integrate battery-electric vehicles into their operations.

## Electrifying the I-710 Corridor

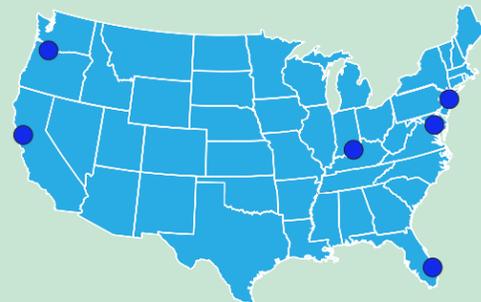
- **Kicked off** I-710 Corridor electrification efforts with an RFI in 2018 in partnership with CARB, CEC, and the Ports of Los Angeles and Long Beach, which identified the state of the ZEV market, providing clear prioritization of battery-electric trucks and making clear the pressing need for infrastructure investment, seeding LACI's later work.
- **Completed** a regional CEC-funded assessment of drayage truck charging infrastructure along the I-710 Corridor. This work was a collaboration between LACI and the Coalition for Environmental Health and Justice, using truck traffic and grid capacity data to identify over a dozen community priority sites for medium/heavy-duty infrastructure deployment at industrial facilities and commercial zones along the I-710 freeway, creating a new model for community input for infrastructure investments.
- **Secured** federal Community Project Funding, in partnership with Congresswoman Barragán, for \$1.5M to deploy the **first public drayage truck charging station on Port of Los Angeles property**. The Partnership has since leveraged these federal dollars to receive further funding commitments from the Port, LA Metro, and MSRC for a total of \$10.5 million dedicated to the project.



# Goods Movement: TEP Partnership Wins



## Zero Emission Delivery



- **Piloted** the nation's first voluntary Zero Emission Delivery Zone in Santa Monica with 15+ partners, inspiring other cities to undertake similar initiatives.
- **Secured** a Department of Energy Vehicles Technologies Offices grant to enable LACI to work with the cities of Santa Monica, Los Angeles and Pittsburgh to pilot curb management technologies to encourage the adoption of zero emission delivery vehicles.
- **Launched a National Zero Emission Delivery Cities Climate Innovation Challenge** in partnership with C40 and Climate Mayors for participating cities across the country to implement innovative solutions to reduce emissions from e-commerce and goods movement. The first cohort of participants will include: **Louisville, KY; Miami-Dade County, FL; New York City; Oakland, CA; Portland, OR; and Washington D.C.**

# Goods Movement: TEP Partner Wins



LADWP's **Charge-Up LA** program offers a reimbursement of \$125,000 per charging station, depending on power output, for medium and heavy duty EVs, such as transit buses, school buses and trucks. This rebate has a maximum of \$500,000 per site.



SOUTHERN CALIFORNIA  
**EDISON**

SCE's **Charge-Ready Transport** program has deployed over 600 chargers for M/HD vehicles in Los Angeles County since its inception.



Electrify America, in partnership with NFI Industries, is **finalizing construction on the nation's single largest charging infrastructure project** to support heavy-duty electric trucks: 38 power balanced fleet chargers and a 4 MW battery energy storage system to support 70+ electric trucks in drayage operations.



Ava Community Energy (formerly East Bay Community Energy or EBCE) is a **financing partner** for a Community Charging Depot in Livermore that will be able to charge up to 96 trucks at once and will service fleets moving cargo to and from the Port of Oakland, as well as other nearby commercial fleets.

**Audi is launching three Class 8 trucks** for parts distribution in Southern California.



CARB and CEC came together to finance their first joint battery-electric truck plus infrastructure project, the **Joint Electric Truck Scaling Initiative (JETSII)**, managed by the South Coast Air Quality Management District, (SCAQMD) to demonstrate how fleets can coordinate a large deployment of battery-electric trucks.



Voltera **launched its first Class 8 drayage charging depot** in fall 2023 in Lynwood. The launch was Voltera's first scaled truck site with 60 installed high-powered chargers. Voltera has also purchased property in Wilmington and is in the process of purchasing and developing multiple properties to support drayage electrification in proximity to the I-710 corridor between the ports and the Inland Empire.



# Announcing Bold New Targets and Commitments

As the Partnership looks to the next five years, we are strategically capitalizing on momentum in key areas and leveraging political will to adopt bold new targets in specific sectors and to secure key stakeholder commitments to advance our 2028 goals.

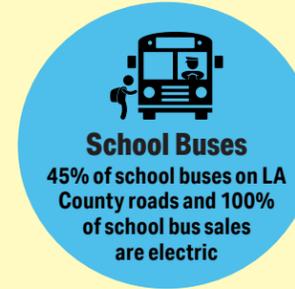


## Increasing TEP's Public and Workplace Charger Goal



As demand for charging grows and EV infrastructure deployment accelerates, we are increasing TEP's public and workplace charger target from 84,000 to 129,000 chargers installed in LA County by 2028 to reflect new commitments from LADWP.

Originally we set the EVSE target in Roadmap 2.0 based on needs to meet our light duty and shared car targets. However, LADWP has since increased its EVSE goal to keep pace with infrastructure needs ahead of the state's 2035 EV sales target. The utility has estimated that after 2025, it will need to install at least an additional 15,000 chargers a year beyond the previous projections that informed our initial target. As such, we are adding an additional 45,000 chargers to our 2028 target.



## Electrifying School Buses in the Greater LA Region

TEP is taking action to improve kids' health and air quality in our region by setting a nation leading school bus electrification target of 45% of school buses on LA County roads and 100% of school bus sales to be electric by 2028. According to CARB, riding a diesel school bus contributes 33% of a child's daily exposure to some air pollutants. Additionally, in LA County one in eleven children suffers from asthma.

The time is now as there are a multitude of electric school buses on the market and state and federal funding opportunities are plentiful. Our ambitious target aligns with the Los Angeles County Electric Truck and Bus Coalition's goal for our region which suffers from the worst air pollution in the state.

The Partnership also recognizes the exciting opportunities electric school buses present to address the energy transportation nexus through vehicle to grid integration (V2G).



## Partnership Win

In support of this target, TEP recently advocated in support of AB 579 (Ting), which has been signed into law by Governor Newsom and will require 100% of all newly purchased or contracted school buses be zero emission by 2035.

## Partner Wins

LADWP is establishing an agreement with LAUSD to provide electric transportation funding totaling up to \$4.8 million.



This financial support includes \$4.5 million designated for charging stations, \$300,000 allocated for a dedicated project planning and team development, and \$45,000 for feasibility studies.



Highland Electric has deployed 25 electric buses at Compton Unified School District through the EPA Clean School Bus grant program.



# The Zero Emissions 2028 Roadmap

This updated version of the Roadmap includes:

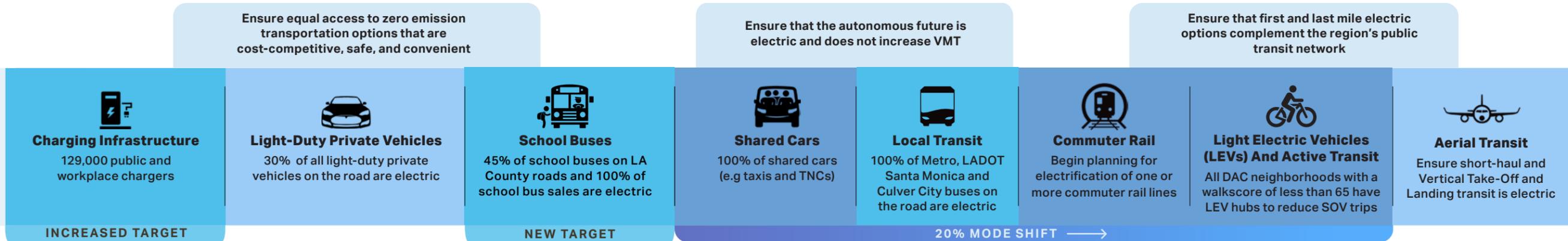
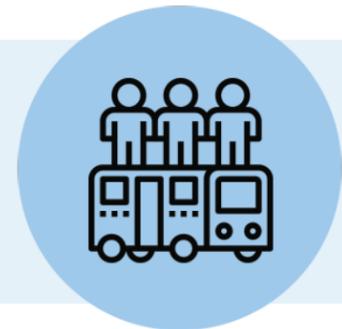
- Increased Charging Infrastructure target to 129,000 public and workplace chargers
- School bus target of 45% of school buses on LA County roads and 100% of school bus sales are electric
- Culver City and Santa Monica’s commitments to having 100% of buses on the road be electric
- In 2023, LACI launched a Clean Energy Partnership, which released a [Roadmap](#) with developed targets related to energy-transportation priorities.

Accelerate transportation electrification in the Greater LA region towards an additional 25 percent reduction in GHG emissions and air pollution by 2028 to build on our region’s leadership

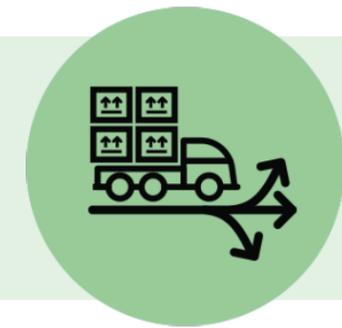
## Guiding Principles



## People Movement



## Goods Movement



# Where We are Headed in 2024-2025: People Movement

As the Partnership drives towards its 2028 goals, we recognize that it will be critical to make significant investments and progress in the next two years in order to benefit the LA region by the time of the 2028 Olympic and Paralympic Games and beyond. Actions the Partnership will explore in the next two years include:



## Policies & Programs

### Local



**Work with LAUSD** to develop a comprehensive policy on school bus electrification.



**Collaborate with LA28** to support last mile mobility options around key Olympic venues.



**Support a 2024 Healthy Streets LA ballot measure** that will help implement the City of LA's Mobility Plan 2035 for safer streets for all users.



**Prioritize street improvements** that include dedicated bike lanes and green infrastructure such as street trees and permeable pavement to reduce heat exposure.



**Explore where TEP can support** increased transit ridership, charging deployment for EV buses (including for the 2028 Olympic and Paralympic Games), and safer streets for biking and walking, as well as shared mobility programs.

### State



**Renew exploration of an income-sensitive feebate program** to accelerate the ZEV transition.



**Pass the EVs for All Act (SB 529) with California State Senator Lena Gonzalez** for a dedicated state grant program to fund EV car share and charging deployments at public and affordable housing developments.

### Federal



**Pass the EVs for All Act (HR 3468) with Congresswoman Barragán** that is modeled on our successful EV car share pilot in Rancho San Pedro to allocate federal funding for EV car sharing and EV charging deployments at affordable housing developments



## Convenings



**Streamline EV charger permitting:** Convene local jurisdictions responsible for EVSE permitting to identify best practices for streamlining and standardizing the permitting processes across the greater LA region.



**Advance Distributed Clean Energy for EV Charging:** Hold joint meetings with LACI's new Clean Energy Partnership to identify opportunities to work together to advance transportation-energy nexus innovations such as the deployment of demand response enable charging infrastructure, behind the meter software optimizations, and electric school bus V2G integrations.



**Grow the Green Workforce:** Collaborate with LACI's Regional Green Job Consortium to identify workforce development needs and training opportunities to meet our EVSE infrastructure goals and grow the green economy.



## Research



**Conduct an EV Charging Infrastructure Assessment** and develop a priority investment plan in Boyle Heights to help accelerate EV deployment by identifying strategic locations where charging could best serve the residents of this low-income community who lack significant public charging opportunities and yet suffer from high levels of air pollution from the multitude of freeways traversing the community.



## Pilots and Scaling



**Implement a new EV car share pilot** at the Housing Authority for the City of Los Angeles (HACLA) Pico Gardens affordable housing development to test pricing models and sustainable revenue models to scale and grow shared mobility while increasing access to EVs for lower income families.



**Implement a zero emission transportation testbed at Warner Center**, a unique 1100 acre mixed-use community in the west San Fernando Valley that aims to be a place where one can choose to live, work and play without daily reliance on cars.



**Implement an innovative streetlight DCFC pilot** in Huntington Park and Santa Monica.



**Explore a pilot with LAX** to increase use of EVs by taxi and ridehailing drivers.



**Leverage federal funding** to secure additional public and private dollars for DCFC charging plazas.



**Implement a Low Rider retrofit pilot** with TEP partner PCS Energy.



**Create a best practices model for successful e-bike lending programs** in low-income communities based on learnings from 3 e-bike pilots LACI is implementing.



**Create a congestion pricing (traffic reduction) pilot** in Los Angeles in partnership with LA Metro.



**Secure funding for the deployment of electric school buses** through EPA's Clean School Bus grant program and implement an innovative V2G pilot with a school bus.



**Develop an incentive/rebate/grant program** specifically designed to target existing gasoline station owners to encourage them to transition from gasoline pumps to DCFC fast chargers in phases.

# Where We are Headed in 2024-2025

## Goods Movement



### Policies & Programs



Introduce a state bill to increase the weight limit on state highways to be inclusive of zero emission heavy-duty trucks.



Lead on federal policy, as needed, to facilitate the adoption of zero emission delivery vehicles, based on learnings from LACI's National Zero Emission Delivery Cities Climate Innovation Challenge.



Vigorously defend CARB's Advanced Clean Fleet rule from any potential efforts to water it down.



### Convenings



As part of the National Zero Emission Delivery Cities Climate Innovation Challenge, in partnership with participating cities, we will hold convenings with delivery fleets to identify bottlenecks for electrification.



With project partners in the JETSI, such as NFI Industries, Schneider National, Daimler, Volvo, CEC, and SCAQMD and others, holding innovation convenings to discuss the opportunities to improve medium/heavy-duty truck technology and operations for a battery-electric freight future and showcase innovative LACI startups.



### Research



In collaboration with LA28 and funding from the CEC, we will create a **Blueprint** that identifies where investments in depot infrastructure deployments and mobile and modular charging infrastructure can provide lasting benefits to the region while supporting more zero emissions transportation by the time the world comes to our region in 2028.



With funding from the U.S. Department of Energy we will identify **industrial facilities and commercial zones along critical freight arteries feeding into the I-710 freeway** where innovative infrastructure solutions can increase the duty cycles achievable for battery-electric trucks and lessen concentrated burdens on the grid.



Leveraging insights from our 710 Blueprint, and SCAG's Zero Emission Truck Infrastructure planning grant, we will partner with the POLA, SCAQMD and other stakeholders to develop a **strategy** to transition the largest 'frequent flyer' fleets to zero emissions by 2028. There are over 2,000 trucks visiting POLA more than 20 times per week. This study will identify the locations and operational patterns of frequent fliers to outline the steps needed to electrify these fleets by 2028, including where would depot and/or public charging need to be located, costs, financing options, and opportunities to aggregate charging demand to drive energy costs down and increase utilization for infrastructure providers.



### Pilots and Scaling



Support the POLA and partners in implementing the first public drayage charging site in the greater LA region.



Develop two additional port charging sites identified by our 710 blueprint.



Create an enforced **Zero Emission Delivery Zone in downtown LA** to accelerate the transition to zero emission last-mile delivery solutions.



Launch a **Zero Emission Delivery solutions pilot in South LA** to help local businesses complete last mile delivery needs.

# Glossary

**Autonomous vehicle (AV):** A vehicle with at least level 4 autonomy

**AQMD:** South Coast Air Quality Management District

**CARB:** California Air Resources Board

**CEC:** California Energy Commission

**DAC:** Disadvantaged communities are defined by CalEPA as the top 25 percent scoring areas from CalEnviroScreen 3.0, along with other areas with high amounts of pollution and low populations. CalEnviroScreen was developed by the Office of Environmental Health Hazard Assessment (OEHHA) at the request of CalEPA to identify California's most pollution-burdened and vulnerable communities. The most recent version, CalEnviroScreen 3.0, uses a quantitative method to evaluate multiple pollution sources and stressors, and vulnerability to pollution, in California's approximately 8,000 census tracts.

**DCFC:** Direct Current Fast Chargers

**Equity:** LACI is working to ensure that everyone can benefit from the green economy, either from green jobs, clean air or accessing new zero emissions mobility or energy solutions. Our vision is for all communities in the Greater LA region to have access to and benefit from the transition to electric vehicles, charging infrastructure, first and last mile travel options, and all of the innovation solutions incorporated in the Roadmap.

**EV:** Battery electric and plug-in hybrid electric passenger vehicles with an all-electric range of 50 miles or greater

**EVSE:** Electric Vehicle Service Equipment

**GHG:** Greenhouse Gases

**Greater LA Region:** We have used LA County data and established goals specific to LA County, but the key challenges and opportunities identified through the Partnership are applicable across the larger LA region, including Orange, Riverside, San Bernardino and Ventura Counties.

**Medium- and Heavy-Duty Zero Emission Vehicles:** Medium- and heavy-duty vehicles with zero tailpipe emissions, including battery electric, fuel cell electric vehicles as well as plug-in hybrid electric vehicles.

**ICE:** Internal Combustion Engine

**JETSI:** The Joint Electric Truck Scaling Initiative financed by CARB and CEC is a pilot project which provides fleets with concrete guidance and lessons learned to successfully deploy 50 battery electric trucks and infrastructure at scale and enable fleets to transition to zero emission technologies

**LACI:** Los Angeles Cleantech Incubator

**LADOT:** Los Angeles Department of Transportation

**LADWP:** Los Angeles Department of Water and Power

**LA Metro:** Los Angeles County Metropolitan Transportation Authority

**LAUSD:** Los Angeles Unified School District

**LEV:** Light Electric Vehicle, which include motorized electric scooters, bikes, and other related vehicles

**SOV:** Single Occupancy Vehicle

**TEP/Partnership:** Transportation Electrification Partnership, a LACI convened program

**TNC:** Transportation Network Company

**VMT:** Vehicle Miles Traveled

**VTOL:** Vertical Take-Off and Landing

**V2G:** Vehicle to Grid

# Acknowledgments

## Leadership Group Organizations

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Winifred Yancy, LADWP | Stephanie Wiggins, LA Metro | Rita Kamalpath, LA County | Drew Murphy, Edison Energy | Michael Backstrom, SCE

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## Several additional TEP alumni have contributed to the ambition and progress in LA and beyond, including:

Meg Arnold | Scott Briasco | Michelle Boge | Dr. Thomas Becker | Bryan Copp | Rolando Cruz | Jim Edson | Karim Farhat  
Lauren Faber O'Connor | Philip Fine | Former Mayor Eric Garcetti, City of LA | Gary Gero | Angela Konert | Valerie Kornahrens | Kent Leacock  
Stella Li | Andreas Lips | Alex Mitchell | Clinton Moloney | Marvin Moon | Matt Miyasato | Craig Newman | Wayne Natri | Rachel Nguyen  
Ron Nichols | Kristen Torres Pawling | Vincent Pellecchia | Rohan Patel | Jessie Denver | Sarah Rees | Lucas Scheidler  
Former Mayor Megan Sahli-Wells, Culver City | Maik Schwalm | Heidi Sickler | Vic Shao | Mark Smits | Taylor Steele | Shevonne Sua  
Francesca Wahl | Phil Washington | Michael Webster | Elena Vasconi

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## About LACI

The Los Angeles Cleantech Incubator (LACI), a City of Los Angeles-established nonprofit organization, is creating an inclusive green economy by: unlocking innovation through working with startups to accelerate the commercialization of clean technologies; transforming markets through partnerships with policymakers, innovators and market leaders in zero emission transportation, clean energy and sustainable cities; and enhancing communities through workforce development, pilots and other programs. Founded as an economic development initiative by the City of Los Angeles and its Department of Water & Power (LADWP), LACI is recognized as one of the most innovative business incubators in the world by UBI. Since 2011, LACI has helped 375 portfolio companies raise \$1 billion in funding, generate \$335 million in revenue, and create 2,626 jobs throughout the Los Angeles region, with a projected long-term economic impact of more than \$585 million. Learn more at [laci.org](https://laci.org) and sign up for our Transportation Electrification Partnership Newsletter to join us in tackling the climate crisis.

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