
Zero Emissions 2028 Roadmap
TRANSPORTATION ELECTRIFICATION PARTNERSHIP
LACI

"Here in Los Angeles, we don't wait for the future — we guide it."

LOS ANGELES MAYOR ERIC GARCETTI

Contents

www.laci.org/roadmap

"...we are committed to help the Greater LA region go further, faster.

Message from Mayor Eric Garcetti

Here in Los Angeles, we know that when we live sustainably, we can promote equity, protect the environment, and thrive in the face of the challenges ahead.

We have an opportunity to lead the nation by transforming the transportation sector, moving people and goods throughout our region with zero emissions—reducing greenhouse gas emissions, cleaning our air, and creating good middle-class, local jobs.

That's why I'm proud to help lead the unprecedented public-private Transportation Electrification Partnership, working together with my fellow local government leaders, regulators, utilities, automakers and stakeholders to accelerate the electrification of transportation here in Los Angeles and across the region.

This Zero Emissions 2028 Roadmap brings actors together to set a regional framework to accelerate ambition toward electrification, which is essential to upholding the goals outlined in the Paris Agreement and to continuing the reduction of greenhouse gas emissions by the time the world arrives in Los Angeles for the 2028 Olympic and Paralympic Games. The ambitious goals identified in the Roadmap will play an instrumental role in informing our planning for the transportation-related targets and policies in the upcoming Sustainable City pLAn refresh, which is scheduled for release in the first quarter of next year.

I'm proud to be working alongside leaders who know that today's decisions will shape the lives of our children and grandchildren tomorrow, and I am inspired by all that we have achieved — and all that we will do — to make Los Angeles the most sustainable city in the world.

Sincerely,
Mayor Eric Garcetti

Message from Sheila Kuehl

Los Angeles is known around the world for our cars, our freeways and unfortunately, for our pollution. Now it's high time to turn the Greater Los Angeles Area into a global leader as we head into a new clean transportation future.

Los Angeles County is proud to join the Los Angeles Cleantech Incubator (LACI) and our fellow members in the Transportation Electrification Partnership's Leadership Group in releasing this Zero Emissions 2028 Roadmap. This roadmap articulates a vision for cleaner air and good sustainable jobs in our region by electrifying the ways in which people and goods travel from Point A to point B.

Working together with this Roadmap as a guide, we can rapidly accelerate transportation electrification in the region. By the time 2028 arrives, we will demonstrate to the world that the Los Angeles region is firmly leading the way to an equitable zero emission transportation future.

Sincerely,
Supervisor Sheila Kuehl, Chair
Los Angeles County Board of Supervisors

"...we will demonstrate to the world that the Los Angeles region is firmly leading the way to an equitable zero emission transportation future."

–Supervisor Sheila Kuehl

That's why we are moving toward 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."

–The Transportation Electrification Partnership's Leadership Group, September 2018

Message from Mary Nichols

Since we first started meeting in July 2017, we knew we had never assembled a regional leadership group that came together around the key priority for fighting climate change: the future of mobility and transportation electrification. And by using the deadline of the Olympics in 2028, we can use the LA region's can do attitude along with California's leadership to make things possible that were never before.

That's why this partnership is so powerful and critically important to reducing greenhouse gas emissions, cleaning up our air, and leading the transition to a zero-emissions future. Without our convener and key partner, the Los Angeles Cleantech Incubator, none of this would be possible.

There is much work ahead, but with our new regional goal to reduce emissions by an additional 25% by 2028 through transportation electrification and the power of this multi-sectoral partnership, I am confident we will succeed.

Best,
Mary Nichols,
Chair, CARB

"...this partnership is so powerful and critically important to reducing greenhouse gas emissions, cleaning up our air, and leading the transition to a zero-emissions future."

–Mary Nichols

Message from Matt Petersen

There's an old proverb that says, "if you want to go fast, go alone. If you want to go far, go together." The Transportation Electrification Partnership embodies that saying—together we know we will bring to reality our ambitious goal that by 2028 we will reduce greenhouse gas emissions and air pollution an additional 25 percent beyond existing commitments.

And by doing so, we will unlock innovation, transform markets, and strengthen communities throughout the Los Angeles region. That's what collaboration makes possible.

LACI is proud to convene and help lead the Partnership to drive our collective work forward in the coming years. We know our start ups—current and future—will be part of bringing to life the solutions we need by 2028, with all our partners.

Since first announcing the Partnership four months ago, we have worked hard to imagine how we can break through the obstacles ahead, bridge the gaps we have identified, and create momentum where we have found inertia. We've put forth the Roadmap as version 1.0 to help set the course, pose the questions we need to answer, and frame the challenges we will overcome together by the time the world arrives in Los Angeles ten years from now.

Best,
Matt Petersen
President & CEO, LACI

The Power of Partnership

The Transportation Electrification Partnership (the Partnership), formed by LACI in May 2018, is an unprecedented multi-year partnership among local, regional, and state stakeholders to accelerate progress towards transportation electrification and zero emissions goods movement in the Greater LA region (LA) in advance of the 2028 Olympic and Paralympic Games.

The Partnership was established through a collaborative process among members of the Partnership's Leadership Group, consisting of the heads of or senior executives from the California Air Resources Board (CARB), City of Los Angeles, County of Los Angeles, the Los Angeles County Metropolitan Transportation Authority (Metro), the Los Angeles Department of Water and Power (LADWP), and Southern California Edison (SCE), as well as members of the Partnership's Advisory Group, comprised of representatives from leading automakers and industry organizations, including BMW Group, BYD, Greenlots, Itron Idea Labs, Pacific Gas & Electric, PCS Energy, Southern California IBEW-NECA, South Coast Air Quality Management District, and Tesla, as well as California State University, Northridge, and the USC Schwarzenegger Institute for State and Global Policy.

Leadership Group

LACI · Eric Garcetti #lamayor · California Air Resources Board · County of Los Angeles · LADWP · Metro

Advisory Group Founding Partners

BMW Group · Itron · PCS Energy

Advisory Group Associate Partners

BYD · CSUN · greenlots · IBEW · NECA · PG&E · South Coast AQMD · TESLA

What is the Zero Emissions 2028 Roadmap?

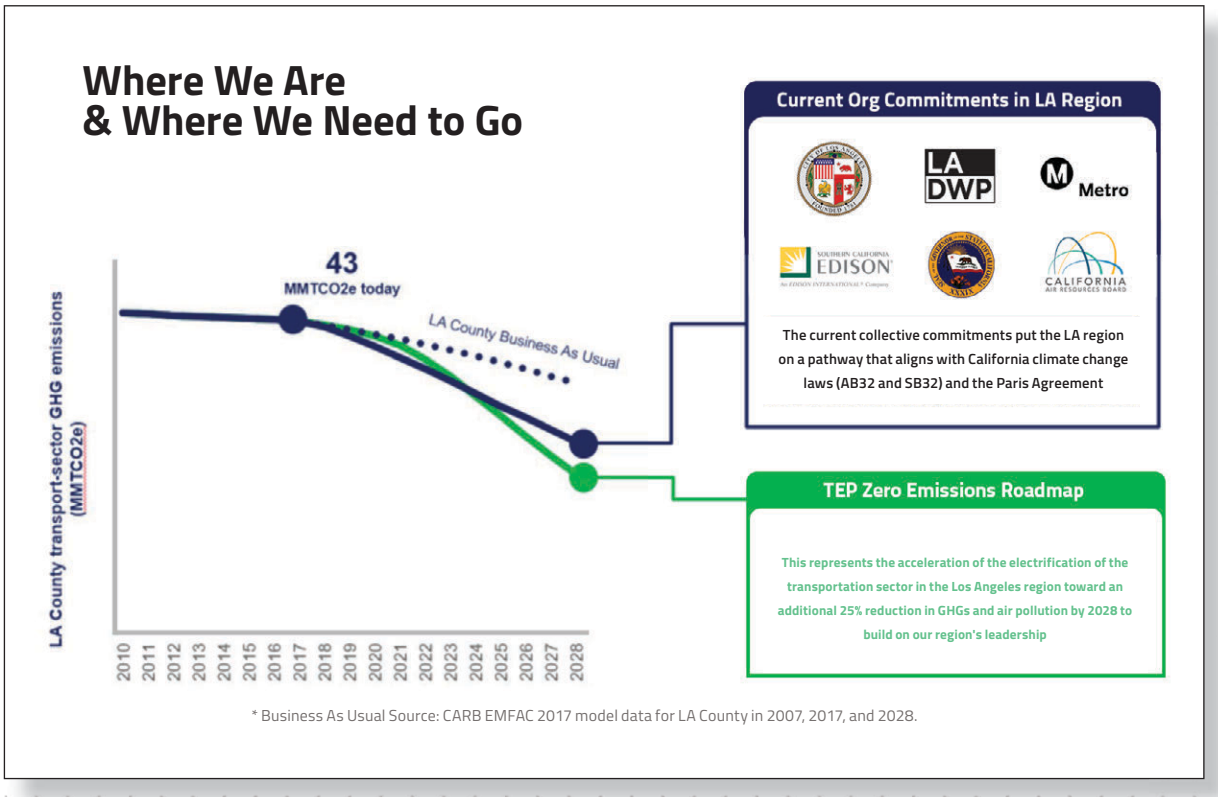
The Roadmap was developed through a series of stakeholder meetings, workshops and interviews to assess the technology, policy, infrastructure, financing, and behavioral gaps and opportunities for people movement, goods movement and the energy-transportation nexus.

The members of the Transportation Electrification Partnership Leadership Group and other Advisory Group partners have made ambitious commitments to transportation electrification for Greater Los Angeles that are aligned with the State of California's climate change and air quality goals, along with the Paris Climate Agreement.

But we are committed to help the Greater LA region go further, faster. That's why we are moving toward 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.

We believe the Guiding Principles in this document, Roadmap 1.0, are important to achieving the further 25 percent ambition. Over the coming year, we will work to refine the range of targets in Roadmap 2.0, while beginning implementation of the Roadmap.

–Transportation Electrification Partnership Leadership Group, September 2018



* Business As Usual Source: CARB EMFAC 2017 model data for LA County in 2007, 2017, and 2028.

Roadmap Background

The Greater Los Angeles region is known the world over for being the car capital of the world, with heavy traffic, urban sprawl and the worst air pollution in the U.S. With greenhouse gas pollution and air pollution from Southern California's transportation sector on the rise, time is of the essence and the Los Angeles region is uniquely positioned to lead the convergence toward a zero emission transportation future.

Why now?

- The recently released 2018 4th California Climate Change Assessment confirms that the state and LA region will increasingly experience the effects of climate change through increased heat, drought, and wildfires[i].
- Attempts in Washington, D.C., to rollback clean air and CAFE standards, along with the White House withdrawing from from the Paris Climate Agreement, necessitate increased regional and statewide climate action.
- Electric vehicles and related technologies, including batteries, are rapidly advancing, yet we need to do more to encourage and support their adoption and use.
- Preparations are already underway to welcome the world to the region for the 2028 Olympic and Paralympic Games. Just as the 1984 Olympic Games served as a rallying point for changes in LA's transportation infrastructure, so too can the 2028 games.

Why LA?

- The LA region suffers from some of the nation's worst air pollution, which disproportionately hurts disadvantaged communities through higher rates of asthma, heart attacks and premature deaths[ii].
- Our region has long-struggled with having among the nation's worst traffic congestion.
- We have already begun to make significant commitments to create a zero emissions transportation future, such as Metro and Measure M's $120 billion, 40-year investment in mobility.
- More electric vehicles are driven in the LA region than in any other area of the country, yet much work remains to be done to support increased adoption.
- Given the LA region is home to the western hemisphere's busiest shipping ports, international airports and major original equipment manufacturers (OEMs), transportation electrification will provide far-reaching benefits to our economy.
- The LA region is increasingly a global leader of mobility, climate action, data, smart cities and clean technologies—we can be the home for zero emissions transportation and mobility innovation.
- (OEMs), transportation electrification promises far-reaching benefits to our economy.

i. California's Fourth Climate Change Assessment Report: Los Angeles Region Specific Report (2018)

ii. https://www.scientificamerican.com/article/us-neighborhoods-struggle-with-health-threats-from-traffic-pollution/

Roadmap Next Steps

Over the next year the Partnership will:

- **Engage key stakeholders and form working groups in People Movement, Goods Movement, and the Energy-Transportation Nexus.**
- **Identify key pilot projects and begin implementation of Roadmap 1.0. Examples for potential types of pilots include: a connected zero-emission vehicle neighborhood developed with crowd-sourced solutions; a fully-electric micro-grid powered warehouse district; and working with municipalities to create a zero-emissions district.**
- **Publish Roadmap 2.0 by September 2019, with key milestones for future years (e.g., 2, 5, and 8-year targets) along the way to the 10-year targets. It will identify the technology, policy, infrastructure, financing, and behavioral solutions needed to advance toward the milestones and targets.**

Our hope is that the Roadmap will inspire a diversity of stakeholders to think big and align actions going forward. Together, the Greater LA region can go further, faster and lead the way to an electrified transportation future.

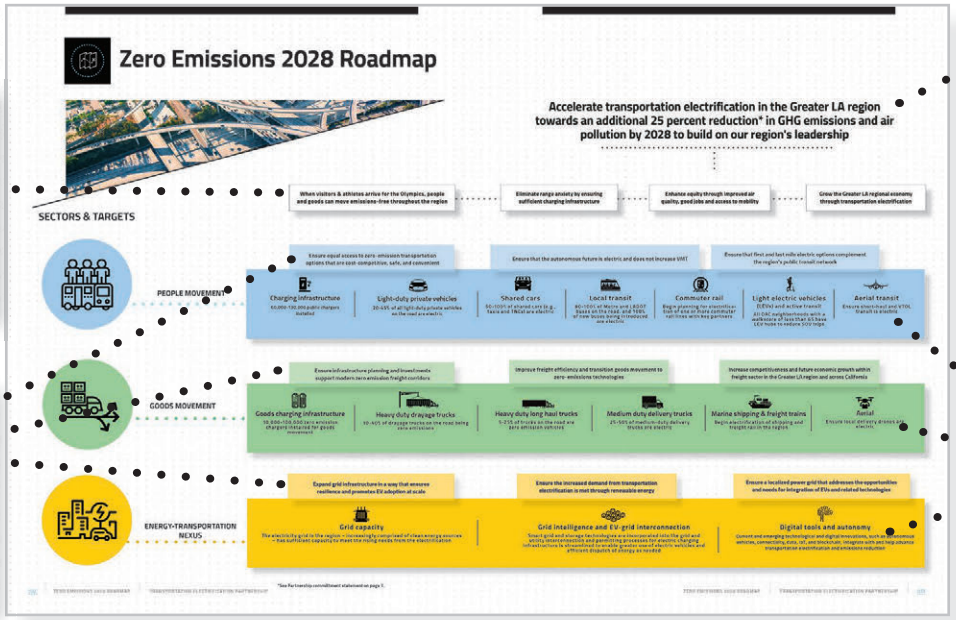
How To Read the Roadmap

TOP LINE GUIDING PRINCIPLES

These are the four key principles that inform and guide the entire Roadmap.

CATEGORY GUIDING PRINCIPLES

These are principles contained within each sector that underpin the targets we commit to and efforts we will undertake.



GOAL OF THE ZERO EMISSIONS 2028 ROADMAP

This is the foundational purpose and objective of the entire Partnership and Roadmap.

SECTORS & TARGETS

For each sector, a range of targets are expressed. Achieving a mix of these targets across all sectors will be needed to help achieve the goal of 25% overall increased reduction in greenhouse gas emissions and air pollution.

Top Line Guiding Principles

There are several guiding principles of the Roadmap that inform the goals and targets identified. These principles are:

1. **When visitors & athletes arrive for the Olympics, ensure that people and goods can move emissions-free throughout the region**
2. **Eliminate range anxiety by ensuring adequate charging infrastructure**
3. **Enhance equity through improved air quality, improved access to mobility options, and good jobs**
4. **Grow the Greater LA regional economy through transportation electrification**

Understanding the Goals

The Roadmap focuses on three overarching categories for identifying goals necessary to achieving a holistic transportation transformation. These three categories address the vast majority of the region's transportation needs: People Movement, Goods Movement, and the Energy-Transportation Nexus.

CATEGORY GUIDING PRINCIPLES

These are principles contained within each sector that underpin the targets we commit to and efforts we will undertake.

SECTORS & TARGETS

The sectors are the key issue areas within each category that the Roadmap tackles.

TARGETS & OUTCOMES

CATEGORY INTRODUCTION

The category introduction explains the significance of this category to the Roadmap's purpose, and the rationale for change.

TYPES OF QUESTIONS WE ARE CONSIDERING FOR NEXT YEAR

These are the types of questions related to challenges that the sector currently faces that LACI and the Partnership may dedicate resources to addressing in the next year.

The target ranges identified in this 1.0 version of the Roadmap were arrived at through extensive modeling that established a transportation emissions baseline for the region, and projected various rates of deployment for infrastructure and vehicles by 2028 to achieve the goal of 25 percent additional reductions in GHGs and air pollution. The ranges will be further studied by the Partnership over the coming year as implementation begins, and the Roadmap 2.0 is developed.

Zero Emissions 2028 Roadmap

When visitors & athletes arrive for the Olympics, people and goods can move emissions-free throughout the region

SECTORS & TARGETS

PEOPLE MOVEMENT

Ensure equal access to zero-emission transportation options that are cost-competitive, safe, and convenient

Charging infrastructure

60,000-130,000 public chargers installed

Light-duty private vehicles

20-45% of all light-duty private vehicles on the road are electric

GOODS MOVEMENT

Ensure infrastructure planning and investments support modern zero emission freight corridors

Goods charging infrastructure

10,000-100,000 zero emission chargers installed for goods movement

Heavy duty drayage trucks

10-40% of drayage trucks on the road being zero emissions

ENERGY-TRANSPORTATION NEXUS

Expand grid infrastructure in a way that ensures resilience and promotes EV adoption at scale

Grid capacity

The electricity grid in the region – increasingly comprised of clean energy sources – has sufficient capacity to meet the rising needs from the electrification

*See Partnership committment statement on page 7.

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

Eliminate range anxiety by ensuring sufficient charging infrastructure

Enhance equity through improved air quality, good jobs and access to mobility

Grow the Greater LA regional economy through transportation electrification

Ensure that the autonomous future is electric and does not increase VMT

Ensure that first and last mile electric options complement the region's public transit network

Shared cars
50-100% of shared cars (e.g., taxis and TNCs) are electric

Local transit
80-100% of Metro and LADOT buses on the road, and 100% of new buses being introduced are electric

Commuter rail
Begin planning for electrification of one or more commuter rail lines with key partners

Light electric vehicles (LEVs) and active transit
All DAC neighborhoods with a walkscore of less than 65 have LEV hubs to reduce SOV trips

Aerial transit
Ensure short-haul and VTOL transit is electric

Improve freight efficiency and transition goods movement to zero-emissions technologies

Increase competitiveness and future economic growth within freight sector in the Greater LA region and across California

Heavy duty long haul trucks
5-25% of trucks on the road are zero emission vehicles

Medium duty delivery trucks
25-50% of medium-duty delivery trucks are electric

Marine shipping & freight trains
Begin electrification of shipping and freight rail in the region

Aerial
Ensure local delivery drones are electric

Ensure the increased demand from transportation electrification is met through renewable energy

Ensure a localized power grid that addresses the opportunities and needs for integration of EVs and related technologies

Grid intelligence and EV-grid interconnection
Smart grid and storage technologies are incorporated into the grid and utility interconnection and permitting processes for electric charging infrastructure is streamlined to enable greater use of electric vehicles and efficient dispatch of energy as needed

Digital tools and autonomy
Current and emerging technological and digital innovations, such as autonomous vehicles, connectivity, data, IoT, and blockchain, integrate with and help advance transportation electrification and emissions reduction

PEOPLE MOVEMENT

Introduction

HOW WE MOVE AROUND THE REGION IS A BIG PART OF OUR LIVES. WITH OVER 10 MILLION PEOPLE IN LA COUNTY ALONE, THERE ARE APPROXIMATELY 35 MILLION TRIPS BEING MADE EVERY SINGLE DAY USING A VARIETY OF MODES. WE OFTEN RELY ON INDIVIDUALLY-OWNED VEHICLES, WHICH HAVE A SIGNIFICANT IMPACT ON OUR CARBON EMISSIONS AND AIR QUALITY. REDUCING THESE EMISSIONS THROUGH ELECTRIFICATION WILL TRANSFORM OUR REGION, CREATING CLEANER AIR AND HEALTHIER COMMUNITIES.

People Movement

Passenger vehicles including cars, SUVs, large pickups, and vans are the largest emitting group of transportation vehicles and represent the greatest opportunity for transportation electrification. Public buses and light rail transportation are also addressed in this section, along with first mile and last mile solutions that increase transit ridership as well as encourage walking and biking.

Guiding Principles

Ensure equal access to zero-emission transportation options that are cost-competitive, safe, and convenient

Ensure that the autonomous future is electric and does not increase VMT

Ensure that first and last mile electric options complement the region's public transit network

Sectors & Targets

Charging infrastructure	Light-duty private vehicles	Shared cars	Local transit	Commuter rail	Light electric vehicles (LEVs) active transit	Aerial transit
60,000 to 130,000 public chargers installed	20-45% of all light-duty private vehicles on the road are electric	50-100% of shared cars (e.g., taxis and TNCs) are electric	80-100% of Metro and LADOT buses on the road, and 100% of new buses being introduced are electric	Begin planning for electrification of one or more commuter rail lines with key partners	All disadvantaged communities with a walkscore of less than 65 have LEV hubs to reduce single-occupancy vehicle (SOV) trips	Ensure short-haul and VTOL transit is electric
Low: Based on current commitments of utilities in County High: Based on projected needs to support a higher range of light-duty electric vehicles	Low: SCE 2030 pathway scaled to 2028 High: Ambitious goal to achieve Partnership pathway	Low: Estimated proportion of electric TNC rides based on Lyft's 1B AV EV goal by 2025 High: Ambitious goal to achieve Partnership pathway	Low: Estimated progress to reach commitments by 2030 High: Commitments of Metro & LADOT to attempt to move up current 2030 100% commitments to 2028.			

Types of Questions We Are Considering for Next Year

1. What level of EV charging infrastructure would be sufficient to address range anxiety?
2. How do we streamline and standardize the permitting process for charging infrastructure across the Greater LA region?
3. How do we accelerate the installation of charging infrastructure into existing and new multi-family housing?
4. How do we harmonize education about and incentives for EV purchasing across utility service territories?

GOODS MOVEMENT

Introduction

OUR REGION IS A GATEWAY FOR GOODS ENTERING CALIFORNIA AND THE NATION AS A WHOLE, WITH FORTY PERCENT OF ALL THE GOODS THAT ENTER THE U.S. TRAVELING THROUGH THE PORTS OF LOS ANGELES AND LONG BEACH[iii]. THE GOODS MOVEMENT INDUSTRY IS VITAL TO THE REGION'S ECONOMY, AND REPRESENTS A LARGE PORTION OF VEHICLES ON THE ROAD. A THOUGHTFUL AND COMPREHENSIVE APPROACH TO COMMERCIAL FLEET ELECTRIFICATION WILL BE ESSENTIAL TO THE ROADMAP'S SUCCESS, AND TO ACHIEVING THE REGION'S ECONOMIC, ENVIRONMENTAL AND PUBLIC HEALTH GOALS.

iii. https://laedc.org/wtc/chooselacounty/infrastructure-goods-movement/

Goods Movement

Medium- and heavy-duty long-haul and drayage trucks comprise the second largest categories of GHG emissions in the transportation sector and goods movement represents the region's largest source of air pollution. This category represents a streamlined effort to map out the future of zero emissions goods movement in the region.

Guiding Principles

- **Ensure that infrastructure planning and investments support modern zero-emission freight corridors**
- **Improve freight efficiency and transition goods movement to zero-emissions technologies**
- **Increase competitiveness and future economic growth within the freight sector in the Greater LA region and across California**

Sectors & Targets

Goods charging infrastructure

10,000-100,000 zero emission chargers installed for goods movement

Low: SCE's target based on May 2018 CPUC decision

High: Based on number of heavy-duty and medium-trucks

Heavy-duty drayage trucks

10-40% of drayage trucks on the road are zero emissions

Low: SCE target for 2030 scaled to 2028

High: Aggressive target to support Paris and to meet Clean Air Action Plan to meet zero emissions by 2035

Heavy-duty long haul trucks

5-25% of trucks on the road are zero emission vehicles

Low: SCE target for 2030 scaled to 2028

High: Aggressive target to support Paris

Medium-duty delivery trucks

25-50% of medium-duty delivery trucks are electric

Low: UPS target 25% by 2025

High: 100% is based on discussions with GM on desire for delivery electrification

Marine shipping & freight trains

Begin electrification of shipping and freight rail in the region

Aerial

Ensure local delivery drones are electric

Types of Questions We Are Considering for Next Year

1. How do we standardize the plug design for medium- and heavy-duty trucks?
2. How can we ensure sufficient investment in research for advanced battery technologies that can meet the demands of medium- and heavy-duty trucks?
3. How do we develop the right business models and market signals to bring zero emissions trucks to cost parity with fossil-fuel trucks?

ENERGY-TRANSPORTATION NEXUS

Introduction

AS MILLIONS OF ELECTRIC VEHICLES ARE DEPLOYED ONTO OUR ROADS OVER THE NEXT DECADE, THERE WILL BE A GROWTH NOT JUST IN THE NEED FOR EV CHARGING STATIONS, BUT ALSO INCREASED CAPACITY, INTEGRATION OF EMERGING TECHNOLOGIES, AND OTHER OPPPORTUNITIES. THE ELECTRICAL GRID THAT POWERS THOSE CHARGING STATIONS IS THE LYNCHPIN TO THIS ROADMAP. THE FOUNDATION OF AN ELECTRIC TRANSPORTATION FUTURE WILL BE THE GRID AND RELEVANT INFRASTRUCTURE THAT CAN SUPPORT THIS RAPID ESCALATION OF ELECTRIC VEHICLE CHARGING DEMAND. IT IS NECESSARY TO EXPAND INFRASTRUCTURE AND INTEGRATE A VARIETY OF EMERGING TECHNOLOGIES TO SUPPORT ELECTRIC VEHICLE ADOPTION AT SCALE.

Energy-Transportation Nexus

The Roadmap recognizes a future grid infrastructure that is dependent on renewable energy and is able to meet the increased capacity of vehicle electrification. Achieving this end goal will ensure that the transition to electrified passenger cars and trucks is frictionless for consumers and businesses, and integrates emerging technologies.

Guiding Principles

Expand grid infrastructure in a way that ensures resilience and promotes EV adoption at scale

Ensure that the increased demand from transportation electrification is met through renewable energy

Ensure a localized power grid that addresses the opportunities and needs for integration of EVs and related technologies

Sectors & Targets

Grid capacity

The electricity grid in the region – increasingly comprised of clean energy sources – has sufficient capacity to meet the rising needs from the electrification

Grid intelligence and EV-grid interconnection

Smart grid and storage technologies are incorporated into the grid and utility interconnection and permitting processes for electric charging infrastructure is streamlined to enable greater use of electric vehicles and efficient dispatch of energy as needed

Digital tools and autonomy

Current and emerging technological and digital innovations, such as autonomous vehicles, connectivity, data, IoT, and blockchain, integrate with and help advance transportation electrification and emissions reductions

Types of Questions We Are Considering For Next Year

1. How can we ensure that long-term energy resource planning considers the local transmission and distribution infrastructure capacity needed to meet the demands of transportation electrification?
2. How do we integrate more renewables and batteries to support electrification of transportation and grid resilience?
3. How do we prepare for an electrified vehicle future where the grid communicates its requirements to connected vehicles in real time?
4. How does the electricity grid both prepare for and enable autonomous vehicles and new operating models, such as Mobility as a Service (MaaS), and utilize technologies like blockchain-based encrypted payments, induction charging, IoT devices, and others?

Glossary

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

CA: State of California

CARB: California Air Resources Board

Charging Stations: Level 2 or DC Fast Charging; does not include level 1 charging

DAC: Disadvantaged communities

DCFC: Direct Currrent Fast Chargers

Emissions: Emissions in this analysis are from mobile sources of transportation only

GHG: Greenhouse Gases

Greater LA Region: In our data analysis, we have used LA County data but the goals and key questions identified are applicable across the larger LA region, including the counties of LA, Orange, Riverside, San Bernardino and Ventura

Heavy- and Medium-Duty Electric Vehicles: Battery electric or fuel cell electric vehicles as well as plug-in hybrid electric vehicles with all-electric ranges greater than 150 miles

ICE: Internal Combustion Engine

LACI: Los Angeles Cleantech Incubator

LADOT: Los Angeles Department of Transportation

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

Light-Duty Private Electric Vehicles: Battery electric passenger vehicles with an all-electric range of 50 miles or greater

SOV: Single Occupancy Vehicle

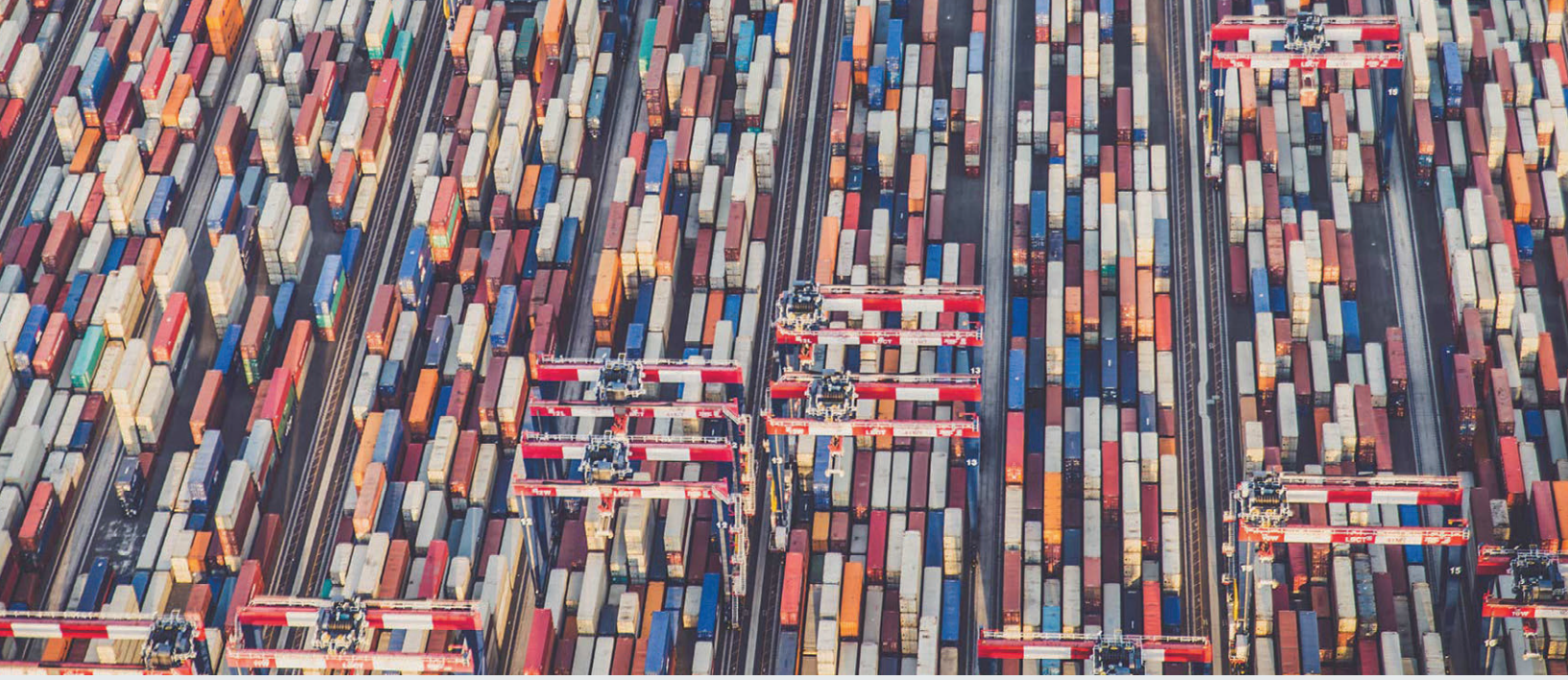
Partnership: Transportation Electrification Partnership, a LACI managed program

TNC: Transportation Network Company

VMT: Vehicle Miles Travelled

VTOL: Vertical Take-Off and Landing

Walkscore: Walkscore measures the walkability of any address using a patented system. For each address, Walk Score analyzes hundreds of walking routes to nearby amenities. Points are awarded based on the distance to amenities in each category. Amenities within a 5 minute walk (.25 miles) are given maximum points. A decay function is used to give points to more distant amenities, with no points given after a 30 minute walk



Acknowledgements

Leadership Group and Advisory Group

Mary Nichols, CARB | Ron Nichols, SCE | David Wright, LADWP | Nancy Sutley, LADWP | Lauren Faber O'Connor, City of LA | Stephanie Wiggins, LA METRO Jim Gallagher, LA METRO | Gary Gero, LA County | Kristen Torres Pawling, LA County | Steve Cliff, CARB | Jack Kitowski, CARB | Michael Backstrom, SCE | Erica Bowman, SCE | Katie Sloan, SCE | Michael Samulon, City of LA |Angela Konert, BMW | Maik Schwalm, BMW | Paul Jennings, PCS Energy | Stella Li, BYD | Vincent Pellecchia, BYD | Jack Symington, BYD Craig Newman, Itron | Elena Vasconi, Itron | Roberto Aiello, Itron | Jim Edson, Itron | Rohan Patel, Tesla | Sanjay Ranchod, Tesla | Gina Goodhill, Tesla | Brett Hauser, Greenlots | John McLean, Greenlots | Tom Ashley, Greenlots | Jennifer Kropke, IBEW-NECA | Fran Pavely, The USC Schwarzenegger Institute | Robert Gunsalus, CSUN | Steven Malnight, PG&E | Brandon Hernandez, PG&E | Stephanie Greene, PG&E | Wayne Nastri, SCAQMD

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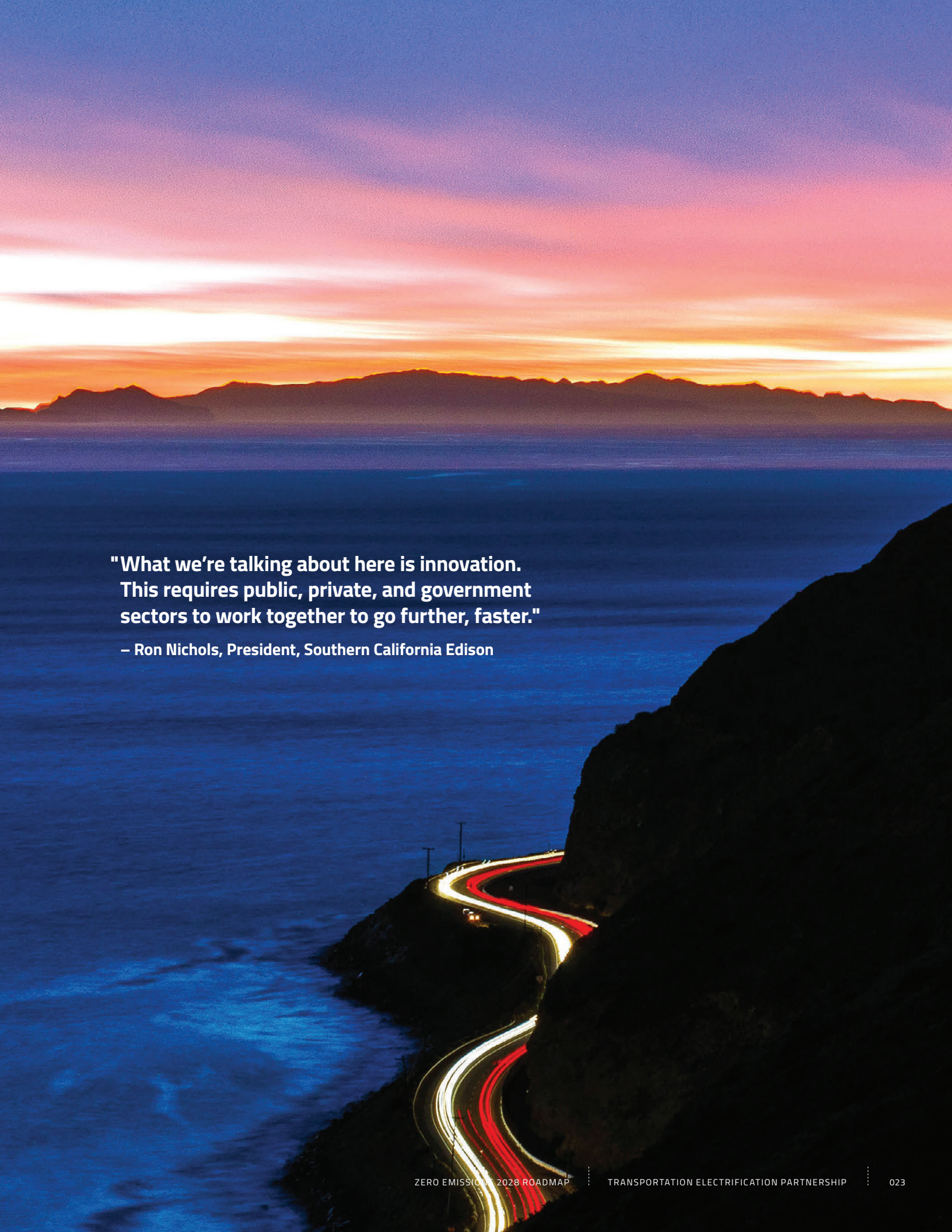
About LACI

The Los Angeles Cleantech Incubator (LACI) is a private non-profit organization creating an inclusive green economy by unlocking innovation, transforming markets, and enhancing communities. Founded as an economic development initiative by the LADWP, LACI is recognized as one of the most innovative business incubators in the world by UBI. In the past six years, LACI has helped 73 portfolio companies raise $184M in funding, $220M in revenue, create 1,700 jobs, and deliver more than $379M in long term economic value. In addition to the Transportation Electrification Partnership, LACI supports a number of transportation-related startups, hosts the California Climate Cup, and leads the development of an RFI for heavy-duty vehicles.



"What we're talking about here is innovation. This requires public, private, and government sectors to work together to go further, faster."

– Ron Nichols, President, Southern California Edison

"We believe it's important to lead in the effort to fight climate change and improve air quality in Southern California."

–Phillip A. Washington, CEO, LA Metro

"This partnership is a win across the board. Globally, locally, in environmental justice, reducing GHGs and air pollution, creating local jobs: It's exciting."

–David Wright, General Manager, LADWP

TRANSPORTATION ELECTRIFICATION PARTNERSHIP

www.laci.org/roadmap #ZE28Roadmap