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To: Supervisor Lindsey P. Horvath, Chair
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From: Michael Owh
Director

REPORT BACK ON A ZERO-EMISSION VEHICLE MASTER PLAN FOR LOS ANGELES COUNTY (ITEM NO. 4, AGENDA OF APRIL 23, 2024)

On April 23, 2024, the Board of Supervisors (Board) adopted A Zero-Emission Vehicle Master Plan for Los Angeles County Motion (Motion), directing the Internal Services Department (ISD), in collaboration with the Chief Sustainability Office, Department of Regional Planning, Department of Agricultural Commissioner/Weights and Measures, Department of Economic Opportunity, and Department of Public Works, to develop, within 180 days, a Zero-Emission Vehicle (ZEV) Master Plan. The ZEV Master Plan includes goals, strategies, and technical guidance to deliver on the County of Los Angeles' (County) zero-emission fleet goals, expand electric vehicle (EV) charger infrastructure throughout the County, promote ZEV ownership and enhance EV charger reliability.

Background:

The ZEV Master Plan is a comprehensive roadmap to guide the County's transition to a clean, equitable, and resilient transportation system. It emphasizes the promotion of EV ownership, enhancement of EV charger reliability, and expansion of EV charging infrastructure throughout the County in alignment with the County's sustainability and climate objectives. Additionally, it explores opportunities to strengthen the ZEV workforce pipeline to support the EV infrastructure buildout. The ZEV Master Plan provides actionable recommendations for a regional transition that prioritizes equity and resilience. It aims to address infrastructural, regulatory, and technological challenges associated with transportation electrification in the County.

ISD collaborated with the aforementioned departments to provide an overview of the current landscape and to determine capacity and resource needs for implementing the plan. The plan includes a summary of key findings from an earlier released ZEV Mobility Plan, which provides a framework for Fleet Transition, Employee Rideshare, and EV and Charging Community Outreach and Input. The Fleet Transition Plan was developed following State regulations and County goals, including (1) the Advanced Clean Fleets

(ACF) Regulation, which requires State and local government fleets to transition to medium- and heavy-duty (MDHD) ZEVs, and (2) the County's Sustainability Plan, which aims to achieve 100 percent fleet electrification by 2045. This includes a mandate from the Board that all new vehicle purchases be electric unless an exemption is requested, starting in 2024. The plan presents a practical strategy for achieving an all-electric future that satisfies the operational fleet requirements while adhering to the ACF compliance mandates and the County's transition goals.

The plan includes an evaluation of 8,000 vehicles across 35 departments. The transition strategy outlines EV replacement recommendations for departmental vehicles based on each department's specific operational needs, vehicle usage patterns, and the cost-effectiveness of EV alternatives. Approximately 6,300 vehicles have been recommended for replacement with electric vehicles, pending validation of operational impacts. Although the capital costs for electric vehicles are higher, the transition of the County's vehicle fleet is expected to generate cost savings through operational efficiency and environmental improvements, which can offset some of the differences in capital expenditure. The charging infrastructure implementation plan supports this transition, recommending the installation of more than 3,700 EV chargers across nearly 450 sites. The infrastructure recommendations are optimized for efficiency, resilience against power outages, and scalability to accommodate future fleet expansion.

Finally, the ZEV Master Plan includes recommendations across six key pillars:

1. Policies and Programs

- Update zoning codes to require EV charger installations in certain building retrofits.
- Enable curbside charging installations, especially in dense, underserved areas.
- Designate Zero-Emission Vehicle (ZEV) Zones near transit, commercial districts, and high-density housing.
- Promote multi-use charging hubs integrated with community services.
- Streamline permitting processes and improve information access, including upgrades to DPW's platform and checklists.

2. Workforce Development

- Expand apprenticeship and training programs for EVSE installation and maintenance (led by DEO).
- Consolidate workforce development resources into a central hub for trainees and employers.
- Partner regionally with IBEW, community colleges, and employers to match trained individuals with jobs.
- Monitor workforce pipeline metrics like enrollment, graduation, and job placement rates.

3. Regional EV Charger Deployment

- Track usage and performance of EV chargers, especially public-funded ones, using standardized metrics.
- Improve resilience of charging infrastructure via microgrids, renewable energy, and battery storage.
- Create a public dashboard to track ZEV adoption, infrastructure deployment, and fuel displacement.

4. Community Outreach and Engagement

- Raise awareness about EV incentives, costs, and benefits, especially in low-income and DACs.
- Showcase EV usage in County departments and public agencies.
- Facilitate communication between community members, businesses, and government.

5. Public-Private Partnerships

- Improve public procurement processes to enable faster EV charger deployments.
- Support innovative business models for EV infrastructure (e.g., Charging-as-a-Service).
- Standardize rate setting and revenue sharing to ensure affordable, transparent EV charging.

6. Internal Operations (Lead by Example)

- Transition over 6,300 County fleet vehicles to EVs.
- Install 3,700 fleet-dedicated chargers at 450 County sites.
- Encourage carsharing programs among employees.
- Establish internal department liaisons for ZEV implementation tracking.
- Secure long-term funding and staffing to meet electrification goals.

Cross-Cutting Implementation Needs

- Over $100 million in additional upfront costs for fleet electrification.
- $61–79 million for County fleet charging infrastructure.
- Ongoing staffing and resources for permitting, charger maintenance, and tracking systems.
- Annual progress reporting to the Board of Supervisors.

If you have any questions, please contact me at (323) 267-2101 or via email at MOwh@isd.lacounty.gov. Alternatively, your staff may contact Minh Le, Energy and Environmental Services General Manager, at (323) 267-2006 or via email at MSLe@isd.lacounty.gov.

MO:QH:ML:LI:ea

Attachment

c: Executive Office, Board of Supervisors
Chief Executive Office
Chief Sustainability Office
Regional Planning
Agricultural Commissioner/Weights and Measures
Economic Opportunity
Public Works

County of Los Angeles

Zero-Emission Vehicle Master Plan

Final Report
May 2025

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Glossary

Abbreviation	Definition
AB	Assembly Bill
AC	Alternating Current
ACF	Advanced Clean Fleets
ACWM	Agricultural Commissioner/Weights and Measures
ADA	American with Disabilities Act
AFDC	Alternative Fuels Data Center
AHJ	Authority Having Jurisdictions
ARCHES	Alliance for Alliance for Renewal Clean Hydrogen Energy Systems
BESS	Battery Energy Storage Systems
BIPOC	Black, Indigenous, and People of Color
BOS	Board of Supervisors
BSC	Building Standards Commission
BSL	Bureau of Street Lighting
CaaS	Charging-as-a-Service
CALGreen	California Green Building Standards Code
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CBC	California Building Code
CBO	Community-based Organization
CCC	California Conservation Corps
CCS	Combined Charging System
CEC	California Energy Commission
CEO	Chief Executive Office
CHAdeMO	Charge de Move
CSO	Chief Sustainability Office
CTEP	California Type Evaluation Program
DAC	Disadvantaged Communities
DCFC	Direct Current Fast Charging
DEO	Department of Economic Opportunity
DPR	Department of Regional Planning
DPW	Department of Public Works
DSA	Division of the State Architect
EV	Electric Vehicle
EVCS	Electric Vehicle Charging Station
EVITP	Electric Vehicle Infrastructure Training Program
EVSE	Electric Vehicle Supply Equipment
EVSP	Electric Vehicle Service Provider
GHG	Greenhouse Gas
GO-Biz	Governor's Office of Business and Economic Development
HD	Heavy-Duty
HRTP	High Road Training Partnerships

IBEW	International Brotherhood of Electrical Workers
ICCT	International Council of Clean Transportation
IRA	Inflation Reduction Act
ISD	Internal Services Department
ISM	Installation and Service and Maintenance
ISO	International Organization for Standardization
L1	Level 1
L2	Level 2
LA	Los Angeles
LACI	Los Angeles Cleantech Incubator
LADOT	Los Angeles Department of Transportation
LADWP	Los Angeles Department of Water and Power
LD	Light-Duty
MD	Medium-Duty
MTBF	Mean Time Between Failures
MTTR	Mean Time To Repair
NACS	North American Charging Standard
NEVI	National Electric Vehicle Infrastructure
OCPP	Open Charge Point Protocol
PPP	Public-Private Partnership
RAP	Registered Apprenticeship Program
RDO	Regular Day Off
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
TEP	Transportation Electrification Partnership
V2X	Vehicle-to-Everything
WCVI	William C. Velasquez Institute
ZEA	Zero-Emission Area
ZEV	Zero-Emission Vehicle

Executive Summary

The Zero-Emission Vehicle (ZEV) Master Plan is a comprehensive roadmap to guide County of Los Angeles' (LA County) transition to a clean, equitable, and resilient transportation system. This Master Plan aligns with the 2019 OurCounty Sustainability Plan, outlining a pathway towards achieving a fully zero-emission transportation system by 2045. It emphasizes the promotion of electric vehicle (EV) ownership, enhancement of EV charger reliability, and expansion of EV charging infrastructure throughout the County. Additionally, it explores opportunities to strengthen the ZEV workforce pipeline to support the EV infrastructure buildout. This ZEV Master Plan provides actionable recommendations for a regional transition that prioritizes equity and resilience. It aims to address infrastructural, regulatory, and technological challenges associated with transportation electrification in LA County. It prioritizes disadvantaged communities, resilient infrastructure, and robust monitoring to drive accountability.

Key Objectives of the ZEV Master Plan

- Promoting equitable access to EV ownership and infrastructure;
- Streamlining EVSE installation for faster network expansion;
- Addressing charger reliability issues and concerns, especially related to high downtime and inconsistent pricing;
- Modernize county internal fleet and operations
- Foster cross-sectoral public private partnerships; and
- Strengthening the regional ZEV workforce pipeline.

Current Landscape & Challenges

While EV ownership and deployment of EV chargers in LA County has been steadily growing, progress is hindered by several persistent issues:

- Insufficient infrastructure, especially in disadvantaged communities (DACs);
- Charger reliability concerns, with high downtime and inconsistent pricing;
- Regulatory hurdles, including fragmented permitting processing and outdated building codes, despite introduction of Assembly Bills (AB) 1236 and 970;
- Workforce shortages, particularly in EVSE installation and maintenance.

Strategies and Recommendations

The Plan addresses critical challenges—such as infrastructure gaps, permitting delays, high costs, and workforce shortages—while outlining targeted solutions across six key pillars, as summarized in **Figure 1**:

- Policies and Programs
- Workforce Development
- Regional EV Charger Deployment
- Community Outreach & Engagement
- Public-Private Partnerships
- Internal Operations (Lead by Example)

Several key actions recommended in the ZEV Master plan include:

- Overviewing the County's 10-year plan and ZEV Mobility Plan, including strategies for building out necessary staffing and implementing rate adjustments;
- Digitizing permitting process for charging infrastructure deployment;
- Revising zoning codes for building retrofits requiring EV chargers;
- Improving charger reliability by establishing robust data tracking and reporting protocols;
- Enhancing infrastructure resilience via microgrid integration and managed charging integration;
- Leveraging government funding, utility incentives, and public-private partnership (P3) opportunities;
- Raising awareness on funding opportunities and financial transparency for EV ownership;
- Building workforce capacity through specialized training, community college partnerships, and workforce transition incentives;
- Prioritizing infrastructure deployment in underserved areas and improving data sharing for charger location and access; and
- Transitioning over 6,300 fleet vehicles to EVs and installing 3,700 chargers dedicated to fleet vehicles.

Staffing and Resources

Implementing the ZEV Master Plan requires significant staffing and resources, which requires close collaboration between the leading department, involved parties, and the Board of Supervisors (BOS). The County must assess and prepare department-specific staffing and resource needs to ensure successful implementation of the plan. Key changes to staffing and fiscal resources outlined in the plan include:

- Fleet vehicle electrification would cost over **$100 million** more upfront than conventional vehicles;
- Despite long-term savings from fuel and maintenance, the total cost of owning and maintaining an EV fleet would still be nearly **$30 million** higher than that of the conventional County fleet.
- Deploying fleet dedicated charging infrastructure across 450 County sites will require **$61–79 million**;
- Each department should appoint a liaison responsible for reporting and monitoring the electrification and implementation progress;
- The establishment and continuous update of online dashboards and resource hubs for County charger deployment, ZEV deployment tracking, and workforce development will necessitate additional funding and staffing support; and
- Programs such as permitting, curbside charging, and County charger deployment and maintenance will require structured and phased organizational expansion.

As a regional leader, LA county is uniquely positioned to set a precedent in sustainable mobility. The Plan outlines how the County can modernize internal operations and champion widespread

EV adoption. By implementing these strategies, LA County will accelerate a cleaner, more resilient, and accessible transportation system, thereby reducing emissions and improving air quality for all residents.

Figure 1. Overview of ZEV Master Plan Recommendations by Pillar & OurCounty Goals

OurCounty Goals	Strategy Pillars	Recommendations
GOAL 2 Buildings & infrastructure that support human health & resilience.	**Policies and Programs**	• Update zoning codes for building retrofits • Enable curbside charging installations • Designate zero-emission vehicle zones • Promote multi-use charging hubs • Improve permitting platform & streamline information dissemination
GOAL 4 A prosperous LA County that provides opportunities for all residents and businesses and supports the transition to a green economy.	**Workforce Development**	• Improve existing training & apprenticeship programs • Build regional partnerships
GOAL 11 Inclusive, transparent, and accountable governance that encourages participation in sustainability efforts, especially by disempowered communities.	**Community Outreach & Engagement**	• Raise EV financial transparency and awareness of current regulations & incentive programs • Showcase EV model applications by County • Facilitate communication with community, government & business
GOAL 12 A commitment to realize OurCounty sustainability goals through creative, equitable, and coordinated funding and partnerships.	**Promote Public Private Partnership**	• Improve public procurement processes • Encourage new charging business models • Improve rate setting and revenue sharing procedures
GOAL 7 A fossil fuel-free LA County.	**Regional EV Charger Deployment**	• Implement usage & performance monitoring • Improve charging infrastructure resilience • Establish process & dashboard to track charger, fuel sales and EV adoption metrics in County
	Lead by Example	• Update fleet procurement and budget planning policies • Enhance current procedure for charger deployment, maintenance & operation • Encourage EV car sharing between employees

1 Introduction

As a leader in climate action, the County of Los Angeles (LA County) is making significant progress in advancing transportation electrification. Currently, the County has installed 1,561 electric vehicle (EV) charging ports spread across 121 different sites, demonstrating a strong commitment to sustainable mobility. Across the County, there are 493,700 light-duty (LD) zero-emission vehicles (ZEVs), of which 372,600 are battery-electric (BEVs) and 116,200 are plug-in hybrids (PHEVs) as of 2024. Many of these electric vehicles are new, with over 108,700 new BEVs sold in 2024. There are also approximately 60,536 public and shared private EV chargers across its territory, with around 29% being public chargers. Of this total, approximately 57,700 are Level 2 (L2) chargers and 2,800 are Direct Current Fast Chargers (DCFC).[1] By comparison, there are only 1,711 gasoline stations and 962 diesel stations across the County in 2023, though notably many of those stations sell both fuels. With the expansion of LD ZEV sales and infrastructure over the past decades, LA County has also seen a decline in gasoline sales in the last decade. Compared to the historical peak in 2017, gasoline sales across the County have decreased by approximately 18%, totaling 2.69 billion in 2023. Diesel sales remained stable across the County in the last decade, with a total of 256 million gallons sold in 2023.[2]

In 2019, LA County adopted the Los Angeles Countywide Sustainability Plan[3], which set ambitious targets for EV charger deployment: 60,000 chargers by 2025 and an additional 70,000 chargers by 2035. These targets align with the County's goal of achieving a fully zero-emissions fleet by 2045. As of April 2025, the County already met the 2025 goal with over 60,000 public and shared private chargers installed. To support these objectives, the project team, in collaboration with the LA County Internal Services Department (ISD), has developed the LA County Zero-Emission Vehicle (ZEV) Master Plan. This comprehensive strategy prioritizes the expansion of charging infrastructure, promoting EV ownership, and improvement of charger reliability, laying the groundwork for a cleaner, more equitable transportation future.

1.1 Motion for the ZEV Master Plan

On April 23, 2024, Supervisor Lindsey P. Horvath introduced a motion[4] directing the acceleration of the County's transition to clean transportation. The motion highlights the urgent need for ZEV adoption to reduce greenhouse gas (GHG) emissions, improve air quality, and protect public health, particularly in disadvantaged communities (DACs). It particularly mentions the unincorporated areas of LA County, where transportation represents the largest source of GHG emissions, approximately 2.7 million metric tons of carbon dioxide annually. It acknowledges that despite the County's existing efforts—such as the OurCounty Sustainability Plan, the Clean Fuel - Sustainable Fleet Policy, and the County's 2045 Climate Action Plan—significant gaps in charger deployment and reliability remain. Additionally, it mentions that the existing EV workforce is insufficient to support the rapid infrastructure expansion and maintenance required for a regional EV transition.

[1] California Energy Commission. "Electric Vehicle Chargers in California". https://www.energy.ca.gov/data-reports/energy-almanac/zero-emission-vehicle-and-infrastructure-statistics-collection/electric.
[2] California Energy Commission (CEC). "California Retail Fuel Outlet Annual Reporting (CEC-A15) Results". https://www.energy.ca.gov/data-reports/energy-almanac/transportation-energy/california-retail-fuel-outlet-annual-reporting (accessed December 24, 2024).
[3] OurCounty LA. "Los Angeles Countywide Sustainability Plan" (2019). https://ourCountyla.laCounty.gov/.
[4] Los Angeles County Supervisor Lindsey Horvath. "BOARD ADOPTS LA COUNTY'S FIRST ZERO-EMISSION VEHICLE MASTER PLAN" (April 23, 2024). https://lindseyhorvath.laCounty.gov/.

As such, the motion directs the LA County ISD, in collaboration with the Chief Sustainability Office (CSO), the Department of Regional Planning (DRP), Department of Agricultural Commissioner/Weights and Measures (ACWM), and the Department of Public Works (DPW), to develop the ZEV Master Plan to address critical infrastructure gaps, workforce shortages, and regulatory challenges while ensuring an equitable transition to clean transportation across the region. This plan aligns with current state and federal EV mandates, including California's requirement that all new passenger vehicle sales be ZEVs by 2035, as well as funding opportunities under the Inflation Reduction Act (IRA) and the National Electric Vehicle Infrastructure (NEVI) program.

1.2 Scope of the ZEV Master Plan

The ZEV Master Plan follows the ZEV Mobility Plan, which was previously developed by the project team to provide LA County with strategic direction for electrifying its vehicle fleet in alignment with the 2019 Sustainability Plan. The ZEV Mobility Plan included a comprehensive overview of the County's existing fleet and its operations, followed by a thorough evaluation of potential EV replacements and supporting infrastructure. The ZEV Mobility Plan provided concrete and actionable recommendations for vehicle replacements and charging infrastructure. The ZEV Master Plan goes beyond this effort to provide technical guidance and strategic direction for a regional ZEV expansion to a cleaner and more resilient transportation system in LA County. The plan includes six pillars for recommendations to the county: policies and programs, workforce development, regional EV charger deployment, community engagement, public private partnerships and how the county can lead by example. Each section addresses core components of the board motion, as indicated in **Table 1.** The ZEV Master Plan provides policy and program recommendations for relevant departments to consider in order to achieve the objectives and targets specified in the Board Motion. The implementation of many of these actions will necessitate additional dedicated staff and resources. Each department is responsible for identifying the required resources and coordinating with the Board to ensure further program implementation.

Table 1. Key Components of the LA County ZEV Master Plan and Corresponding Sections

Board Motion Description	Leading Department	Section
Data-based solutions for EV charger deployment, as well as the development of the dashboard to identify patterns in usage and types of users;	ISD	4 & 7
The 10-year deployment plan for Level 2 and Level 3/ DC fast chargers;	ISD	7 & Appendix
The training program, action plan, and resources needed to build internal capacity of existing County staff to support clean transportation planning and electric vehicle supply equipment (EVSE) installation and maintenance;	ISD	3 & Appendix
Partnership with local electric utility companies to identify strategies for EV infrastructure development;	ISD	4
A report from all relevant County departments to identify the barriers to implementing the Clean Fuel - Sustainable Fleet (Policy) and internal action plans to expand their zero-emission fleet and charging infrastructure;	All departments	7 & ZEV Mobility Plan

Board Motion Description	Leading Department	Section
Internal action plans from the Internal Services Department, Department of Public Works, LA County Sheriff's Department, and LA County Fire Department to accelerate zero-emission vehicle acquisitions including strategies to plan for and fund required charging infrastructure to ensure County departments can transition to zero-emissions vehicles while avoiding operational impacts;	DPW, Sheriff's Department, ISD and Fire Department	7 & ZEV Mobility Plan
Performance standards and equipment specifications, that are in line with state and federal legislative efforts, to ensure high reliability and recordkeeping of EV charging infrastructure installed for public- and privately-owned shared EV charging stations including infrastructure installed in LA County facilities;	ACWM, ISD	4
Recommendations on programs and code amendments that would expand EV charging zones in all appropriate areas in Los Angeles County such as for EV charging stations for new residential and non-residential developments that incorporates standards from the California Green Building Standards Code;	DPW, ISD	2
With the assistance from the Department of Public Works and the Governor's Office of Business and Economic Development (GO-Biz) ZEV, identify obstacles in the permitting of EV chargers in the County and contracted cities, and provide recommendations for improvements to the process, ensuring compliance with Assembly Bill (AB) 1236, AB 970, and AB 126;	DPW	2
A plan to partner with Los Angeles County Department of Economic Opportunity (DEO), California Conservation Corps (CCC), International Brotherhood of Electrical Workers (IBEW), Los Angeles Cleantech Incubator (LACI), GO-Biz, and other relevant organizations to identify and expand green job workforce training opportunities particularly for technicians to become Registered Service Agents to install EV chargers and to perform maintenance and repair services;	DEO, ISD	3
With the assistance of the DRP, a plan to track metrics on key ZEV adoption as identified in the 2045 Climate Action Plan, including: • The number of zero-emission vehicles registered and number of non-zero emissions vehicles registered in unincorporated LA County; • The total sales of gasoline and diesel fuel in unincorporated Los Angeles County • The total number of gas stations decommissioned in unincorporated LA County; • Specific tracking metrics for zero-emission infrastructure in unincorporated LA County;	DRP	2, 4, & Appendix
Partnership opportunities with private, government, and non-governmental entities to ensure best practices including, but not limited to, LACI and the public-private Transportation Electrification Partnership (TEP);	CSO, ISD	6
Strategies and a community outreach plan to ensure low-income communities have equitable access to infrastructure;	ISD	5 & ZEV Mobility Plan

Board Motion Description	Leading Department	Section
Targets for grant funding and strategies to finance EV purchases using IRA tax credits and other state and federal grants that are newly available to governments;	ISD, Fire, Sheriff, DPW	7 & ZEV Mobility Plan
Staffing or other resources needed to implement these strategies;	All departments	7
An annual update to the Board on the progress towards implementing all aspects of the ZEV Plan, including departments' progress in meeting their clean fleet goals.	All departments	5 & 7

2 Policies and Programs

2.1 Existing Conditions

2.1.1 Goals

The 2024 BOS motion direct the ZEV Master plan to provide include the following:

- Recommendations on programs and code amendments that would expand EV charging zones in all appropriate areas in Los Angeles County such as for EV charging stations for new residential and nonresidential developments that incorporate standards from the California Green Building Standards Code
- Identify obstacles in the permitting of EV chargers in the County and contracted cities, and provide recommendations for improvements to the process, ensuring compliance with AB 1236, AB 970, and AB 126.

The 2024 Climate Action Plan sets a variety of targets for EV adoption and ZEV infrastructure rollout, with four notable actions to help achieve those targets.

- Action T6.3, the Plan calls for the County to "require all new development to install EV charging stations (EVCS) through a condition of approval/ordinance. Residential development must install EVCSs; nonresidential development must install EVCSs at a percentage of total parking spaces."
- Action T8.2 then calls for the County to "create an ordinance requiring new goods movement facilities to install alternative fueling infrastructure."
- Action T8.3 calls for the County to "adopt Building Performance Standards for existing goods movement facilities and reach code requirements for major retrofits and renovations that require alternative

Strategy Pillar I – Policies & Programs

- ✓ **Recommendation i: Update Zoning Codes for Building Retrofits**
  - ✓ **Leading department:** DPW
  - ✓ **Implementation timeline:** Near-term
  - ✓ **Priority:** High
  - ✓ **Action a:** Require that certain types of building retrofits come with EV charger installations or be EV Ready.
- ✓ **Recommendation ii: Enable Curbside Charging Installations**
  - ✓ **Leading department:** DPW
  - ✓ **Implementation timeline:** Mid-term
  - ✓ **Priority:** Medium/High
  - ✓ **Action a:** Connect with other municipalities and charging providers to serve as a bridge to match certified technicians with job placements.
- ✓ **Recommendation iii: Designate Zero-Emission Vehicle Zones**
  - ✓ **Leading department:** DRP
  - ✓ **Implementation timeline:** Long-term
  - ✓ **Priority:** Medium
  - ✓ **Action a:** Identify certain regions in the County as focus regions for installation of ZEV infrastructure and increased usage of ZEVs.
- ✓ **Recommendation iv: Promote Multi-Use Charging Hubs**
  - ✓ **Leading department:** DRP
  - ✓ **Implementation timeline:** Long-term
  - ✓ **Priority:** Medium
  - ✓ **Action a:** Promote mixed-use developments that integrate EV charging stations with retail, dining, and community services to maximize utilization.
- ✓ **Recommendation v: Improve Permitting Platform & Information Dissemination**
  - ✓ **Leading department:** DPW
  - ✓ **Implementation timeline:** Near-term
  - ✓ **Priority:** High
  - ✓ **Action a:** Allocate funds for DPW to support improvement of permitting platform in alignment with recommendations from LACI.

fueling infrastructure for medium- and heavy-duty vehicles. Require goods movement facilities to install alternative fueling infrastructure for medium- and heavy-duty (MD/HD) vehicles at the point of sale."

- Action T8.4 directs the County to "Streamline permitting of ZEV charging and fueling infrastructure for MD/HD vehicles."

The 2019 Sustainability Plan directs the County under Action 31 to "adopt CALGreen Tier 1 green building standards and identify which Tier 2 standards could be adopted as code amendments". Action 91 further directs the County to "streamline permitting and construction of zero-emission vehicle infrastructure." The County has already made significant progress addressing these goals as outlined in section 2.1.2.

2.1.2 Current EVCS Codes and Ordinances

2.1.2.1 CALGreen EVCS Code

Principally, the County and regional municipalities are subject to building codes based on residential and commercial statuses. The California Green Building Standards Code, Part 11 of Title 24 of the California Code of Regulations (CALGreen), sets mandatory requirements to ensure that charging stations and infrastructure are provided statewide for new construction.[5] In CALGreen, the Building Standards Commission (BSC) has authority for most nonresidential occupancies and most recently amended EVCS code as of July 1, 2024. Of pertinence to EVCS code are the amendments to Section 5.106.5.3 of CALGreen, which provides two methods to comply with EVCS installation: default and power allocation methods. According to the 2024 Supplement Update Guide to CALGreen-Nonresidential, the BSC expanded compliance methods, tabulated in and Table 3, with the following code[6]:

- Amended Section 5.106.5.3 EV charging to clarify that compliance with EV charging regulations can be achieved using the requirements in Section 5.106.5.3.1 EV capable, Section 5.106.5.3.2 EVCS and associated Table 5.106.5.3.1 (Table 2), or Section 5.106.5.3.6 EVCS-Power allocation method and associated Table 5.106.5.3.6 (Table 3)
- Amended Section 5.106.5.3.2 to allow the use of one DCFC to be substituted for five L2 EVSEs. Currently one DCFC is allowed to be substituted for five EV capable spaces without EVSE. BSC added a new code Section 5.106.5.3.2.1 to allow for DCFCs to be substituted on a 1-to-5 ratio for both EV capable spaces (already allowed) or independently L2 EVSEs. Additional changes include adding a new code Section 5.106.5.3.2.2 to allow the use of Low Power L2[7] receptacles to be substituted for EV capable spaces without EVSE. The specific amendment allows for two Low Power L2 charging receptacles to be permitted to reduce the minimum number of required EV capable spaces without EVSE by one.

[5] California Department of General Services. "CALCode Quarterly Spring 2024" (2024). https://www.dgs.ca.gov/BSC/News/Page-Content/CALCode-Quarterly-Newsletters-Archive/CALCode-Quarterly-Spring-2024?search=ev%20nonresidential.
[6] California Building Standards Commission. "SUPPLEMENT UPDATE GUIDE To the 2022 California Green Building Standards Code (CALGreen)-Nonresidential (2024)". https://www.dgs.ca.gov/-/media/Divisions/BSC/05-Resources/CALGreen/2022-CALGreen-Supplement-Guide-07-01-24---Final.pdf.
[7] L2 EVSE below 6.6 kVA.

Table 2. BSC EV Capable Space and EVCS Requirements for New Nonresidential Construction (Default)

Total Number of Actual Parking Spaces	Number of Required EV Capable Spaces	Number of EVCS (EV Capable Spaces Provided with EVSE)[b & c]
0-9	0	0
10-25	4	0
26-50	8	2
51-75	13	3
51-75	13	3
76-100	17	4
101-150	25	6
201 and over	20% of actual parking spaces[a]	25% of EV capable spaces[a]

a) Calculation for spaces shall be rounded up to the nearest whole number.
b) The number of required EVCS (EV capable spaces provided with EVSE) in the third column count toward the total number of required EV capable spaces shown in the second column.
c) At least one L2 EVSE shall be provided.

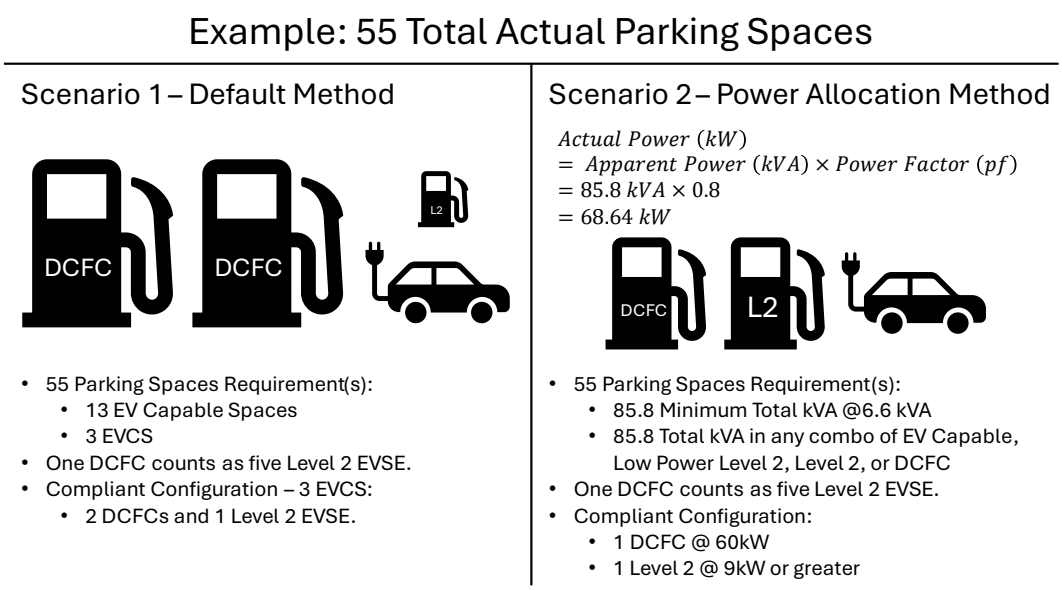
Table 3. BSC EV Capable Space and EVCS Requirements for New Nonresidential Construction (Power Allocation Method)

Total Number of Actual Parking Spaces	Minimum Total kVA @ 6.6kVA	Total kVA Required in any Combination of EV Capable[c,d], Low Power L2, L2[a,b], or DCFC
0-9	0	0
10-25	26.4	26.4
26-50	52.8	52.8
51-75	85.8	85.8
51-75	112.2	112.2
76-100	165	165
101-150	231	231
201 and over	20% of actual parking spaces X 6.6	Total required kVA = P X 0.20 X 6.6 Where P=Parking spaces in facility

a) L2 EVSE @ 6.6 kVA minimum.
b) At least one L2 EVSE shall be provided.
c) Maximum allowed kVA to be utilized for EV capable spaces is 75%.
d) If EV capable spaces are utilized, they shall meet the requirements of Section 5.106.5.3.1 (**Error! Reference source not found.**) E V capable spaces.

The default and power allocation compliance methods, described by Table 2 and Table 3, respectively, are meant to be used interchangeably. Per the BSC, this proposed alternative was crafted using the required power allocation in amps for the EV capable spaces from Table 5.106.5.3.1 (Table 2) so the two tables are meant to be equals; using either compliance method would achieve the same amount of power allotment. Figure 2 provides an example of compliant EVCS counts based on the default and power allotment methods for reference. It assumes a scenario where a site will have a total of 55 total actual parking spaces. Based on Table 2, there must be capacity for 13 EV capable spaces with three of those spaces equipped with EVSE. The net result is ten EV capable spaces and three EVSEs (which can be either L2 or DCFC). It should be noted that there are other possible combinations for compliance based on requirements from **Table 2** and **Table 3**.

Figure 2. Example of EVCS Compliance for 55 Total Actual Parking Spaces



2.1.2.2 Permit Streamlining

The state of California has successfully implemented policies to accelerate the adoption of EVs and installation of EVCS in the last thirty years. However, the segmented building code and permitting environment can be challenging for new projects to break through. To this end, the state legislature wrote AB 1236 (2015)[8] and AB 970 (2021)[9] to reduce permitting process bottlenecks. AB 1236 and AB 970, codified in Government Code Sections 65850.7 and 65850.71, require cities and counties to adopt streamlined permitting procedures for EVCS, including a streamlining ordinance and checklist. Effectively, this requires Authority Having Jurisdictions (AHJs), like cities and counties, to make it simpler and faster for building owners and contractors to implement EVCS projects. To facilitate this effort, GO-Biz created the Permitting EVCS Scorecard (**Table 4**), a list of seven attributes that every city and County must achieve to be compliant with the ordinances. The streamlining status of each AHJ is also publicly available on the EVCS Streamlining Map[10], which uses a three-tier EVCS permit readiness score to reflect how far along AHJs are towards compliance to the ordinance timeline.

According to the EVCS Streamlining Map, most cities within the County boundaries have a permit readiness score of Yellow or Green, which means that streamlining is in progress or complete, respectively. Larger unincorporated areas, such as East Los Angeles, Castaic, and Azusa, are also progressing towards Yellow and Green permit readiness scores; parts of southern Los Angeles, such as South Gate, Torrance, and Ranchos Palos Verdes, still have Red permit readiness scores, meaning that none of the scoring criteria in **Table 4** have been achieved. The County is well into its permit streamlining, publishing its relevant building code and EVCS

[8] AB-1236, Chiu. Local ordinances: electric vehicle charging stations (2015-2016). https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201520160AB1236
[9] AB-970 Planning and zoning: electric vehicle charging stations: permit application: approval (2021-2022). https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202120220AB970.
[10] California Business and Economic Development. https://california.maps.arcgis.com/apps/webappviewer/index.html?id=5b34002aaffa4ac08b84d24016bf04ce.

permitting checklist online.[11] In compliance with Scoring Criteria 2, the County's EVCS Supplemental Plan Review Checklist[12] features a comprehensive permitting checklist considerate of the major phases for an EVCS installation project. A summary of the major facilitators for EVCS deployment is shown in **Figure 4**, emphasizing the specific electrical standards and coordination between owner, contractor, and inspectors. The complete permitting checklist delineates some key points about EVCS permitting requirements, namely the current rating: electrical equipment rated for less than 400 amperes does not require an electrical plan check, and a permit for that specific installation may be obtained over the counter at a local Building and Safety District Office. The complete checklist also makes direct references to rated voltage power supply, breakers, and dimensional configurations of equipment and parking space.

Table 4. Permitting Electric Vehicle Charging Stations Scorecard

Scoring Criteria:	Complete if:
1. Streamlining Ordinance **Ordinance creating an expedited, streamlined permitting process for EVCS including L2 and DCFC has been adopted.**	Streamlining ordinance has been adopted
2. Permitting checklists covering L2 and DCFC **Checklist of all requirements needed for expedited review posted on city or County website.**	Permitting checklist is available and easily found on city or County website
3. Administrative approval of EVCS **EVCS projects that meet expedited checklist are administratively approved through building or similar non-discretionary permit.**	The streamlining ordinance states that permit applications that meet checklist requirements will be approved through non-discretionary permits (or similar)
4. Approval limited to health and safety **EVCS project review limited to health and safety requirements found under local, state, and federal law.**	The streamlining ordinance states that no discretionary use permit is required, and permit approval will be limited to health and safety review
5. Electronic signatures accepted **AHJ accepts electronic signatures on permit applications.**	Electronic signatures accepted on City or County website (usually specified in the ordinance)
6. EVCS not subject to association approval **EVCS permit approval not subject to approval of an association (as defined in Section 4080 of the Civil Code).**	The streamlining ordinance states that EVCS permits do not require association approval
7. One complete deficiency notice **AHJ commits to issuing one complete written correction notice detailing all deficiencies in an incomplete application and any additional information needed to be eligible for expedited permit issuance.**	The streamlining ordinance dictates that a written correction notice must detail all deficiencies

[11] Public Works Los Angeles County. Publications. https://dpw.laCounty.gov/bsd/content/publications.aspx .

[12] Public Works Los Angeles County. "Article 85: Electric Vehicle Charging Stations". https://dpw.laCounty.gov/bsd/lib/fp/Electrical/Article%2085%20-%20Electric%20Vehicle%20Charging%20Station%20and%20Checklist.pdf.

Figure 3. CA EVCS Permit Streamlining Map

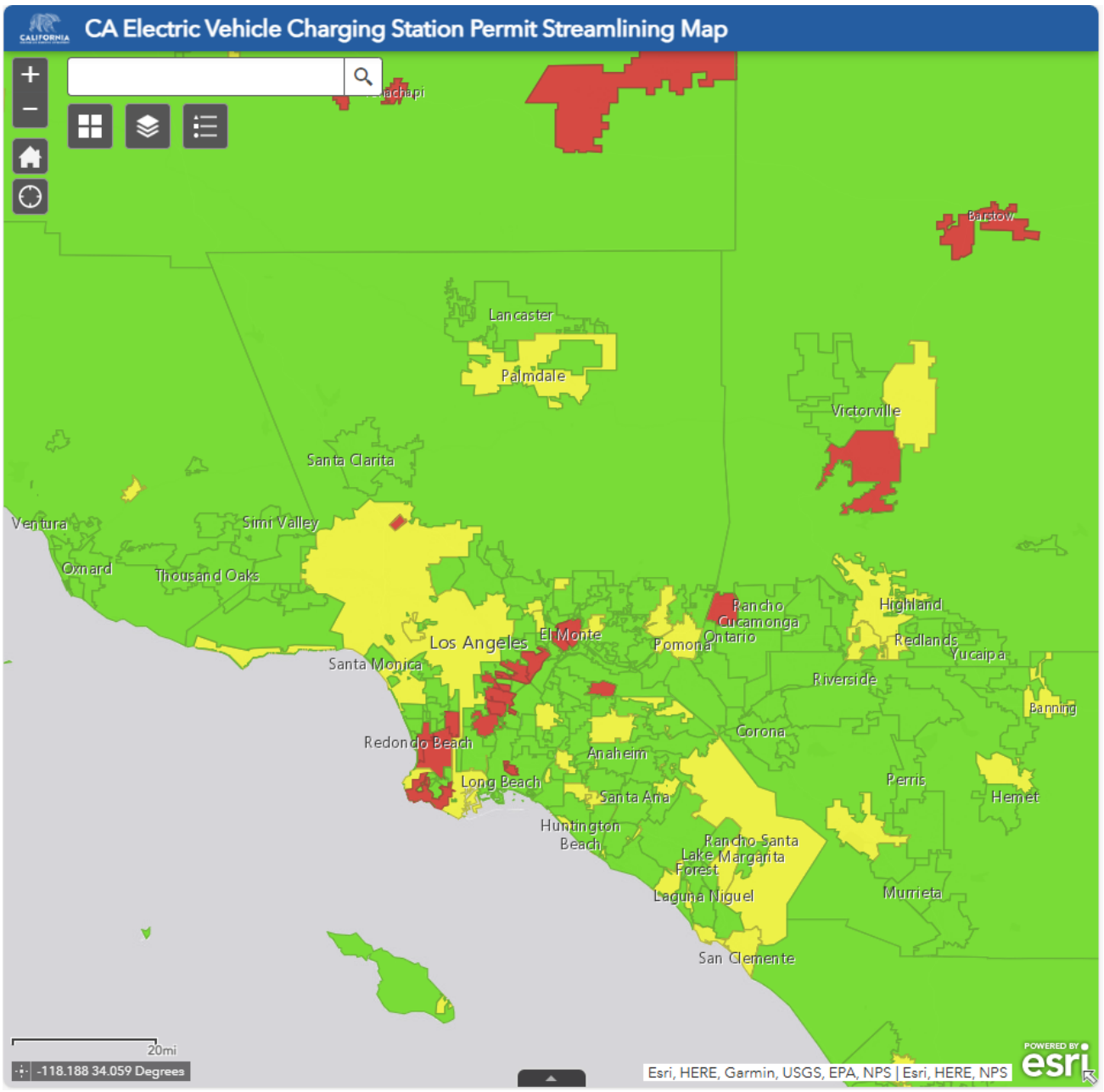
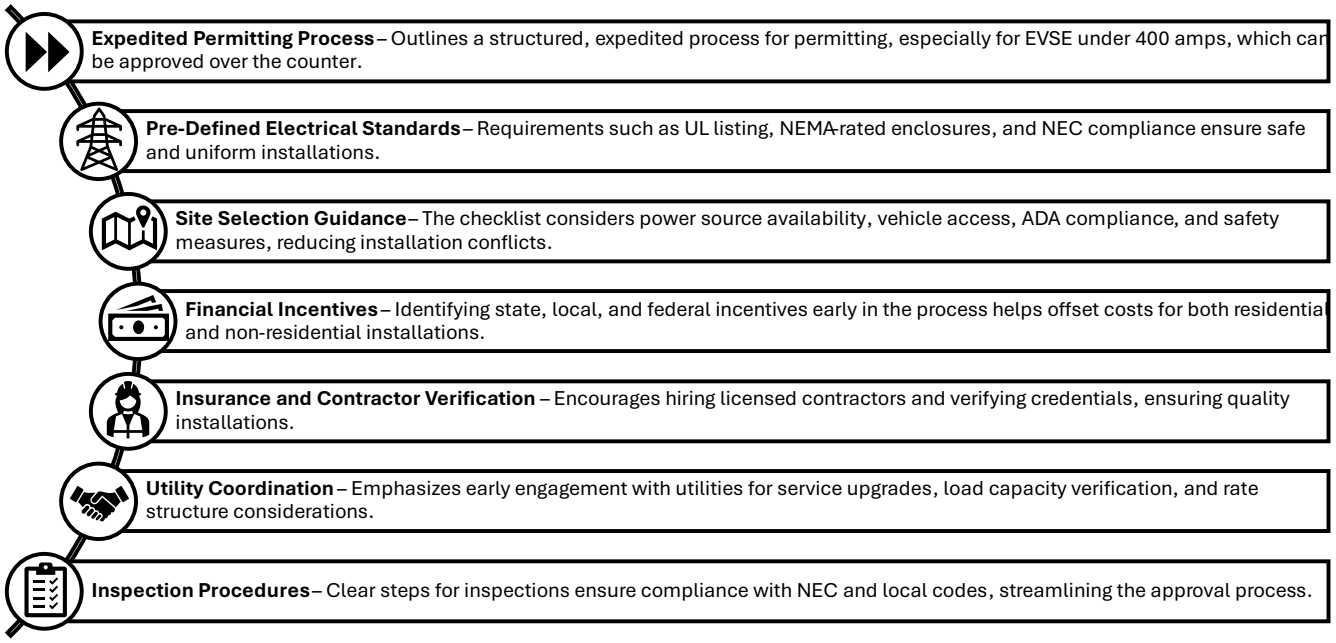


Figure 4. Summary of LA County DPW Article 85 – Facilitators to EVCS Deployment through Permitting



2.1.2.3 Accessibility Requirements

A core tenet of the EVCS deployment strategy is the physical location where the EVCS equipment can be sited. Although Article 85 provides guidelines to optimize site selection, existing physical conditions can put a pause on new developments. Especially in the context of existing parking garages and surface lots, ensuring compliance with the Americans with Disabilities Act (ADA) requirements is crucial, as charging stations must not obstruct accessible pathways or create tripping hazards.

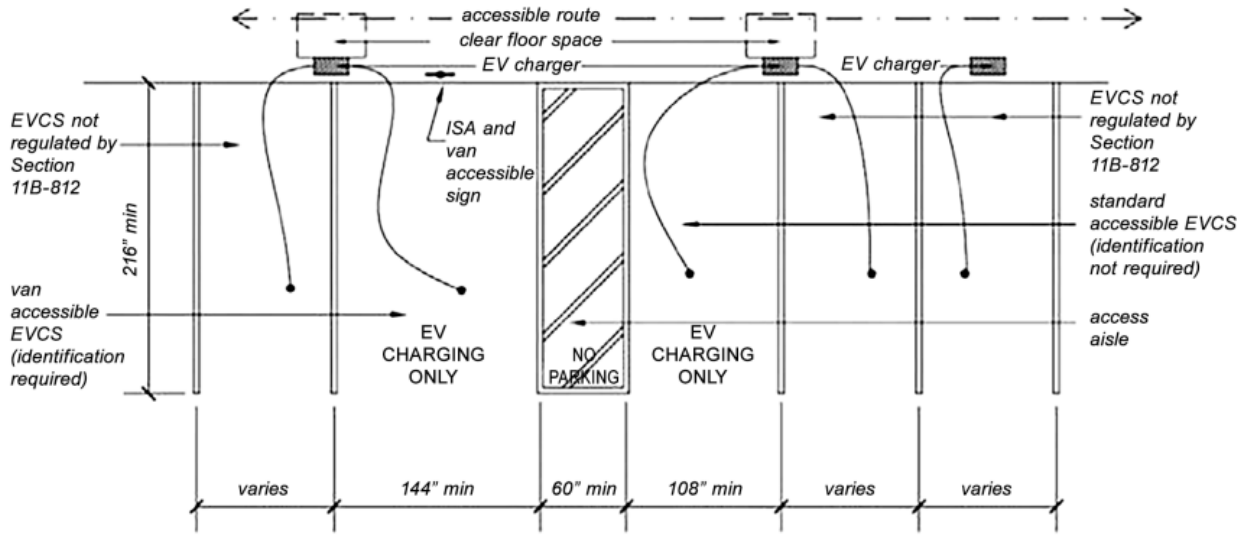
At a high level, the federal ADA requires incorporating accessibility to plug-in EV chargers. EV charger accessibility at public housing, public accommodations, commercial facilities, and public buildings are found in the current edition of the California Building Code (CBC, Title 24, Part 2). Accessibility refers to spaces that are sized such that the space must be 18 feet minimum in length, marked with letters that read "EV CHARGING ONLY", and have at least 98 inches of vertical clearance. The width of the accessible parking space, and whether a space should have an access aisle, is dependent on the type of vehicle expected, as shown in Table 5. A sample layout where two accessible EV parking spaces are required for five charging ports is illustrated in **Figure 5**.

Table 5. Requirements for Accessible Parking Spaces by Type

	Van Accessible	Standard Accessible	Ambulatory	Drive-up
Purpose	Wider charging space with adjacent access aisle to accommodate van with ramp or lift	Charging space with adjacent access aisle	Slightly wider charging space	Similar to a gas station - drive in and drive out, moving forward. Per definition in

	Van Accessible	Standard Accessible	Ambulatory	Drive-up
				CBC Chapter 2, use is limited to 30 minutes maximum.
Width	12 feet (144 inches)	9 feet (108 inches)	10 feet (120 inches)	17 feet (204 inches)
Access Aisle	Yes, on passenger side (can be on either side of non-angled spaces when four or fewer total charging station facilities are provided), making required	Yes, on either side, marking required	No	No
Identify with an ISA sign?	When 5-25 charging stations, identify one; when 26+, identify all van accessible spaces	When 26+ charging stations, identify all standard accessible spaces	No	No

Figure 5. Sample EVCS Layout - Van and Standard Access



Broadly speaking, the EV Ready and ADA compliant space requirements discussed here are in reference to newly constructed residential and non-residential spaces. For existing buildings or parking facilities, the technical provisions present in CBC Chapter 11B offer the following on compliance and exemptions[13]:

5.106.5.4 Additions or alterations to existing buildings or parking facilities

[13] California Building Standards Commission. "SUPPLEMENT UPDATE GUIDE To the 2022 California Green Building Standards Code (CALGreen)-Nonresidential", Section 5.106.5.4 (2024). https://codes.iccsafe.org/content/CAGBC2022P3/chapter-5-nonresidential-mandatory-measures#CAGBC2022P3_Ch05_SubCh5.1_Sec5.106.5.4

Existing buildings or parking facilities being modified by one of the following shall comply with Section 1.106.5.4.1 or 5.106.5.4.2. When EVSE is installed, accessible EVCS shall be provided in accordance with the California Building Code, Chapter 11B, Section 11B-228.3.

1. When the scope of construction work includes an increase in power supply to an electric service panel as part of a parking facility or alteration.
2. When a new photovoltaic system is installed covering existing parking spaces.
3. When additions or alterations to existing buildings are triggered pursuant to code Section 301.3 and the scope of work includes an increase in power supply to an electric service panel.

Exceptions:

1. On a case-by-case basis where the local enforcing agency has determined compliance with this section is not feasible based upon one of the following conditions:
    a. Where there is no local utility power supply.
    b. Where the local utility is unable to supply adequate power.
    c. Where there is evidence suitable to the local enforcement agency substantiating that additional local utility infrastructure design requirements, directly related to the implementation of Section 5.106.5.3, may adversely impact the construction cost of the project.
    d. Where demonstrated as impracticable excluding local utility service or utility infrastructure issues.
2. Remote parking facilities that do not have access to the building service panel.
3. Parking area lighting upgrades where no trenching is part of the scope of work.
4. Emergency repairs, including but not limited to water line break in parking facilities, natural disaster repairs, etc.

It should be noted that under Sections 5.106.5.4.1[14] and 5.106.5.4.2[15], which concern EVCS requirements for existing buildings or parking areas without previously installed EV capable infrastructure and with previously installed EV capable infrastructure (respectively), facilities that undergo an addition or alteration listed in Section 5.106.5.4, construction shall be consistent with Table 5.106.5.3.1 (Table 2) Table 5.106.5.3.6 (Table 3).

In other words, existing facilities or buildings, regardless of what amount of EV capable infrastructure is present, may require the construction of additional EV ready spaces, some of which may be required to be ADA accessible pending public- or private-access and if the facility is residential or non-residential. The Division of the State Architect (DSA) further comments on EVCS requirements (consistent with CBC Chapter 11B), raising that at least two exceptions existing to providing accessible EVCS. One exception is if 1) EVCS not available to the general public and intended for use by a designated vehicle or driver, and 2) in public housing

[14] California Building Standards Commission. "SUPPLEMENT UPDATE GUIDE To the 2022 California Green Building Standards Code (CALGreen)-Nonresidential", Section 5.106.5.4.1 (2024). https://codes.iccsafe.org/content/CAGBC2022P3/chapter-5-nonresidential-mandatory-measures#CAGBC2022P3_Ch05_SubCh5.1_Sec5.106.5.4.1

[15] California Building Standards Commission. "SUPPLEMENT UPDATE GUIDE To the 2022 California Green Building Standards Code (CALGreen)-Nonresidential", Section 5.106.5.4.2 (2024). https://codes.iccsafe.org/content/CAGBC2022P3/chapter-5-nonresidential-mandatory-measures#CAGBC2022P3_Ch05_SubCh5.1_Sec5.106.5.4.2

facilities, EVCS intended for use by an EV owner or operator at their residence.[16] Otherwise, any construction at existing facilities consistent with Section 5.106.5.4 must also provide an accessible route to the EVCS, be it an entrance to the building or facility.

2.2 Recommendations

Update Zoning Codes for Building Retrofits	Enable Curbside Charging Installations	Designate Zero-Emission Vehicle Zones	Promote Multi-Use Charging Hubs	Improve Permitting Platform

2.2.1 Update Zoning Codes for Building Retrofits - DPW

Require that certain types of building retrofits (over a certain cost threshold or over a certain area of lot size) come with EV charger installations or be EV Ready.

Acknowledging that the County oversees a broad region with many different zoning types and varying electrification feasibility statuses, it may be most effective to consider revisions to zoning and land use regulations related to EV charging infrastructure, especially for existing conditions. The 2024 Supplement Guide to CALGreen raises the following amendments:

- Amended Section 5.106.5.4.1: Existing buildings or parking areas without previously installed EV capable infrastructure [A]. When such facilities undergo additions or alterations as defined in Section 5.106.5.4—for example, expansion, major renovations, or reconfiguration—they must incorporate EVSE into the scope of construction.

  Specifically, the required EV infrastructure must comply with one of the following, based on the nature and number of parking spaces being added or altered:

  - Section 5.106.5.3 and Table 5.106.5.3.1 (Table 2) – which outlines minimum requirements for EV-capable, EV-ready, and EV-supply equipment (EVSE)-installed spaces based on total parking capacity.
  - Section 5.106.5.3.6 and Table 5.106.5.3.6 (Table 3) – which provides alternative compliance pathways, including tiered requirements and phased implementation strategies for certain project types or jurisdictions.

  This amendment ensures that as existing facilities are upgraded, they contribute to the growing EV infrastructure network in alignment with broader sustainability goals and regulatory mandates such as those in the CALGreen.
- Amended 5.106.5.4.2: Existing buildings or parking areas with previously installed EV capable infrastructure [A]. This amendment applies to existing buildings or parking areas that already have EV-capable infrastructure in place. When such facilities undergo additions or alterations as specified in Section 5.106.5.4—including expansions, reconfigurations, or significant renovations—electric vehicle (EV) charging infrastructure must be upgraded or extended to meet current requirements.

[16] California Department of General Services, Accessibility Regulations for Public Buildings, Public Accommodations, Commercial Facilities, and Public Housing (2020). https://scag.ca.gov/sites/default/files/old/file-attachments/tt031020_californiaevcsaccessibilityregulations.pdf?1605821849=

Construction must comply with one of the following provisions, depending on the project scope:

- Section 5.106.5.3 and Table 5.106.5.3.1 (Table 2) – establishing minimum requirements for the number and type of EV spaces based on total parking spaces.
- Section 5.106.5.3.6 and Table 5.106.5.3.6 (Table 3) – offering an alternative compliance path for jurisdictions or projects adopting Tier 1 or Tier 2 voluntary measures under CALGreen.

Existing EV-capable infrastructure, including previously allocated electrical capacity and installed conduit or raceway, must be leveraged to meet these updated requirements. If the number of altered or added parking spaces exceeds the capacity of the existing infrastructure, additional EV charging capability—including EVSE-ready wiring and electrical load allocation—must be provided to ensure full compliance with the applicable standards. This amendment supports continued expansion of EV charging access while encouraging the efficient reuse of existing infrastructure, in alignment with the CALGreen and local sustainability goals.

Although setting potential facility and building retrofits to the same standards as new construction contributes towards meeting new EV charging station goals, it is possible that projects in existing buildings or parking areas would require assistance to assure compliance with space requirements set by both BSC and ADA. Different areas may fulfill capacity or space requirements but may have gaps in other requirements that require the abandonment of potential renovation projects. This is where innovation or repurposing could continue to be utilized to increase the number of EVCS regionally, such as expansion upon the curbside programs.

2.2.2 Enable Curbside Charging Installations - DPW

Develop policies that allow curbside charging installations in urban areas to serve residents without dedicated parking. May require changes to LA County Department of Public Works (DPW) street lighting guidelines.

The Los Angeles streetlight charging program has installed approximately 700 chargers to date at locations throughout the central and western parts of the City of Los Angeles. The strategy the City has utilized to date has focused on siting EVCS with the fewest competing curb uses and most electrical capacity. The success of this program suggests that **cities with municipal electric utilities have the potential to scale streetlight charging, which offers relatively low-cost and low-complexity installations at the curbside**. These also help address the ADA vertical clearance requirements for EVCS and have the potential to be deployed in underserved neighborhoods that conventionally have just street parking.

The expansion of streetlight, curbside, and multi-unit dwelling charger programs, such as the streetlight charging program administered by the Bureau Street Lighting (BSL), the Los Angeles Department of Water and Power (LADWP), and Los Angeles Department of Transportation (LADOT) partnership can continue to provide a vector for rapid installations of public L2 chargers. It is reasonable to assume that as feedback from community surveys and EVCS accessibility maps improve that other underserved neighborhoods and key destinations will be served by such charger programs.

2.2.3 Designate Zero-Emission Vehicle Zones– DRP

Identify certain regions in the County as focus regions for installation of ZEV infrastructure and increased usage of ZEVs to advance goals around environmental justice and reduce existing pollution burdens - particularly near transit corridors, commercial districts, and high-density residential zones.

"Zero-emission areas", or ZEAs, are very localized implementations of transportation and EVCS planning such that the net impacts of reduced vehicle miles traveled and fossil fuel use yield mobility and environmental benefits for small areas, like neighborhoods. The International Council of Clean Transportation (ICCT) conducted an analysis of ZEAs and found that four neighborhoods within Los Angeles are ideal candidates for becoming the first ZEAs in the United States.17 We recommend that the County focus particular attention on a select range of ZEV zones in the development of ZEV purchases, incentives and in charger installation. Particular areas of focus shall be areas with existing pollution burdens, such as those near transit corridors, commercial districts, and high-density residential zones.

2.2.4 Promote Multi-Use Charging Hubs – DRP

Promote mixed-use developments that integrate EV charging stations with retail, dining, and community services to maximize utilization.

Other AHJs, like the City of San Diego, are considering repurposing existing gasoline or diesel fueling infrastructure and transforming them into multiservice hubs with EV chargers. The City of San Diego has been exploring development of multiservice hubs by identifying constraints tied to conventional vehicles not applicable to ZEVs (e.g., air quality and noise pollution) and that could obstruct ZEV infrastructure expansion. Where installation of EVCS is infeasible directly at a conventional fueling site, the City of San Diego will target public charger installations along major transportation corridors. The County has made its own progress with multiservice hubs, having installed over 1,300 chargers.[18] Continuing to make the case to the state government that zoning and land use regulations must adapt to keep pace with electrification trends will ensure that current efforts can expand access to EV chargers. Several charging networks have already started integrating large-scale charging services at shopping centers[19] and LA County could encourage similar regional collaborations and public-private partnerships (P3s).

[17] The International Council on Clean Transportation. "Los Angeles Electric Vehicle Charging Infrastructure Needs and Implications for Zero-Emission Area Planning" (2021). https://theicct.org/wp-content/uploads/2021/06/LA-charging-infra-feb2021.pdf.
[18] County of Los Angeles Internal Services Department. "2023 Annual Report: Clean Transportation and Energy Programs" (2023). https://isd.laCounty.gov/wp-content/uploads/2025/02/2023-Annual-Report-v4.pdf.
[19] Electrify America, a leader in electric vehicle (EV) charging solutions, is proud to announce the opening of its latest large format charging station; at Simon's Fashion Valley in San Diego, California, featuring 20 Hyper-Fast chargers - capable of speeds up to 350 kilowatts (kW) (2024). https://media.electrifyamerica.com/view/releases/253

2.2.5 Improve Permitting Platform & Streamline Information Dissemination – DPW, BOS

Allocate funds for DPW to support improvement of permitting platform in alignment with recommendations from LACI.

- **Improvement of Platform and Website:** The consensus among users is that DPW's current platform and website could be improved. There is a need for a dedicated platform that is user-friendly and streamlined, allowing for smoother interactions between contractors, inspectors, and the department. The website should serve as a comprehensive and easily navigable portal, providing clear information to both contractors and inspectors.
    - The website should clarify project type and permits needed. Applications for EVSE permits often require more than one type of permit or could go through various pathways to get permitting approval. Currently, the DPW website lists all permits that are offered by the department. However, it does not clarify the types of projects for which each type of permit is issued. Clarity around which applications are necessary, estimations of processing times, and other important information should be included upfront.
    - The website should provide information about applicable charger incentives. It should include resources for rebates, utility programs and grants which users can apply for to save money on EVSE installations.
    - The website should include a checklist for EVSE requirements that is easier to navigate. Various other locations have simple-to-follow EVSE checklists that make it much easier to understand what is needed in order to apply for a permit. DPW should refine its checklist to be easier to navigate.
- **Streamlined Information Dissemination:** The need for information extends beyond just contractors; inspectors also require clear guidelines and updates. DPW should ensure that information dissemination is not one-sided. Regular updates and guidelines on how inspections are being conducted and guidelines for approval should be provided to inspectors and applicants alike, enabling them to perform their roles more effectively and align with the department's expectations.
- **Consistency in Permit Pathways:** Users reported instances of confusion and changing requirements for permit pathways. DPW should strive for consistency in its communication and decision-making. Clear criteria should be established to determine whether a project falls under a simple permitting or complex permitting pathway. Express permits can typically be issued where work does not require any type of plan review or approval, this allows for faster installation of EVSE. Avoiding abrupt changes in the application pathway will minimize disruptions and delays.

3 Workforce Development

3.1 Existing Conditions

3.1.1 Goals

The 2019 County Sustainability Plan identified a goal to "provide opportunities for all residents and businesses and supports the transition to a green economy". This came with targets for job placements from County workforce development programs, including the following:

- 30,000 job placements in 2025
- 100,000 job placements by 2035
- 200,000 job placements by 2045

These goals pertain to jobs related to ZEVs including manufacturing, vehicle design and installation and maintenance of EV charging stations, as well as many other sectors of the green economy.

The 2024 Climate Action Plan further expanded upon this goal with an equity strategy focused on achieving a "Just Transition" to clean energy. This is further elaborated upon in the County's Just Transition Strategy report[20], with strategies related to working with existing training institutions and programs to connect dislocated oil extraction workers to jobs with high parity in pay and skill alignment such as transportation electrification.

Strategy Pillar II – Workforce Development

- ✓ **Recommendation i: Training and Apprenticeship Programs**
  - ✓ **Leading department:** DEO
  - ✓ **Implementation timeline:** Near-team
  - ✓ **Priority:** High
  - ✓ **Action a:** Monitor development, recruitment, enrollment, graduation rates of programs which educate the next generation of installers, maintenance workers and EV mechanics through education and workplace programs
  - ✓ **Action b:** Consolidate current training opportunities and available programs into a centralized hub for regional workers and employers; incorporating trainee personal stories could provide personal testimonials for these programs.
- ✓ **Recommendation ii: Regional Partnership**
  - ✓ **Leading department:** DEO
  - ✓ **Implementation timeline:** Near/Mid-team
  - ✓ **Priority:** Medium
  - ✓ **Action a:** Connect with IBEW, other municipalities and charging providers to serve as a bridge to match certified technicians with job placements.
  - ✓ **Action b:** Serve to centralize the hiring information and job openings from the local charging companies, to help enable hiring for trainees.

The 2024 BOS motion included a mandate for the ZEV Master Plan to include "a plan to partner with LA County DEO, CCC, IBEW, LACI, GO-Biz, and other relevant organizations to identify and expand green job workforce training opportunities particularly for technicians to become Registered Service Agents to install EV chargers and to perform maintenance and repair services."

[20] LA County-City Just Transition Task Force. "Los Angeles Just Transition Strategy" (2022). https://preview-assets-us-01.kc-usercontent.com/0234f496-d2b7-00b6-17a4-b43e949b70a2/d2ade00b-66cc-4da1-8a01-7f9d72ee7b5d/LA%20County-City%20Just%20Transition%20Strategy_FINAL%2012.5.22.pdf

3.1.2 Existing Workforce Development Programs

LA County is committed to greening all industries and investing in emerging green industries, such as clean tech and zero-emission transportation that drive economic and climate resiliency.

Among community colleges in LA County, LA Trade Tech, LA Southwest, Long Beach City, Pasadena, Cerritos, and Rio Hondo have the greatest concentration of ZEV training programs and would likely be partners for workforce development activities. Over the past year, DEO has partnered with ISD and Cerritos College to implement the IDEAL ZEV Workforce Pilot—an initiative funded by the California Energy Commission (CEC).[21] This program has successfully trained 128 individuals in EVSE installation, maintenance, and management. The curriculum covers EVSE installation fundamentals, service, and maintenance, and was used to train instructors at five community colleges. The courses developed by each college will help meet the growing regional demand for skilled workers in the ZEV. As of May 2025, five for-credit courses are scheduled across three community colleges, with two non-credit courses planned at two additional colleges.

Through the department's work in High Road Training Partnerships (HRTPs), DEO also supported the Apprenticeship Readiness Fund in enrolling individuals in the MC3 Pre-Apprenticeship Program and then into Registered Apprenticeship Programs (RAPs) with the IBEW who help prepare individuals for ZEV careers. Since March 2023, DEO has helped 29 individuals join IBEW's RAP. Lastly, DEO launched a $17.8 million HRTP Fund with applications open from April 14-May 9, 2025, that partnerships designing and implementing ZEV training programs can apply for to help expand green job opportunities.

Further, DEO is actively engaged and a member of the Green Jobs Regional Partnership Leadership Group and Research Group, hosted by the Los Angeles Cleantech Incubator, with the guiding the vision of 600,000 green jobs by the LA28 Games and includes developing EV Charging Operation and Maintenance Technician training to underrepresented communities across LA County. DEO has been attending weekly Alliance for Renewable Clean Hydrogen Energy Systems (ARCHES) stakeholder meetings, led by GO-Biz, to stay up to date on building stronger community engagement in the development of Hydrogen Hubs. DEO has requested a seat on the ARCHES Workforce Committee with a forthcoming start date.

DEO plans to identify and expand additional green job workforce training opportunities to meet the employer demand of Registered Service Agents to install EV chargers and to perform maintenance and repair services. DEO will partner with ISD, CCC, IBEW, LACI, GO-Biz, and other relevant stakeholders to establish HRTPs in the sector through the HRTP Fund or through its public workforce system comprised of America's Job Centers of California.

Privately, the Electric Vehicle Infrastructure Training Program (EVITP) trains state-licensed electricians in the maintenance of EVSE.[22] This 20-hour online program provides the most comprehensive training for the installation of EVSE equipment in the U.S. and Canada today and eligible participants must be state licensed or certified electricians or have 8,000 hours of hands-on electrical construction experience if their state does not certify electricians. AB 841 (Ting, Chapter 372, Statutes of 2020)[23] also requires that EVSE funded by the CEC or CARB must be installed by a contractor with an appropriate license classification, and at least one

[21] California Climate Investment. "Ideal ZEV Workforce". https://www.caclimateinvestments.ca.gov/ideal-zev-workforce
[22] Electric Vehicle Infrastructure Training Program, https://evitp.org/training/
[23] California Legislative Information, Assembly Bill No, 841 (2020), https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201920200AB841

electrician on each crew must hold an EVITP certification. LACI and startup ChargerHelp! Have also launched an "EVSE Technician Fellowship," now in its 11th cohort, to address EVSE downtime issues due primarily to non-electrical communications faults[24]. Participants are low-moderate income Angelinos who are un- or under-employed but have basic math, reading, and computer skills with a high school diploma.

3.2 Recommendations

Training & Apprenticeship Programs

Regional Partnerships

Insufficient training opportunities and investment in a skilled workforce have caused delays in EVSE deployment due to unskilled designer and project managers, high rates of inoperable chargers, poor quality control procedures, and slow response times. This has resulted in unreliable charging experiences and public hesitation to switch to EVs. The following recommendations have been developed to address the shortage of skilled labor in the EVSE. The following recommendations have been formulated to address the lack of skilled labor in the EVSE workforce.

3.2.1 Training and Apprenticeship Programs – DEO

Monitor development, recruitment, enrollment, graduation rates of programs which educate the next generation of installers, maintenance workers and EV mechanics through education and workplace programs

- **Track Program Metrics**: Establish a system to monitor key metrics such as development, recruitment, enrollment, and graduation rates of ZEV-related programs. This includes vocational schools, community colleges, and workplace training programs.
- **Regular Reporting**: Implement regular reporting mechanisms to assess the effectiveness of these programs and identify areas for improvement.
- **Stakeholder Engagement**: Engage with educational institutions, industry partners, and government agencies to ensure alignment with workforce needs and to support continuous improvement

Consolidate current training opportunities and available programs into a centralized hub for regional workers and employers; incorporating trainee personal stories could provide personal testimonials for these programs.

- **Create a Centralized Training Hub**: Develop a centralized hub that consolidates all existing ZEV training and apprenticeship opportunities. This hub will serve as a one-stop resource for individuals seeking education and career advancement in the ZEV sector3.

[24] LACI. "EVSE Technician Fellowship C11". https://laincubator.org/evse-technician-fellowship-cohort-11/.

- **Interactive Platform:** Utilize an interactive online platform to provide access to training programs, certifications, and degree opportunities. This platform should be user-friendly and regularly updated to reflect the latest opportunities

3.2.2 Regional Partnerships - DEO

Connect with IBEW, other municipalities and charging providers to serve as a bridge to match certified technicians with job placements.

- **Establish a Regional Network**: Form a coalition of IBEW, municipalities and charging providers within LA County and neighboring regions. This network will facilitate communication and collaboration on workforce development initiatives.
- **Regular Meetings and Workshops**: Organize regular meetings and workshops to discuss best practices, share resources, and address common challenges in the ZEV sector.
- **Job Matching Platform**: Develop an online platform that serves as a bridge to match certified technicians with job placements. This platform will allow municipalities and charging providers to post job openings and access a pool of qualified candidates. Streamlined mechanisms must be established to ensure that individuals with the skills are matched with appropriate employment opportunities.

Serve to centralize the hiring information and job openings from the local charging companies, to help enable hiring for trainees.

- **Annual Job Fair:** County departments can work with the America's Job Center of California (AJCC) to organize annual job fair to provide opportunity for employers and program trainees to connect
- **Create a Centralized Hiring Hub**: Establish a centralized hiring hub (could be on the same server that hosts the training hub as mentioned above) that consolidates job opportunities from local charging companies. This hub will help to connect college training programs and streamline the hiring process and ensure that trainees have access to job placements.
- **Standardized Hiring Processes**: Implement standardized hiring processes across the network to ensure consistency and efficiency. This includes common application procedures, interview protocols, and onboarding practices.
- **Partnership with Training Programs**: Collaborate with local training programs to ensure that graduates are well-prepared for the job market. This partnership will help align training curricula with industry needs and provide a direct pathway from training to employment.

4 Regional EV Charger Deployment

4.1 Existing Conditions

4.1.1 Goals

In the 2019 Los Angeles Countywide Sustainability Plan, one of the objectives set by the County is to achieve a fossil fuel-free LA County. One of the strategies to accomplish this ambitious goal involves creating a zero-emission transportation system. LA County recognizes the necessity of transitioning from fossil fuel combustion to ZEV technologies and the essential role of a comprehensive charging infrastructure network to support reliable and efficient travel by EVs. Therefore, a set of targets and timeline were set by LA County for a Countywide transition to a zero-emission transportation system (Table 6).

4.1.2 Accessibility

Accessibility is related to the ease of use at EV charging stations. The accessibility of EV charging stations in both LA County and the unincorporated area is assessed using the Alternative Fuels Data Center[25] Station Locator.

- **Public vs. Private**: In the unincorporated LA County, 95% of the stations are open to the public, while the rest are privately-owned. Usually, these private EV charging stations are open for a specific group of users, such as fleet customers and employees.
- **Charging Power**: The majority of the EV charging stations in unincorporated LA County offer only one type of charging level in one station and 88% of the stations offer L2 charging. About 12% of the EV charging stations offer DCFC. The distribution of charging power in the unincorporated area

Strategy Pillar III – Regional EV Charger Deployment

- ✓ **Recommendation i: Usage & Performance Monitoring**
  - ✓ **Leading department:** ACWM
  - ✓ **Implementation timeline:** Near-term
  - ✓ **Priority:** High
  - ✓ **Action a:** Establish a standardized system for tracking and monitoring key performance metrics of EV charging infrastructure, beginning with those funded by public dollars
- ✓ **Recommendation ii: Improve Charging Infrastructure Resiliency**
  - ✓ **Leading department:** ISD
  - ✓ **Implementation timeline:** Near/Mid-term
  - ✓ **Priority:** Medium
  - ✓ **Action a:** Establish on-site renewable energy resources and pilot programs for off-grid charging options such as battery-electric storage, mobile chargers and microgrids.
  - ✓ **Action b:** Encourage technological advancements to enhance the feasibility and reliability of smart and managed charging technologies with researchers, utilities, service providers.
- ✓ **Recommendation iii: Establish Process & Dashboard to Track ZEV Metrics**
  - ✓ **Leading department:** DRP
  - ✓ **Implementation timeline:** Near-term
  - ✓ **Priority:** High
  - ✓ **Action a:** Provide funds for and gather data to meet BOS motion requirements
  - ✓ **Action b:** Disseminate metrics on centralized dashboard to track progress

[25] U.S. Department of Energy, Alternative Fueling Station Locator (2024) https://afdc.energy.gov/stations#/find/nearest

mirrors that of LA County overall, with 90% of EV charging stations providing L2 charging and 10% offering DCFC charging.

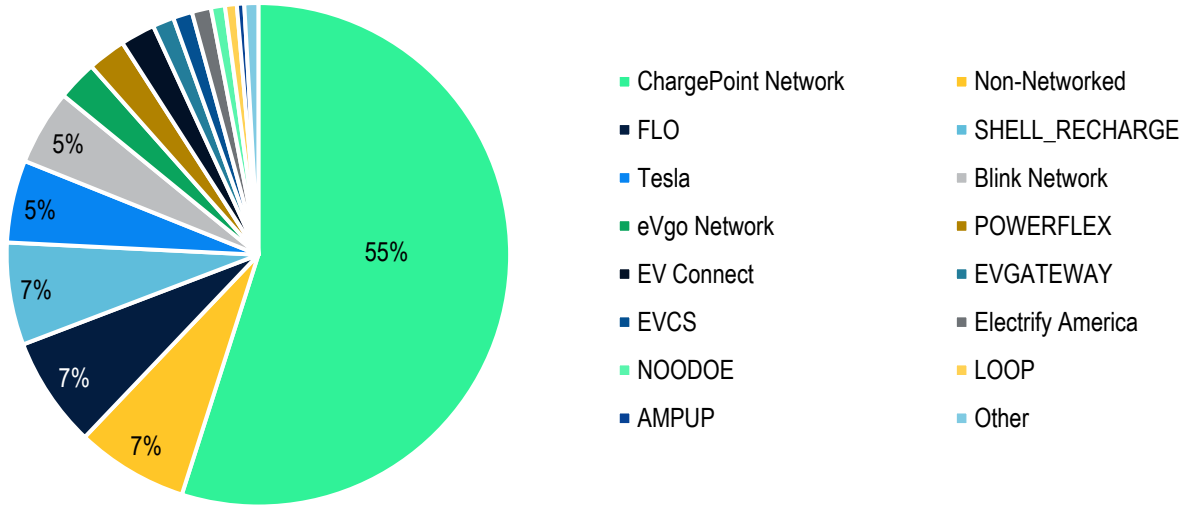
Table 6. Countywide Target for a Zero-Emission Transportation System in LA County

Scope	Timeline	Target
Countywide	By 2025	*60,000 new public EV charging stations (2018 baseline)*[26] 30% of all new LD private vehicles are ZEVs
	By 2035	130,000 new public EV charging stations 80% of all new LD private vehicles are ZEVs
	By 2045	100% of all new LD private vehicles are ZEVs
County Operations	By 2025	5,000 EV charging stations at County facilities 100% of non-emergency LD vehicle purchases to be ZEVs
	By 2035	15,000 EV charging stations at County facilities 100% of MD vehicle and emergency LD vehicle purchases to be zero-emission
	By 2045	100% of all vehicles in the County fleet to be zero-emission or better

- **Network Status**: An EV charging network links stations to the host for managing charging and monitoring power use and most of the publicly accessibly charging infrastructure is networked. As shown in **Figure 6**, in unincorporated LA County, about 55% of the stations today are within the ChargePoint Network, followed by FLO (7%), Shell (7%), Tesla (5%), and Blink (5%). About 7% of the stations are non-networked. in California, Senate Bill 454 Electric Vehicle Charging Stations Open Access Act requires that EV drivers shall not be required to pay a subscription fee or become a member to use a charging station.
- **Connector Type**: There are various connectors and plugs designed for specific charging types and speeds. J1772 connectors are typically used for alternating current (AC) charging, providing around 5-25 miles of range per hour. Combined Charging System (CCS) and CHArge de MOve (CHAdeMO) connectors are for DC fast charging, offering about 100-200+ miles of range in 30 minutes. The J3400 or North America Charging System (NACS) supports both AC and DC charging. In unincorporated LA County, nearly 95% of the EV charging stations are equipped with J1772 connector or a combination of J1772 connector and other connector types, such as Tesla and CHAdeMO. Similarly, in LA County, around 87% of the existing charging stations have J1772 connectors or combinations including J1772.
- **Equity**: Among all EV charging stations identified in LA County for passenger cars, nearly 60% of the stations are located in DACs.[27] Within the unincorporated LA County, approximately 50% of the EV charging stations for passenger cars are located in DACs.

[26] Target Already Met
[27] California Office of Environmental Health Hazard Assessment, SB 535 Disadvantaged Communities (2023), https://oehha.ca.gov/calenviroscreen/sb535

Figure 6. EV Charging Network in Unincorporated LA County



4.1.3 EV Charger Deployment

Due to the frequent changes in the number of EV chargers and the expansion of the network, obtaining an accurate charger count can be challenging. So far, the project team has primarily leveraged the AFDC dataset, as it provides detailed information on the metrics, showing approximately 16,000 public and private chargers across the County. On the other hand, as shown in Table 7, the CEC's Zero Emission Vehicle and Infrastructure Statistics dashboard reports **over 17,000 public chargers and 43,000 shared private chargers throughout the entirety of LA County** This totals 60,000 chargers across the County, suggesting the 2025 goal has been achieved. Historically, CEC has used public charger counts reported by AFDC. However, since August 2024, the CEC dashboard also includes chargers identified through PlugShare, which created the observed discrepancy between the two datasets. The CEC also conducted a more rigorous survey to collect shared private charger data from electric vehicle service providers (EVSP) and non-EVSPs including public agencies and electric utilities to acquire information on shared-private data. In addition, the new Clean Transportation Program grant requires recipients to report counts on their entire network of chargers, excluding residential ones, which adds another distinct data source for the CEC dashboard.[28] The CEC dashboard has only been updated once since the addition of these new data sources, and the project team recommends the County revisiting this data once a new update is available.

Table 7. Number of EV Chargers in LA County Today

Source	Public EV charger	Private EV charger (Shared)	Total
AFDC	3,175	12,919	16,094
CEC	17,448	43,088	60,536

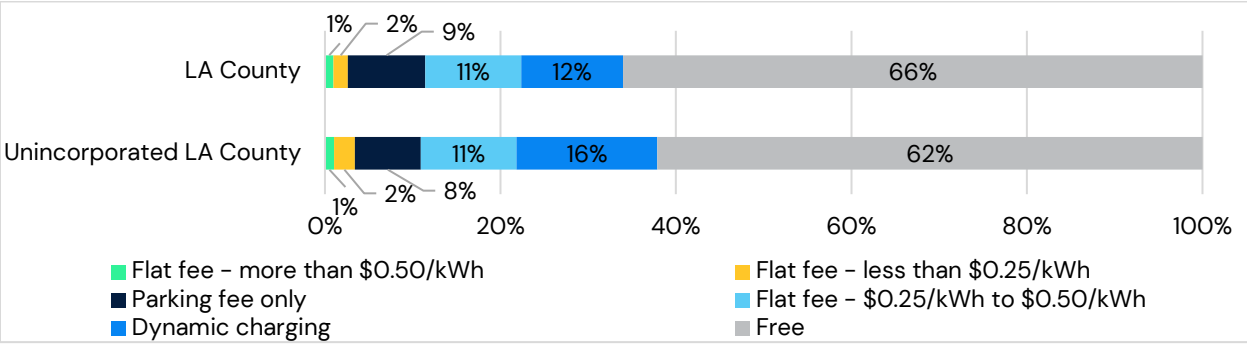
[28] The CEC has also initiated a regulatory process to consistently obtain this data through Assembly Bill 2061 (Chapter 345, Statutes of 2022), with an expectation to receive data in early 2026.

4.1.4 Affordability

EV charging infrastructure affordability, specifically the EV charging pricing structure, is critical for successful and equitable deployment of EVs across the region. Competitive and transparent EV charging prices encourage more usage and adoption, while affordable rates make EVs accessible to all users, including those who may not have easy access to home charging. Furthermore, dynamic pricing for charging can impact the behavior of EV drivers. By offering lower charging prices during off-peak hours, drivers can be incentivized to charge their vehicles when the electrical grid is less constrained, thereby assisting in balancing energy demand. Establishing fair and consistent pricing at public and semi-private charging stations helps prevent cost disparities between different neighborhoods and charging networks. Moreover, affordability directly influences charging behavior.

While the EV charging pricing information is not available for all charging station data collected, it is found that among stations with such data available, approximately 60% of them offer free charging (**Figure 7**). Nearly 10% of the stations offer free charging but with a parking fee that varies case by case. About 15% of the charging stations involve a flat fee for charging, with most of the charging fees ranging from $0.25/kWh to $0.50/kWh. Notably, 15% of the stations offer dynamic charging, which means the charging fee varies by time. For those stations, charging fee could reach up to $0.50/kWh during peak hours (i.e., from 4pm to 9pm) and decrease to, for example, $0.30/kWh during off-peak hours. The EV charging pricing schemes in the unincorporated LA County are similar to those in the whole LA County, with slightly less share of free EV charging and slightly more share of dynamic charging. By implementing dynamic or time-of-use pricing models, EV drivers can be incentivized to charge during off-peak hours—when electricity demand is lower and rates are cheaper—reducing strain on the electrical grid and enhancing overall grid reliability.

Figure 7. EV Charging Pricing Type at Charging Stations in Unincorporated LA County



The fact that some EV chargers do not provide charging pricing information brings concerns about the lack of charging price standardization. As outlined in the California Type Evaluation Program (CTEP), EV chargers used in commercial and public applications must meet stringent standards for measurement accuracy, pricing transparency, and operational reliability. Specifically, CTEP requires all EV chargers to display the billing rate ($/kWh) at any point during a charging transaction, allowing users to easily understand the cost of their charging session. Although it may be unrealistic to regulate the actual charging price and rate for the entire County, increasing transparency regarding the costs and additional fees can certainly help users be better prepared. As LA County continues to expand its EV infrastructure, developing a regionally coordinated, equitable, and performance-based pricing framework will be essential to

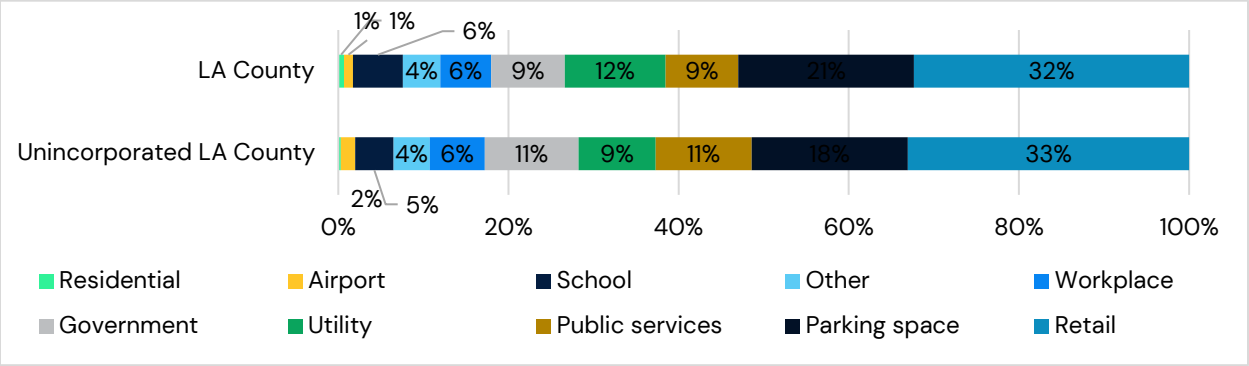
meeting climate and mobility goals. More discussion on rate setting can be found later in Section VI.

4.1.5 Land Use

The location of EV charging stations and the number of EVSE ports in each charging station are reflected and are included by the type of land use at which the facility or community are served.

- **Facility Type**: In unincorporated LA County, there are approximately 350 charging stations out of the 2,114 charging stations that have information on facility type. As shown in **Figure 8,** many stations are located in or near facilities that are in the retail industry (e.g., car dealerships, hotels, restaurants, and shopping centers), public parking lots, public services (e.g., parks, libraries, and museums), and government buildings. Across LA County, nearly 750 EV charging stations have information on facility type; many of these stations are also located around retail locations, public parking lots, and places that provide public services; some EV charging stations are also sited around government buildings.
- **Workplace Charging**: Currently, less than 5% of the charging stations in unincorporated LA County are workplace charging
- **On-site Renewable Energy Source**: Based on EV charging station data collected from AFDC, in unincorporated LA County, there are a few charging stations equipped with on-site renewable energy sources. For example, in West LA Veterans Affairs Medical Center, one L2 EVSE port powered by electricity from solar energy is available for their employees to charge. A Toyota dealership in Lancaster also offer one L2 EVSE port powered by electricity from solar energy to the public within their business hours.

Figure 8. Types of Facilities Where Charging Stations are Located



4.1.6 Hydrogen Refueling Stations

According to the AFDC station locator, there are 24 hydrogen refueling stations for passenger cars currently available in LA County, and 11 of these are in unincorporated LA County. All 11 hydrogen refueling stations are open to the public and almost all the stations are open 24 hours daily. Most of the hydrogen refueling stations provide hydrogen pressured at both 350 bar and 700 bar, with only 2 stations only providing hydrogen at 700 bar.

4.2 Recommendations

Establish Charger Usage and Performance Monitoring	Improve Charging Infrastructure Resilience	Track ZEV Adoption Metrics in County

4.2.1 Usage and Performance Monitoring – ACWM

Establish a standardized system for tracking and monitoring key performance metrics of EV charging infrastructure, beginning with those funded by public dollars

The project team recommends the County track several key metrics to optimize the performance and efficiency of its EV charging operations, and ensure compliance with relevant funding opportunities, including the NEVI Formula Program. These recommended metrics provide insights into charger usage, energy consumption, costs, and infrastructure reliability, informing future planning and infrastructure management. **Figure 9** provides a comprehensive list of these recommended metrics, which fall under six main categories:

- **Sessions**: This category tracks session counts, durations, and average idle times. Session counts provide insights into charger demand and usage frequency, demonstrating whether infrastructure is underutilized or overburdened. Session duration indicates charging efficiency and user behavior, highlighting inefficiencies or the need for more powerful chargers if sessions are longer than expected. Idle times, which track how long chargers remain plugged in without active charging, reflect inefficient charge usage and the need for better management strategies (e.g. enforcing strict session time limits, automating scheduling, etc.). Together, these metrics offer a comprehensive view of charger performance, aiding in infrastructure planning, operational optimization, and better management of charging schedules to ensure maximum efficiency and availability.
- **Energy Delivered**: This category tracks total energy delivered, average energy delivered per session, max kWh delivered in a session, max kW hour (peak hour), and energy losses. Total energy delivered measures overall consumption, while average energy delivered per session shows typical energy usage per vehicle. Max kWh delivered in a session highlights peak consumption, and max kW hour identifies times of highest demand. These metrics help with understanding fleet energy demands and consumption patterns. On the other hand, energy losses represent the difference between total energy drawn from the grid and the energy delivered to vehicles, highlighting operational inefficiencies. These metrics can inform strategies for optimizing energy usage, improving infrastructure, and energy management to reduce wastage.
- **Cost & Revenue**: This category tracks metrics that are key for financial planning, including the cost of electricity per kWh, additional fees and charger operating costs, potential revenue versus collected revenue, revenue per session, and any discounts granted. Understanding the cost per kWh helps with managing energy expenses and evaluating potential savings with off-peak charging. Additionally, the NEVI Formula Program requires operators to track and display real-time pricing information, informing users about the price they will pay for each kWh consumed (account for any fluctuations

in real-time), and any extra charges or fees applied (e.g. session fees, idle fees, or peak demand chargers). Tracking potential and collected revenue can help highlight areas for pricing adjustments or better utilization of charging stations. Revenue per session and discounts granted influence overall financial viability and can inform pricing strategies. Together, these metrics enable operators to identify opportunities for improving revenue and reducing costs, while remaining NEVI compliant.

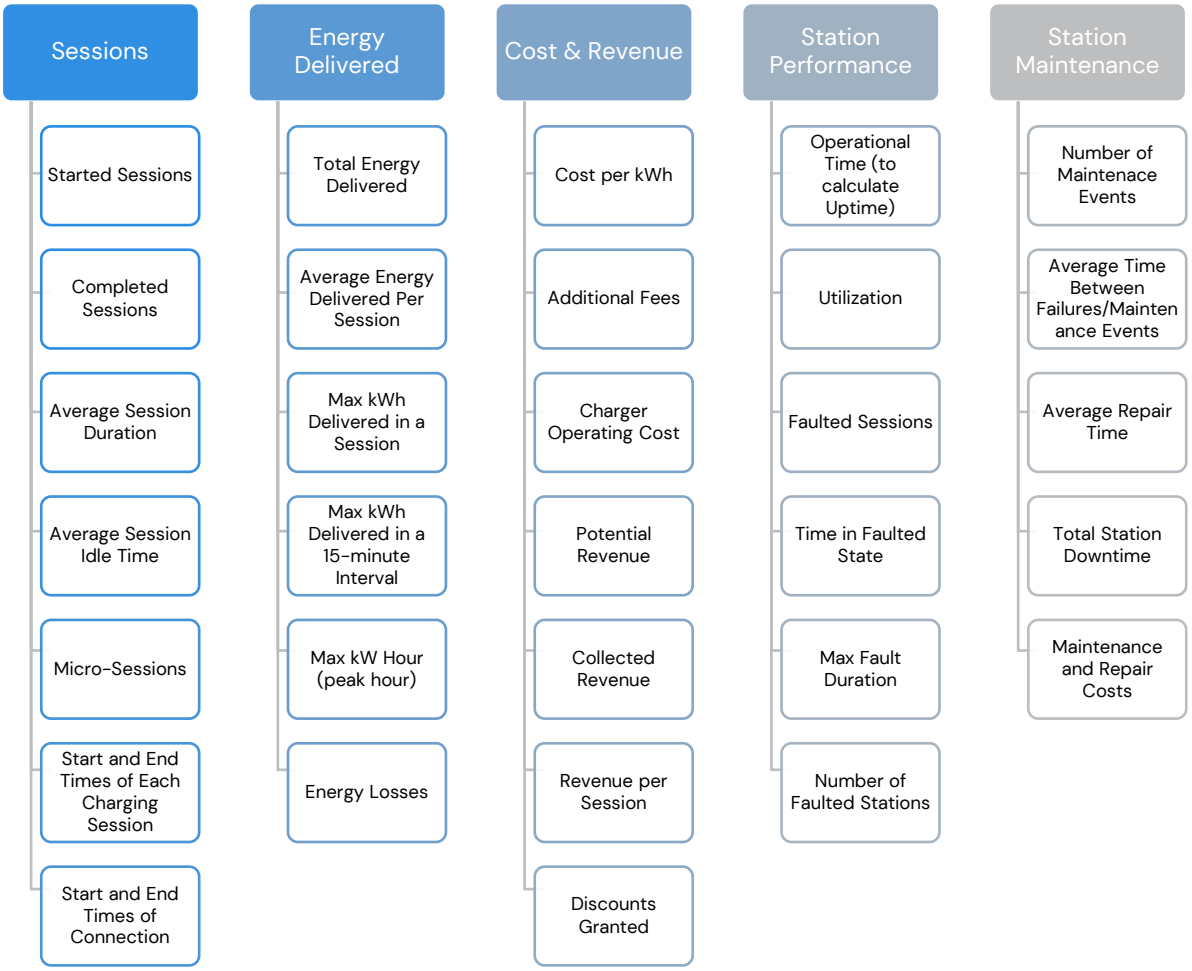
- **Station Performance**: This category tracks several important metrics that reflect the reliability and operation efficiency of EV charging infrastructure. These metrics include operational time, utilization, and information about faulted sessions. Operational time, used to calculate average uptime, measures the duration a station is fully operational. Average annual uptime is a required metric under the California Public Resources Code § 25231.5, enacted under AB 2061 for publicly available EVSEs and under NEVI Formula Program must be calculated monthly over the course of a year. Utilization reflects the percentage of time the station is actively in use, indicating demand and capacity (or the need for additional capacity). Typically, a 20% utilization rate is used as the baseline, beyond which a network expansion is recommended for commercialized charging stations.[29] Additionally, a utilization rate above 80% suggests congestion. Faulted sessions track the number of times charging sessions are interrupted or fail due to technical issues, while time in faulted state measures the total duration the station remains non-operational after a fault. Max fault duration highlights the longest time a station was out of service during a fault, helping assess how quickly repairs are made. Finally, the number of faulted sessions provides insights into how frequently malfunctions occur, which can guide maintenance strategies. These metrics allow operators to determine the fault rate for a charging station, helping identify weak points to prioritize for maintenance or repairs. Fault rate is a critical component in determining uptime. Together, these metrics help assess the station's reliability, identify performance issues, and prioritize improvements to enhance charger availability and minimize downtime.
- **Station Maintenance**: This category tracks the number of maintenance events occurring over a given time, mean time between failures (MTBF) or maintenance events, mean time to repair (MTTR), total station downtime, and maintenance and repair costs. MTBF and MTTR indicate charger reliability and the efficiency of maintenance efforts, whereas downtime reflects the cumulative time a charger is out of service due to maintenance or failures. These metrics are essential for proactive maintenance planning, minimizing disruptions, and improving the overall performance and availability of charging stations.

By monitoring these key metrics, the County can ensure the reliability and performance of its charging operations, and compliance with the reporting requirements under relevant funding opportunities. With reliable and accurate data collection, the County can expect informed decision-making and more effective infrastructure planning and management.

The ACWM already been compiling and recording reports of EVSE installations, but recognizes that placed-in-service reports have been inconsistent and unreliable. ACWM is undertaking inquiries to all Cities for data on the issuance of installation permits and also contacting all known manufacturers and operators to compile comprehensive location and population data.

[29] EV Charging Summit & Expo. "Top Metrics to Measure the Performance of Your EV Charging Stations" (2023). https://evchargingsummit.com/blog/top-metrics-to-measure-the-performance-of-your-ev-charging-stations/.

Figure 9. Recommended Metrics for Tracking the County's EV Charger Usage



ACWM is presently engaged in acquisition processes, and has budgeted financial resources, to assemble six (6) testing systems, consisting of six test standards (capable of testing both AC and DC chargers), six electric vehicles (necessary to transport inspectors, standards, and to receive the electricity flow post-standard), and 4 emulators (to receive electrical charges and to enable changes between different charge states and cable configurations). Securing of test standards and associated equipment will enable ACWM to initiate field inspection and testing of commercially used EVSE by the end of the calendar year. ACWM has also arranged for training of field inspectors in the use and application of the testing standards upon arrival.

Recent legislation (AB 2037 [2024])[30] resulted in granting regulatory authority to County Sealers of Weights and Measures to inspect, test, verify, and regulate EVSE owned and operated by municipalities, a critical measure in ensuring equitable and comprehensive oversight of the industry and to ensure equal protection to all consumers, regardless of what entity operates the device. Presently, ACWM is actively monitoring the development and progress of SB 314 [2025], which is addressing requirements for placement-into-service of EVSE and existing Registered Service Agent mandates to perform such functions. Additionally, ACWM is actively participating

[30] California Legislative Information, Assembly Bill No. 2037 Weights and measures: electric vehicle chargers (2024). https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202320240AB2037

in discussions of means to streamline and enable EVSE implementation through workgroups including members from GoBiz, CEC, and other interested parties.

4.2.2 Improve Charging Infrastructure Resilience – ISD, in Collaboration with All Departments (Especially with DPW, Sheriff, and Fire)

Establish on-site renewable energy resources and pilot programs for off-grid charging options such as battery-electric storage, mobile chargers and microgrids.

LA County experiences considerable wildfire risk, with a major portion of the region falling under designated Fire Hazard Severity Zones[31]. To ensure EV charging facilities can still be accessible during for wildfire-induced Public Safety Power Shutoffs (PSPS), it is important to consider the integration of backup power systems, where these systems will not be integrated already.

- **Consider Vendors with Off-Grid Charging Capabilities**: In the LA County ZEV Mobility Plan, a comprehensive overview of backup power technologies, their costs, benefits, and feasibility, was provided. For this project, the team did some further analysis to identify specific vendors with a strong presence in California for the County to consider. These vendors offer several backup energy solutions, ranging from Battery Energy Storage Systems (BESS) to generators and microgrid controllers, that are suitable for supporting EV charging infrastructure during outages or extreme events.[32]

Encourage technological advancements to enhance the feasibility and reliability of smart and managed charging technologies with researchers, utilities, service providers.

Technologies such as managed charging, smart charging, and bidirectional charging such as vehicle-to-everything (V2X) are essential for ensuring the resilience of charging infrastructure. However, as with all innovative advancements, these new technologies present certain challenges and barriers. For example, the deployment of these technologies may substantially increase the time needed to install chargers. The lead time for utilities and service providers to provide sufficient grid capacity and necessary infrastructure, as well as to energize stations, is already significant. The deployment of new technologies can further prolong this wait time. Sometimes, the complexity and novelty of these technologies may also result in longer downtime due to more instances of problems arising and a shortage of experts capable of resolving issues. Therefore, improving charging infrastructure resiliency is not solely the responsibility of the County but requires early discussion, coordination, and collaboration with researchers, utilities, and service providers.

- **Secure Funding and Partnership**: There are various opportunities available, such as the Grid Resilience and Innovation Partnerships (GRIP) Program, which is dedicated to providing funding and support to enhance grid flexibility and improve the resilience of

[31] Office of the State Fire Marshal, Fire Hazard Severity Zones, https://osfm.fire.ca.gov/what-we-do/community-wildfire-preparedness-and-mitigation/fire-hazard-severity-zones.
[32] These vendors include Enphase Energy, Stem Inc., Sonnen USA, Eaton Corporation, Fluence Energy, ABB and Schneider Electric. These companies are recognized for their innovative and reliable backup energy technologies and have significant market presence and operational experience across the state. Additionally, they offer solutions that incorporate common communication protocols such as Open Charge Point Protocol (OCPP) and International Organization for Standardization (ISO) 15118, allowing for seamless integration with chargers that are compliant with programs like NEVI and Southern California Edison (SCE) Charge Ready. Given the dynamic nature of the market, the County should track new vendors and manufacturers that provide similar offerings.

the power system. As part of the GRIP project application, LA County, in collaboration with regional partners, has already identified opportunities for the deployment of Vehicle-to-Grid (V2G) technology and microgrids in the area. The County should actively seek funding to implement and expand these initiatives.

- **Pilot Project**: The County may collaborate with its current service provider to develop and test advanced technologies such as V2X and share its findings with its partners.

4.2.3 Establish Process & Dashboard to Track Charger, Fuel Sales and ZEV Adoption Metrics in County –DRP

Track and report on the evolution of the ZEV market. This department needs budget to allocate staff hours to this reporting process & to gather confidential fuel sales data from the CEC and CARB.

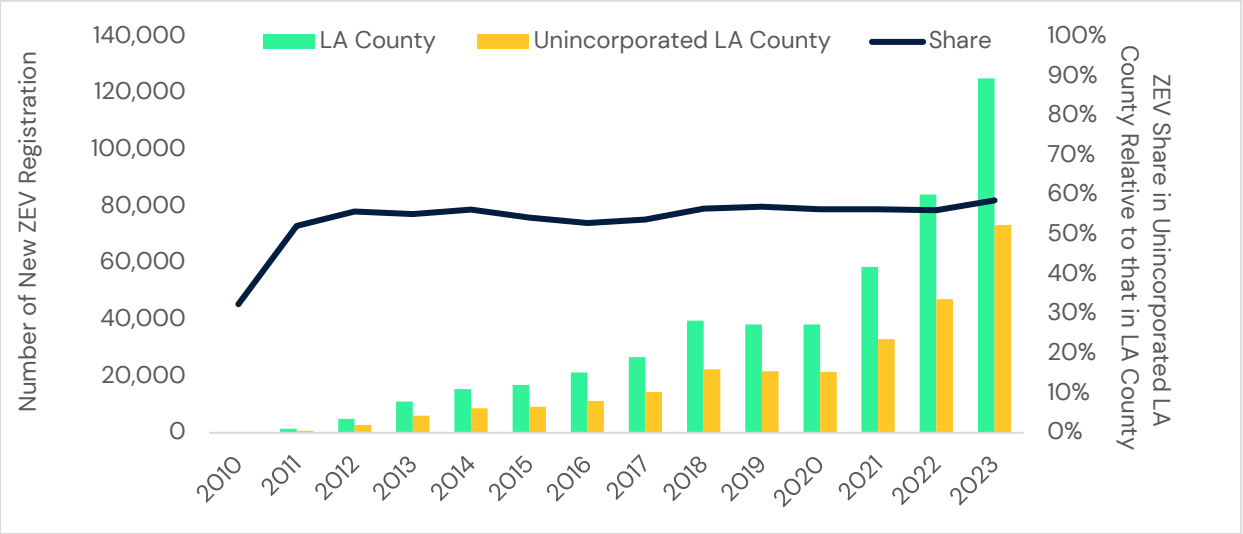
Data Gathering:

- Quantify staff hours need to track metrics as required by the 2024 BOS motion and evaluate the appropriate tracking interval if more frequent than once per year.
- Aggregate publicly available data from CARB and CEC on ZEV sales (such as **Figure 10**, data available through CARB), and EV charger deployment (CEC) across the county and in unincorporated LA county region.
- Request confidential fuel sales data from CEC to track gasoline and diesel sales in unincorporated LA county.
- Identify data source for tracking decommissioned gasoline and diesel stations.

Dissemination of Metrics:

- In collaboration with other EV resource websites hosted by DPW and ISD, DRP to publish key figures on ZEV rollout and ZEV infrastructure deployment across the county and in unincorporated county areas on a publicly accessible dashboard.
- BOS to provide resources to the DRP to support this data gathering and dissemination.

Figure 10. New ZEV Registration in LA County, 2010 - 2023



5 Community Outreach and Engagement

5.1 Existing Conditions

5.1.1 Existing Outreach and Findings

As part of the LA County ZEV Mobility Plan, the William C. Velasquez Institute (WCVI) was assigned to collect feedback from residents in the Gateway Cities of LA County regarding their requirements for EV charging stations, park and ride lots, and the information and resources needed to overcome obstacles to purchasing electric vehicles. This task was accomplished through a survey developed by ISD. WCVI carried out the project from June 3, 2024, to October 31, 2024, visiting 27 out of the 29 Gateway Cities and conducting 27 events to survey residents.

The Gateway Cities area is predominantly Latino, comprising approximately 63% of the population. Additionally, there are significant populations of Asian and African American residents, each making up around 10%, while non-Hispanic white residents constitute roughly 10% of the total population. WCVI gathered feedback from 843 individuals across 103 zip codes. Notably, 71% of these zip codes are classified as DAC based on CalEnviroScreen[33] Scores of 70 or higher. Furthermore, 83% of the survey respondents reside in DACs. The majority of respondents are aged between 25 and 50 years.

Among the survey respondents, nearly a quarter own an EV. While they do not find it more difficult to purchase an EV, they need more information on charging locations. **Some even indicated that the**

Strategy Pillar V – Community Outreach & Engagement

- ✓ **Recommendation i: Improve Awareness of EV Ownership Benefits, Regulations and Incentive Programs**
  - ✓ **Leading department:** ISD
  - ✓ **Implementation timeline:** Long-term
  - ✓ **Priority:** Low
  - ✓ **Action a:** Conduct targeted outreach with residents and business owners to increase their financial literacy of EV ownership and awareness the recent regulations, policies, and incentives.
- ✓ **Recommendation ii: Showcase EV Models Applications by County & Other Entities**
  - ✓ **Leading department:** All
  - ✓ **Implementation timeline:** Long-term
  - ✓ **Priority:** Medium
  - ✓ **Action a:** Increase County and other public agencies' visibility at EV events, showcasing real-world EV applications and use-cases.
- ✓ **Recommendation iii: Facilitate Communication with Community, Government and Business**
  - ✓ **Leading department:** CSO
  - ✓ **Implementation timeline:** Long-term
  - ✓ **Priority:** Medium
  - ✓ **Action a:** Continue coordinating with external partners and stakeholders on facilitating regional EV community outreach and engagement
  - ✓ **Action b:** Collaborate with local organizations and cities to promote the existing EV resources website and establish a centralized hub for all information.
  - ✓ **Action c:** Set up communication channels within County departments for updates on the County's EV transition, sustainability planning, and public outreach efforts

[33] California Office of Environmental Health Hazard Assessment, CalEnviroScreen 4.0 (2023), https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40

insufficient information on charging infrastructure has led them to consider returning to gasoline vehicles.

Non-EV owners identified several factors that could influence their decision to purchase an EV, such as rising gas prices, personal financial stability, environmental benefits, and the perception of lower maintenance costs. However, many hesitated to buy EVs due to a lack of knowledge about costs and maintenance, skepticism about their availability, and concerns over rising vehicle prices driven by economic and political uncertainty.

5.2 Recommendations

Raise EV ownership transparency and awareness of regulations and incentive programs

Showcase EV Models Applications by County and other Entities

Facilitate Communication with Community, Government and Business

5.2.1 Raise EV Financial Transparency and Awareness of Regulations and Incentive Programs – ISD, in Collaboration with All Departments (Fire, Sheriff, Parks, Beaches, and Library)

Conduct targeted outreach with residents and business owners to increase their financial literacy of EV ownership and awareness the recent regulations, policies, and incentives.

As indicated by the survey responses, while most individuals are familiar with the various channels available for purchasing EVs, there is still considerable uncertainty regarding the total costs associated with owning an EV, policies, and regulations. Therefore, the County should consider developing and implementing outreach campaigns to inform residents and business owners about the detailed aspects of ownership. These campaigns should cover topics such as the actual costs of owning an EV, including capital expenditures, loans or leases, maintenance, and fuel. Additionally, they should address relevant policies and incentive programs available for the County. The campaigns should utilize various channels such as social media, local newspapers, and community newsletters to reach a broad audience:

- **Collaborate with Local Organizations**: Partner with local environmental groups, business associations, and educational institutions to amplify outreach efforts and ensure comprehensive coverage.
- **Educational Workshops**: Conduct workshops focused on the benefits of EVs, current regulations, and incentive programs. Topics can include the environmental impact of EVs, total cost of ownership, and available rebates and tax credits.
- **Expert Speakers**: Invite experts from the EV industry, government agencies, and environmental organizations to present and answer questions during these workshops.
- **Develop Comprehensive Materials**: Create and distribute educational materials that cover the benefits of EVs, relevant policies, and incentive programs. These materials can include brochures, fact sheets, and online resources.
- **Accessible Information**: Ensure that the educational materials are easily accessible to all residents and business owners, including translations into multiple languages as needed.

- **Earth Month Activities**: Integrate EV showcases into Earth Month programming, such as environmental fairs, clean-up events, and sustainability workshops. Highlight the environmental benefits of EVs and provide information on incentives and rebates available for EV purchases.
- **Collaborate with Environmental Groups**: Partner with local environmental organizations to co-host Earth Month events, ensuring a comprehensive approach to promoting EVs.

5.2.2 Showcase EV Models Applications by County and Other Entities – All Departments.

Increase County and other public agencies' visibility at EV events, showcasing real-world EV applications and use-cases.

In addition to information campaigns, providing real-world examples and hands-on experience can help enhance consumer confidence in EVs. As a regional leader in EV adoption, showcasing LA County's role in the EV transition and demonstrating EV's use and success in public agencies can effectively increase people's trust in new technology and influence purchasing decisions. Offering practical experiences such as ride-and-drive events, test drives, or participation in EV carshare programs can effectively highlight many advantages of EVs, including smooth acceleration, reduced noise levels, and increased efficiency. Actions that the County can implement to enhance the practical knowledge of EVs may include:

- **Participate in EV Events**: Ensure County has a strong presence at EV events within the community and across the state. This includes setting up informational booths, showcasing EV applications/progress, and providing test drive opportunities.
- **Engage with Industry Leaders:** Collaborate with EV manufacturers and charging providers to enhance visibility and provide expert insights at these events. LACI TEP; Consortium
- **Organize Ride and Drive Events**: Host ride and drive events where residents and business owners can test drive EVs and experience their benefits firsthand. These events should include multiple makes and models of EVs, as well as informational booths about charging infrastructure and incentives.
- **Interactive Demonstrations**: Provide interactive demonstrations and opportunities for attendees to ask questions and learn from EV owners and experts in a non-pressure environment.
- **Feature EVs in Parades**: Include EVs in local parades to showcase their capabilities and promote their adoption. Decorate the vehicles with informative banners and engage with the audience through interactive displays.
- **Community Festivals**: Set up EV exhibits at community festivals and events, offering hands-on experiences and educational materials to attendees.

5.2.3 Facilitate Communication with Community, Government and Business – CSO

Continue coordinating with external partners and stakeholders on facilitating regional EV community outreach and engagement

LA County has already established a regional partnership with various community-based organizations (CBOs), state government agencies, and local municipalities, including the Southern California Association of Governments (SCAG), the South Coast Air Quality Management District (SCAQMD), and several cities. It is recommended to maintain existing programs and collaborations to ensure alignment in community engagement efforts, including:

- **Regular Coordination Meetings**: Have dedicated personnel from each participating agency and hold regular coordination meetings to discuss strategies, share progress, and address challenges related to EV adoption and infrastructure rollout.
- **Unified Messaging**: Develop unified messaging and communication materials to ensure consistent information is disseminated across the region. Report the synthesized recommendations from the regional partnership to the State and advocate for broader agency and funding support.

Collaborate with local organizations and cities to promote the existing EV resources website and establish a centralized hub for all information.

The survey conducted by the county indicated that access to information on EV charging locations and resources remains a significant barrier to both maintaining current owner satisfaction and attracting new adopters. Similarly, businesses, service providers, and developers often struggle to find comprehensive information on codes, ADA compliance, permits, exemptions, industry standards, and regulations due to the rapidly evolving nature of the electric vehicle industry. Therefore, establishing a centralized resource hub for reliable sources would be

Set up communication channels within County departments for updates on the County's EV transition, sustainability planning, and public outreach efforts

useful for the County residents and businesses. This information hub should include links to the EV resources from local jurisdictions, organizations, dealers, and charging service providers, and ensure the website contains comprehensive educational content about EV benefits, regulations, and incentives.

Each department **should appoint a liaison responsible for reporting metrics to CSO**. These metrics should include challenges and accomplishments related to fleet transition, employee rideshare opportunities, and public communication efforts:

- **Regular Reporting:** Implement a regular reporting schedule (e.g., monthly meetings) for liaisons to provide updates on their department's progress and any obstacles they encounter.
- **Interdepartmental Collaboration:** Encourage interdepartmental collaboration to share best practices and support each other in overcoming challenges. This should also

include establishing a central information hub for any eligible vehicle exemption regarding the transition to EVs.

- **Funding Support:** To ensure all departments have sufficient resources for the liaison, BOS should consider providing necessary funding to cover labor hours or any overtime needed for the liaison's duties.
- **Inform Future Planning:** Feedback from department reporting should be communicated with BOS regularly. For any future updates to this plan or County sustainability goals, lessons learned from departments should be incorporated and considered.

Additionally, Parks, Beaches, and Library Departments should work closely with the ISD to enhance outreach efforts. This collaboration will help ensure that public engagement activities are well-coordinated and effective.

- **Community Programs:** Develop and implement community programs and events that promote EV adoption and educate the public about the EV benefits.
- **Feedback Mechanisms:** Establish feedback mechanisms to gather input from the community and adjust outreach strategies accordingly

6 Promote Public-Private Partnership

6.1 Existing Conditions

6.1.1 Goals

In 2019, the County Sustainability Plan outlined a key goal (#12) to commit to "realize OurCounty sustainability goals through creative, equitable and coordinated funding and partnerships". Included in this goal was several actions, including action #155 to "assist County departments, in conjunction with the Center for Strategic Partnerships, to develop innovative P3 support he implementation of OurCounty actions, including consideration of proposals and solicitations."

Additionally, as part of the 2024 BOS motion, the ZEV Master Plan was tasked with including "partnership opportunities with private, government, and non-governmental entities to ensure best practices including, but not limited to, LACI and the public-private TEP."

Strategy Pillar V – Promote P3

- ✓ **Recommendation i: Improve Public Procurement Processes**
  - ✓ **Leading department:** DPW & ISD
  - ✓ **Implementation timeline:** Near-term
  - ✓ **Priority:** High
  - ✓ **Action a:** Develop a bench or pool of pre-qualified private sector partners who specialize in the installation, maintenance and future-proof of EV charging stations.
  - ✓ **Action b:** Create a set of contracting methods specifically for the procurement of EV fleet vehicles.
- ✓ **Recommendation ii: Encourage New Charging Business Models**
  - ✓ **Leading department:** Chief Executive Office (CEO)
  - ✓ **Implementation timeline:** Near/Mid-term
  - ✓ **Priority:** Medium
  - ✓ **Action a:** Establish on-site renewable energy resources and pilot programs for off-grid charging options such as battery-electric storage, mobile chargers and microgrids.
  - ✓ **Action b:** Encourage technological advancements to enhance the feasibility and reliability of smart and managed charging technologies with researchers, utilities, service providers.
- ✓ **Recommendation iii: Improve Rate Setting and Revenue Sharing Procedures**
  - ✓ **Leading department:** ISD
  - ✓ **Implementation timeline:** Near-term
  - ✓ **Priority:** High
  - ✓ **Action a:** Establish clear policies and procedures to ensure fairness and transparency in EV charging rates setting and revenue sharing mechanism to cover costs to operate network.

6.2 Recommendations

Improve Public Procurement Processes

Encourage New Charging Business Models

Improve Rate Setting and Revenue Sharing Procedures

6.2.1 Improve Public Procurement Processes – DPW & ISD

Develop a bench or pool of pre-qualified private sector partners who specialize in the installation, maintenance and future-proof of EV charging stations.

The public procurement process, including internal contracting review and approval, open solicitations, and bid reviews, can add complexities to the County's procurement process and delay the timeline for EV charging infrastructure installation. Sometimes, after a contract expires and installation is completed, there may be no sustainable mechanism to ensure that chargers maintain high uptime. Public agencies might encounter chargers with proprietary communication protocols from the original installer, leading to reliance on one service provider. If this provider goes out of business, the chargers may become nonfunctional, resulting in significant loss in initial costs with limited long-term functionality. Therefore, to facilitate the deployment of County's charging infrastructure and ensure long-term liability, the County may consider improving its current procurement process by engaging a pool of pre-qualified private partners upfront. This pool will include companies with proven expertise and reliability, ensuring high-quality installations and faster project completion. In addition, the following may also be incorporated into this process.

- **Standardized Contracting Procedures:** Implement standardized contracting procedures for these partners, including pre-negotiated terms and pricing to expedite the procurement process. This will reduce administrative burdens and ensure consistency across projects. Ensure that agreements include proper training periods and materials to facilitate knowledge transfer to County.
- **Flexible Charger Installation Options**: Include a range of charger installation options, such as turnkey solutions, land use requirements, to accommodate different site requirements and budgets. This flexibility will help meet the diverse needs of various locations within LA County.

Create a set of contracting methods specifically for the procurement of EV fleet vehicles.

Similar to infrastructure, EV fleet vehicle procurement introduces uncertainties to conventional fleet purchase practices, particularly with new EV brands and an absence of historically established trust between the County and dealers. Therefore, it is recommended for the County to establish a set of contracting vehicles, which includes pre-negotiated agreements with manufacturers and suppliers, ensuring competitive pricing and streamlined purchasing processes. In addition, the County may also consider utilizing existing Statewide or other government contracts for fleet vehicles to benefit from volume discounts and established terms. This approach will enhance cost savings and simplify the procurement process. The County fleet departments will also need to regularly review and update the contracting vehicles to reflect

changes in market conditions, technological advancements, and regulatory requirements. This will ensure that the procurement process remains efficient and relevant.

6.2.2 Encourage New Charging Business Models – CEO

Facilitate regional P3 collaborations to establish new business models such as shared charging networks, charging with reservations, charging as a service

All state and government fleets in California must comply with state mandates and face similar challenges when it comes to EV transition, such as prolonged wait times for EV infrastructure deployment and limited authority regarding the installation of EV chargers on leased properties. As a regional leader, LA County should therefore explore new business models and P3 models to promote the development of shared charging networks that allow multiple users to access charging stations across various locations. This initiative may include collaborations with businesses, residential complexes, and public spaces to create a widespread and accessible network.

- **Interoperability Standards:** Promote interoperability standards to ensure that all EVs can use any charging station within the shared network. This will enhance user convenience and reduce barriers to EV adoption.
- **Collaborative Agreements:** Facilitate collaborative agreements and land use policies between charging providers and local businesses to expand the network and provide more charging options for residents and visitors.

In addition to shared charging networks, another P3 model that could be efficient and effective in encouraging regional EV infrastructure deployment and fleet electrification efforts is introducing reservation systems for charging stations, which allows users to book charging slots in advance. This will reduce wait times and ensure availability, especially during peak hours.

- **User-Friendly Platforms:** Implement user-friendly platforms (such as a website or mobile app) for making reservations, monitoring charger availability, and managing charging sessions. These platforms should provide real-time updates and notifications to users.
- **Pilot Programs**: Launch pilot programs to test the effectiveness of reservation systems in various locations, gathering feedback to refine and improve the service.

Last but not least, Charging-as-a-Service (CaaS) has also been proven to offer flexible, pay-as-you-go charging options. This can include mobile charging units that provide on-demand charging without the need for permanent infrastructure.

- **Scalable Services:** Ensure that CaaS solutions are scalable to meet the growing demand for EV charging. This includes the ability to add, relocate, or upgrade chargers as needed.
- **Cost-Effective Options**: Highlight the cost-effective nature of CaaS, which eliminates upfront investment and provides bundled services for equipment, installation, and maintenance.

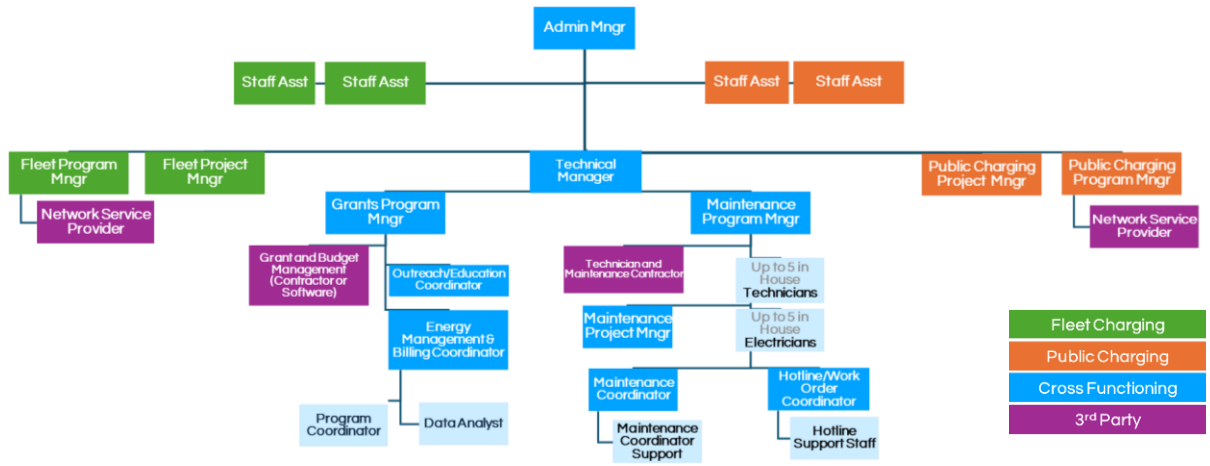
6.2.3 Improve Rate Setting and Revenue Sharing Procedures – ISD/BOS

Establish clear policies and procedures to ensure fairness and transparency in EV charging rates setting and revenue sharing mechanism to cover costs to operate network.

Among the different options for installing EV chargers, third-party owned and operated stations have the lowest cost risk for property owner, since the installer will be responsible for installation, maintenance and other costs. However, under this arrangement, the site host must establish an appropriate revenue model so they can benefit from the chargers. This is especially relevant for chargers at non-retail locations where the site host cannot otherwise benefit from visitors. Some sites may not be expected to have enough usage to merit revenue sharing, as it may take many years to recoup the initial cost.

As the County navigates these procedures in their own charger deployments, they should seek to evaluate what a fair rate-setting procedure and revenue sharing agreement entails and use that to guide development of future policy. For instance, as the County charger network expands, the need to recruit qualified personnel to manage station operations also increases, which may lead to adjustments in user rates. The County is currently conducting an organizational assessment study, which will be completed by June 2025. A draft organization chart is shown in **Figure 11**. This study will provide key insights into appropriate user rate adjustments, staffing needs, and operational models. In particular, it will help identify the specific staff roles and resources required to effectively operate and maintain the growing EV charging network, including responsibilities related to network management, data reporting, maintenance coordination, and customer service. It is especially important for the County and its partners to maintain transparency in these processes and in the revenue these sites are generating. This can help ensure the County is not overpaying or undercharging for charging services and is reaping the profit benefits which taxpayers deserve from their investments.

Figure 11. Proposed future organization chart for County charging infrastructure management



7 Internal Operations (Leading By Example)

7.1 Existing Conditions

7.1.1 Goals

The 2019 County Sustainability Plan includes several actions related to how the County can lead on vehicle electrification. This includes action #92 to "install EV chargers at County facilities and properties for public, employee, and fleet use, prioritizing locations in disadvantaged communities." Under action #93, it further directs the County to "revise and regularly update the County's fleet policy to require zero emission vehicles or better whenever available and operationally feasible." This action has already been completed by the County, outlining the fleet replacement policy in section 7.1.2. Action 94 then directs the County to "convert Sheriff's Department fleet to zero emission by partnering with vehicle manufacturers to develop a zero-emission pursuit vehicle and transport bus." Finally, action #95 aims to "partner with Los Angeles Fire Department and equipment manufacturers to pilot a zero-emission fire engine." Along with this, the plan outlined targets for vehicle purchases and charger installation as follows:

- By 2025: 5,000 EV charging stations at County facilities & 100% of **new** non-emergency LD vehicles to be ZEVs
- By 2035: 15,000 EV charging stations at County facilities & 100% of **new** MD vehicles and LD emergency vehicles to be ZEVs
- By 2045: 100% of **all** vehicles in the County fleet to be ZEVs

Strategy Pillar VI – Internal Operations

- ✓ **Recommendation i: Update Fleet Procurement and Budget Planning Policies to Accommodate County's Transition to EVs**
  - ✓ **Leading department:** All
  - ✓ **Implementation timeline:** Near-term
  - ✓ **Priority:** High
  - ✓ **Action a:** Ensure the County fleet operations adhere to existing County policies and state mandate and monitor vehicle usage to identify potential limitations and constraints of EVs.
- ✓ **Recommendation ii: Further Enhance Current Procedure for Charger Deployment, Maintenance, and Operation**
  - ✓ **Leading department:** DPW & ISD
  - ✓ **Implementation timeline:** Near-term
  - ✓ **Priority:** High
  - ✓ **Action a:** Facilitate internal and external coordination and allocate necessary resources to ensure that chargers are energized and operational in time for fleet vehicle charging.
  - ✓ **Action b:** Explore opportunities to expand County-owned charging infrastructure network to offer access for fleet en-route charging, County employees, and local residents.
- ✓ **Recommendation iii: Encourage EV Carsharing Between Employees**
  - ✓ **Leading department:** All
  - ✓ **Implementation timeline:** Near/Mid-term
  - ✓ **Priority:** Medium
  - ✓ **Action a:** Integrate EVs into County carsharing and vanpool programs and offer incentives to encourage their use.

The 2045 Climate Action Plan included several measures and actions for the County to complete in order to meet its transportation decarbonization goals. This includes action T6.4,

which aims to "install EVCSs at County facilities and properties for public, employee, and fleet use, prioritizing locations in frontline, Black, Indigenous, and people of color (BIPOC), and DACs. Complete an assessment of EV charging locations, identifying gaps in publicly accessible stations for frontline, BIPOC, and DACs. Provide EV purchase incentive information in multiple languages to frontline communities." It also includes action T6.1, which asks the County to "develop a ZEV master plan", which is what this work seeks to address. Another goal from this work is to meet a target for installing new charging stations at County facilities & properties:

- 5,000 new chargers by 2030
- 10,000 new chargers by 2035
- 25,000 new chargers by 2045

The plan also has additional targets for fleet electrification, with actions T7.1, T7.2 and T8.5. These measures speak to electrifying the County fleet of buses/shuttles, light-duty vehicles, and MD/heavy-duty (MD/HD) vehicles respectively. Additionally, the action plan targets 100% bus electrification by 2035, along with the following targets for fleet electrification:

- 35% of LD fleet and 50% of MD/HD fleet be ZEVs by 2030
- 60% of LD fleet and 70% of MD/HD fleet be ZEVs by 2035
- 100% of LD fleet and 95% of MD/HD fleet be ZEVs by 2045

Finally, the 2024 BOS motion includes several actions for the County to complete as part of its ZEV Master plan. This includes the following items:

- "The training program, action plan, and resources needed to build internal capacity of existing County staff to support clean transportation planning and electric vehicle supply equipment installation and maintenance."
- "A report from all relevant County departments to identify the barriers to implementing the Clean Fuel - Sustainable Fleet (Policy) and internal action plans to expand their zero-emission fleet and charging infrastructure;"
- "Internal action plans from the Internal Services Department, Department of Public Works, LA County Sheriff's Department, and LA County Fire Department to accelerate zero-emission vehicle acquisitions including strategies to plan for and fund required charging infrastructure to ensure County departments can transition to zero-emissions vehicles while avoiding operational impacts;"
- "An annual update to the Board on the progress towards implementing all aspects of the Zero-Emission Vehicle Plan, including departments' progress in meeting their clean fleet goals."

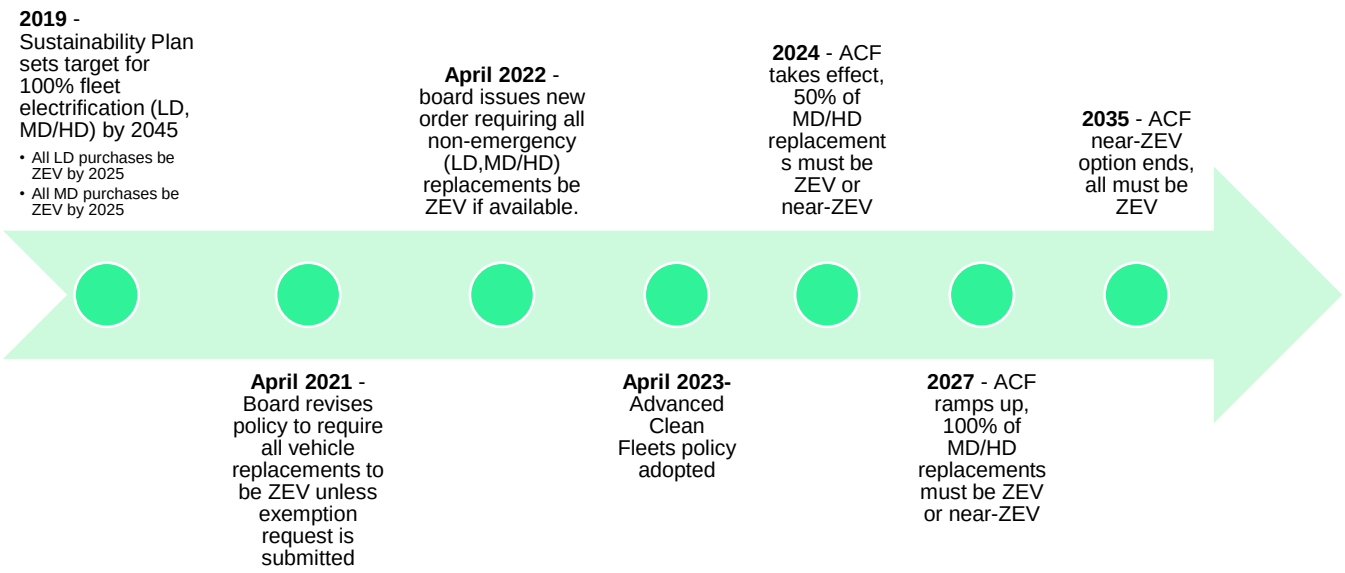
7.1.2 The 2025 LA County ZEV Mobility Plan

In 2022, the LA County ISD was awarded the Sustainable Communities Transportation Plan Grant by the California Department of Transportation (Caltrans) to develop the LA County Shared and Electric Mobility Plan (ZEV Mobility Plan). The project aimed to evaluate the necessary steps for transitioning County vehicles to EVs and to assess new mobility options for County staff. At the beginning of this initiative in Spring 2024, the County's fleet comprised a total of 168 electric vehicles, predominantly light-duty passenger vehicles.

The ZEV Mobility Plan was developed in accordance with state regulations and County goals: (1) the Advanced Clean Fleets (ACF) Regulation, which requires state and local government fleets to transition to MD/HD ZEVs; and (2) the County's Sustainability Plan, which aims to achieve 100%

fleet electrification by 2045, including a mandate from the BOS mandate that all new vehicle purchases be electric unless an exemption is requested starting in 2024, as outlined in **Figure 12.** It presents a practical strategy for achieving an all-electric future that satisfies the operational requirements of fleets while adhering to the ACF compliance mandates and County's transition goals.

Figure 12. Timeline of Relevant ZEV Fleet Policies in LA County ZEV Mobility Plan



The project team evaluated more than **8,000 vehicles across 35 departments**, with critical input and involvement from department fleet and facility managers. This is summarized in the ZEV Mobility plan document as well as in **Table 8**. The team gathered detailed information about the vehicle fleet, including vehicle type, make, model, average daily mileage, dwelling location, and estimated useful life. This data is essential for recommending appropriate ZEV models for replacement and assessing the infrastructure requirements for all dwelling facilities. Moreover, discussions with fleet and facility managers brought to light several challenges faced by the County fleet in transitioning to a fully electric fleet. These challenges include procurement planning, availability of suitable models, rightsizing the fleet, and charging vehicles parked at leased facilities. Further details on how the County can overcome these challenges is summarized in Appendix 1-F of the ZEV Mobility plan.

Table 8. Summary of Participating Departments in Fleet Transition Assessment

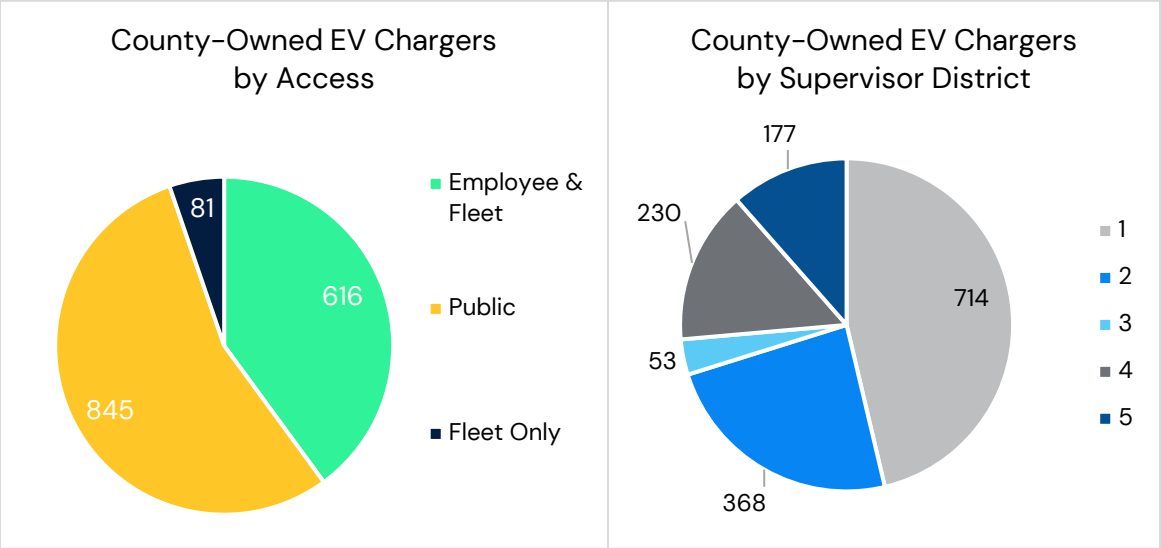
Department Name	Vehicles Reviewed	Number of EVs by 2030
Public Works	2286	1130
Fire	376	211
Sheriff	8000+	TBD – detailed vehicle data not shared
Internal Services Division	679	424
Administration Management Services	12	6

Department Name	Vehicles Reviewed	Number of EVs by 2030
Aging and Disabilities	24	13
Agriculture, Commerce, Weights & Measures	379	161
Animal Care & Control	119	79
Auditor Controller	2	
Beaches and Harbors	154	80
Board of Supervisors (all districts)	97	31
Chief Executive Office	6	6
Child Support Services	7	2
County Assessor	6	2
Consumer & Business Affairs	2	0
Health Services	255	196
Human Resources	1	0
Public Health	283	132
Public Social Services	22	16
Children and Family Services	93	31
District Attorney	294	148
Economic Opportunity	3	1
LA County Development Authority	1	1
Medical Examiner	59	42
Mental Health Services	394	214
Military & Veterans Affairs	2	2
Museum of Natural History	13	13
Parks Department	600	297
Probation	554	381
Public Defender	17	6
Public Library	76	47
Regional Planning	10	0
Registrar Recorder/County Clerk	51	30
Treasurer & Tax Collector	7	4

7.1.3 County Owned Chargers

As noted earlier, LA County has very ambitious goals to install thousands of EV chargers at County facilities to help expand EV adoption within communities and within the County's fleet. As of April 2025, the County has already installed a total of 1,561 EV charging ports spread across 121 different sites or lots. This includes 19 DCFC ports and 1,542 L2 ports, with 73% of the chargers being placed in DACs. Most of these charging ports are publicly accessible (55%), with 40% restricted to County employees or fleet vehicles, and 5% dedicated to fleet vehicles only, as shown in **Figure 13**. The current County-owned chargers maintain an average uptime of 98.7%, surpassing some established networks with reported uptimes of 95%-98%.

Figure 13. Accessibility & Geographic Distribution of County-Owned Charging Stations



Additionally, the County has many planned charging stations which are expected to be installed and working in the next couple of years. This includes a total of 1,032 ports, across 64 sites. Of these, 986 ports are planned for L2 charging and 64 are planned to be DCFC. So far, these sites have been selected to ensure that County fleet vehicles have access to charging and sites aimed at the public have been prioritized according to their scoring from the SCAG EV charging station study. Sites with higher scores have been selected for earlier install dates while those with lower scores have been given install dates several years into the future. With this progress, the County has established credibility and competency in running a massive charging network, although it is nonetheless behind the original targets set out for the County to meet in the 2019 OurCounty plan, and it will take significant additional investment of both funds and staffing to install 5000 new chargers by 2030 to meet the goals in the 2045 Climate Action Plan.

After an organizational assessment of the County's charging network, ISD will need to add more staff and structure to expand the charging network and meet the OurCounty goals. As a result, ISD will be going to Board to increase charging rates, based on 3-time of day, summer/winter, and L2/DCFC rate structure, with no less than less than $0.35/kWh from $0.30/kWh for L2s. In addition, an administrative overhead fee of $500 will be charged to department. The overhead fee covers the maintenance, networking/communication fees, and staff time to keep the network operational. To date, ISD has not charged departments overhead fees to cover the existing staff due to NCC funds provided by CEO and ISD's success at procuring grant and incentive funds. However, to continue operating the 1,600 chargers in the network at 99% uptime and meeting response times in the long-term will require additional staff, especially as grants and incentive funds end.

7.1.4 Existing Employee Commuter Benefits

LA County offers several commuter benefits to employees through its Commuter Benefit Plan (CBP), the Guaranteed Ride Home, Metro Rewards, Vanpool Subsidy, and Rideshare Programs.

- **CBP:** Designed to help employees save on commuting costs by allowing them to use pre-tax dollars for eligible expenses. These expenses include bus and rail passes, transit vouchers, Metrolink passes, TAP cards, vanpool fees, and parking. Employees can allocate

up to $315 per month for transit and an additional $315 per month for parking pre-tax (this limit is set annually by the IRS). The program also facilitates automatic payment and delivery of these purchases, such as transit or parking passes. Enrollment, changes, or suspension of participation are allowed at any time. Additionally, employees represented by SEIU Local 721 may qualify for an additional $70 subsidy toward commuting expenses if they meet specific criteria.[34]

- **Guaranteed Ride Home Program:** This program ensures employees have a reliable way to get home in case of unplanned overtime, emergencies, or illness. It is available to LA County employees registered with their ETC and participating in the Rideshare program.
- **Metro Rewards Program:** This program offers incentives for employees who rideshare at least eight days a month for three consecutive months. Employees are eligible for exclusive giveaways and drawings, such as the chance to win a folding bike.
- **Vanpool Subsidy Program**: Available to eligible LA County employees contracted Vanpools[35] and provides three levels of subsidies: qualifying gas-powered vehicles receive a $250 monthly subsidy, hybrid vehicles receive a $450 monthly subsidy, and EVs receive a $650 monthly subsidy.[36]
- **Telework Program:** This program allows employees to work from home or an alternative location. It requires mandatory training and a formal agreement, ensuring that telework arrangements are well-managed and effective.[37]
- **Rideshare Program:** Offers Plug2Power for employees who purchase an EV. The first option is a $500.00 Visa Reward Card for installing a Level 2 home charger, and the second option is a $500.00 credit to charge at any PowerFlex charging station.[38] Employees are also invited to participate in the annual Rideshare Challenge, which provides six to eight employees with high-value promotional items (up to $500). Selected employees regularly ride rideshare, rewarding m for their commitment to alternative transportation options.
- **Flexwork:** Offers three flexible work schedule options: 1) a regular day off (RDO) typically every other week; 2) 9/80 schedule, offering employees the option to work eight 9-hour days and one 8-hour day over two weeks; and 3) 4/40 schedule, offering employees the option to work four 10-hour days per week.

[34] Los Angeles County Department of Human Resources, Commuter Benefit Plan (2025), https://employee.hr.laCounty.gov/commuter-benefit-plan/
[35] County of Los Angeles, Vanpool Subsidy Policies and Procedures (2021), https://rideshare.laCounty.gov/wp-content/uploads/2021/04/Vanpool-Subsidy-Policies-and-Procedures-2-24-2021.pdf
[36] Los Angeles County Internal Services Department, Vanpool Subsidy Program (2025), https://rideshare.laCounty.gov/County-vanpool-program/
[37] Los Angeles County Department of Human Resources: Telework (2025), https://employee.hr.laCounty.gov/telework-2/
[38] Los Angeles County Internal Services Department, Plug2Power (2025), https://rideshare.laCounty.gov/plug2power/

7.2 Recommendations

Update Fleet Procurement & Budget Planning Policies to Accommodate County's Transition to EVs	Further Enhance Current Procedure for Charger Deployment, Maintenance, & Operation	Encourage EV Carsharing Between Employees

7.2.1 Update Fleet Procurement and Budget Planning Policies to Accommodate County's Transition to EVs – All Departments

Ensure the County fleet operations adhere to existing County policies and state mandate and monitor vehicle usage to identify potential limitations and constraints of EVs.

To lead by example in transportation electrification, LA County should modernize its fleet policies to reflect the realities of EV adoption. Key recommendations include:

Tailored EV Replacement Strategy:

- The ZEV Mobility Plan recommends replacing approximately **6,300 County vehicles** with EVs, based on each department's operational needs, vehicle usage, and cost-effectiveness. This includes phased transitions and department-specific considerations, such as:
    - Limited availability of pursuit-rated EVs for the Sheriff's Department.
    - Lack of electric utility/work truck models for DPW and Fire Departments.

Strategic Adjustments for Compliance:

To meet regulatory goals while maintaining operational readiness, the County should:

- Consider exemptions under the Advanced Clean Fleets (ACF) regulation.
- Downsize vehicles to lower weight classes when feasible.

Addressing Budget Challenges:

- Although EVs offer long-term savings, replacing 6,300 vehicles would cost over **$100 million more upfront** than conventional vehicles. The total cost of ownership for converting the County fleet to an EV fleet is projected to be almost **$30** million higher than maintaining a conventional fleet across the vehicles' lifetimes, despite savings from fuel and maintenance. Additional costs due to tariffs and supply chain delays may further affect budgets and operations.
- Considering the significant costs of MD/HD EVs, the County might prioritize and expedite the replacement of highly-utilized LD vehicles (while adhering to ACF compliance) to optimize savings in fuel and maintenance.

Modernize Procurement and Budget Planning:

- Update and regularly review procurement and budgeting processes to account for higher upfront EV costs and evolving market conditions.

Fleet Rightsizing Opportunities:

- Many County vehicles travel fewer than 20 miles per day. Removing underutilized vehicles can reduce capital costs and improve fleet efficiency.

Data-Driven Decision-Making:

- Install telematics on selected vehicles to collect real-world usage data, enabling more accurate EV suitability assessments and informed replacement planning.
- Current annual mileage data shows that the average daily mileage requirements (less than 80 miles per day) for most ISD vehicles can be met by existing EV models. To further assess the suitability of transitioning to EVs, it is important to have daily operation data available.

Ongoing Monitoring and Reporting:

- Review EV transition progress annually and report findings to the CSO and BOS.

7.2.2 Further Enhance Current Procedure for Charger Deployment, Maintenance, and Operation – ISD & DPW, along with All Departments

Facilitate internal and external coordination and allocate necessary resources to ensure that chargers are energized and operational in time for fleet vehicle charging.

Charger Deployment Strategy:

- Per the ZEV Mobility Plan, install over **3,700 chargers across nearly 450 sites**, designed for efficiency, resilience, and future scalability.
- Estimated installation costs range from **$61–79 million**, requiring strategic budget planning.
- Use data-driven methods to prioritize sites across County facilities, balancing competing needs.

Funding and Collaboration:

- Dedicate staff and resources to track and apply for federal, state, and local funding opportunities.
- Collaborate with other public agencies to explore shared charging facilities, especially at leased or co-managed sites.

Charger Maintenance and Uptime:

- Expand the EVSE maintenance workforce and improve monitoring systems to reduce charger downtime.
- Track charger performance with clear metrics and ensure timely repairs.

Explore opportunities to expand County-owned charging infrastructure network to offer access for fleet en-route charging, County employees, and local residents.

Workplace Charging for Employees:

- Support employees transitioning to EVs by expanding workplace charging access.
- Empower the following departments to achieve these goals:

- ISD to coordinate with Employee Transportation Coordinators and GIS teams to support EV ridesharing.
- Facilities Management to lead charger installations at County worksites.

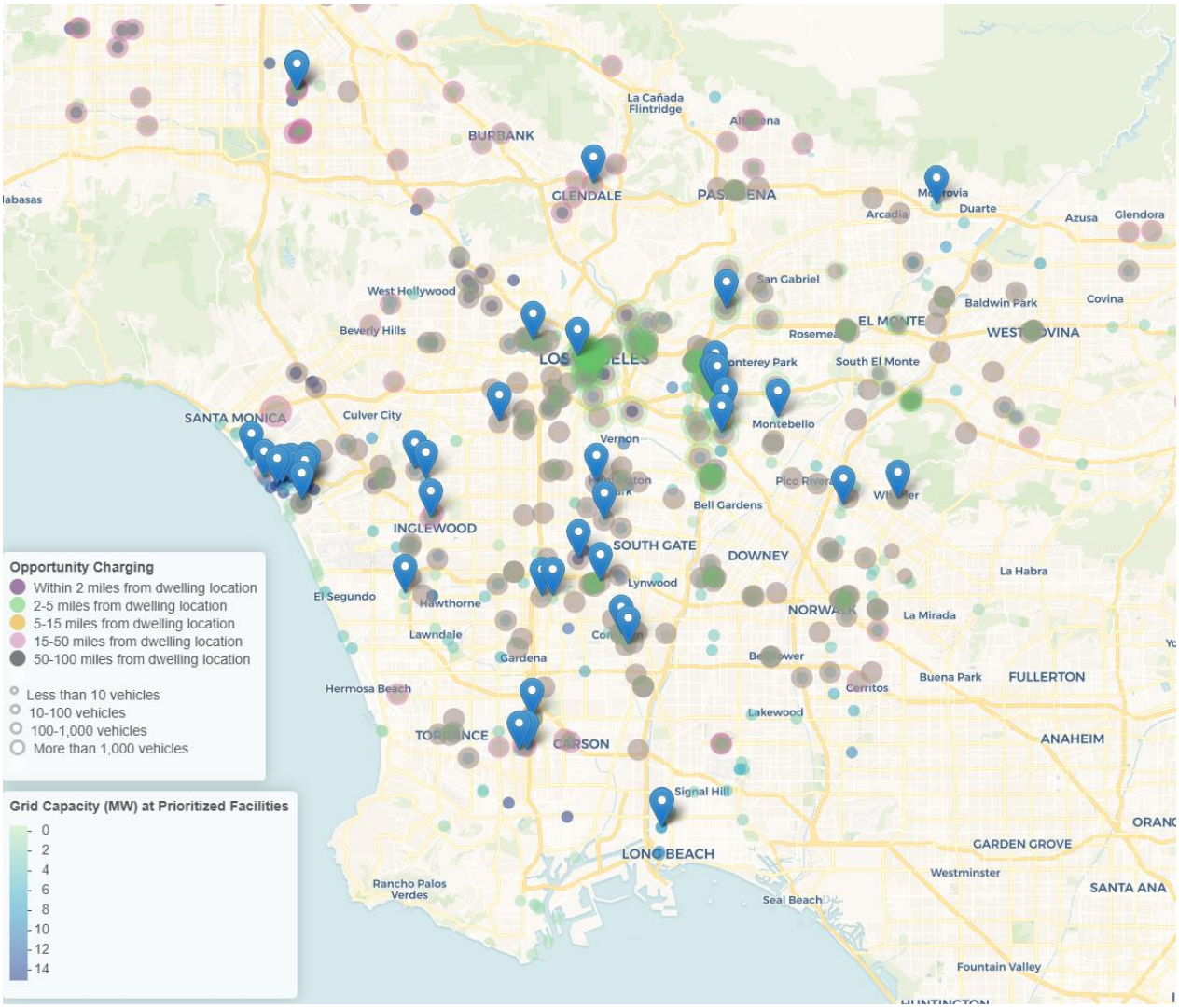
Community Access and Shared Use:

- Maximize charger use by allowing daytime access for employees and local residents, especially where overnight fleet charging is the primary use.

Site Prioritization and Dashboard Tools:

- Maintain and update the 10-year charger prioritization dashboard, as shown in **Figure 14,** using tools like the SCAG Plug-in EV Atlas, utility grid data, and vehicle telematics.
- Use the dashboard to identify leased sites where large-scale charger installation is not feasible
- Inform departments of relocation needs or recommend exemptions for vehicles that must remain at non-upgradable sites.

Figure 14. Dashboard of Prioritized Sites for EV Charging for Fleet Opportunity, Employees and the Public



7.2.3 Encourage EV Carsharing Between Employees – All Departments

Integrate EVs into County carsharing and vanpool programs and offer incentives to encourage their use.

Reduce Personal Vehicle Use:

- Many employees drive to work because they need their personal vehicles for field visits or work-related travel.
- Providing access to County fleet vehicles for these duties can reduce the need for employees to commute in their own cars.

Promote Ridesharing:

- Making fleet vehicles more accessible during the workday encourages employees to use rideshare or public transit options for commuting.

Policy Review and Coordination:

- LA County ISD will work with the Fleet Services Division to review and revise current vehicle usage policies.
- Coordination with Employee Transportation Coordinators (ETCs) will help assess demand for fleet vehicles using data from Annual Vehicle Ridership (AVR) surveys.

Employee Awareness and Support:

- ETCs will promote the availability of County fleet vehicles for work-related use, personal errands (in specific cases), and emergency ride-home programs.

Cost Considerations:

- No immediate funding is required, as the County can use its existing fleet.
- Additional funding may be considered if demand exceeds current fleet capacity.

An example of this approach can be seen in the City of Santa Barbara, which allows employees to use its vehicles for personal errands if they do not drive to work and for guaranteed or emergency ride home purposes.

8 Conclusion

The **LA County Zero-Emission Vehicle (ZEV) Master Plan** represents a bold and strategic framework for guiding Los Angeles County's transition toward a cleaner, more equitable, and resilient transportation future. Through a comprehensive, data-driven approach and a strong emphasis on community collaboration, this plan positions LA County as a leader in California's zero-emission mobility transformation.

The plan's six strategic pillars—policies and programs, workforce development, regional EV charger deployment, community engagement, public-private partnerships, and leading by example—address the most critical barriers to widespread ZEV adoption. From updating building codes to streamline EV charger installation, to launching inclusive workforce training initiatives, and establishing zero-emission zones in pollution-burdened communities, the County is setting a model for sustainable innovation.

Central to the Plan is a commitment to equity. With more than half of the County's EV infrastructure located in disadvantaged communities, the Plan continues to prioritize equitable access to charging and mobility. It also enhances affordability, accessibility, and reliability of EV infrastructure, bolstering the public's confidence in making the shift from traditional vehicles to zero-emission alternatives.

Importantly, the Plan underscores the value of collaboration—across departments, jurisdictions, private industry, and local communities. By fostering public-private partnerships, expanding training pipelines, and improving cross-sector coordination, LA County can ensure that both the economic and environmental benefits of ZEV adoption are widely shared.

As implementation moves forward, this Master Plan serves not just as a roadmap but as a living, tool for guiding LA County into a more sustainable, health-focused, and climate-resilient era. Through decisive action and continued community engagement, the County can achieve its vision of a zero-emission transportation system by 2045—one that reflects the values of innovation, inclusivity, and environmental stewardship.