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Clean Transportation Program

FINAL PROJECT REPORT

Sacramento Electric Vehicle Blueprint

Phase 2 EV Ready Communities Challenge

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- California Conservation Corps (CCC) – for providing on-the-job training and workforce development during EVSE installations.

Special thanks to the City of Sacramento Project Team for their leadership and dedication, and to the residents and community members who participated in outreach and engagement activities. Your input and collaboration were essential to shaping a project that reflects Sacramento’s values of equity, sustainability, and innovation.

PREFACE

Assembly Bill 118 (Núñez, Chapter 750, Statutes of 2007) created the Clean Transportation Program, also known as the Alternative and Renewable Fuel and Vehicle Technology Program (ARFVTP). The statute authorizes the California Energy Commission to develop and deploy alternative and renewable fuels and advanced transportation technologies to help attain the state's climate change policies. Assembly Bill 8 (Perea, Chapter 401, Statutes of 2013) reauthorizes the Clean Transportation Program through January 1, 2024, and specifies that the Energy Commission allocate up to \$20 million per year (or up to 20 percent of each fiscal year's funds) in funding for hydrogen station development until at least 100 stations are operational.

The Clean Transportation Program has an annual budget of about \$100 million and provides financial support for projects that:

- Reduce California's use and dependence on petroleum transportation fuels and increase the use of alternative and renewable fuels and advanced vehicle technologies.
- Produce sustainable alternative and renewable low-carbon fuels in California.
- Expand alternative fueling infrastructure and fueling stations.
- Improve the efficiency, performance and market viability of alternative light-, medium-, and heavy-duty vehicle technologies.
- Retrofit medium- and heavy-duty on-road and non-road vehicle fleets to alternative technologies or fuel use.
- Expand the alternative fueling infrastructure available to existing fleets, public transit, and transportation corridors.
- Establish workforce-training programs and conduct public outreach on the benefits of alternative transportation fuels and vehicle technologies.

To be eligible for funding under the Clean Transportation Program, a project must be consistent with the Energy Commission's annual Clean Transportation Program Investment Plan Update. The Energy Commission issued GFO-19-603 under the California Energy Commission's Clean Transportation Program to fund implementation of projects developed under Phase I, Blueprint Development, of the Electric Vehicle Ready Communities Challenge. In response to GFO-19-603, the recipient submitted an application which was proposed for funding in the Energy Commission's notice of proposed awards March 17, 2020, and the agreement was executed as ARV-20-007 on June 4, 2020.

ABSTRACT

The Sacramento Electric Vehicle (EV) Blueprint represents a transformative, equity-driven approach to advancing zero-emission mobility in California’s capital city. Building on the City of Sacramento’s EV Strategy (2017) and the foundational planning completed under the Phase 1 EV Ready Communities Challenge, Phase 2 focused on implementing high-impact projects that accelerate EV adoption, expand charging infrastructure, and deliver inclusive mobility programs in underserved communities.

Project Purpose and Goals

The project aimed to:

- Advance Sacramento’s target of 75,000 zero-emission vehicles by 2025 and support statewide climate goals.
- Expand public EV charging infrastructure to reduce range anxiety and improve access for residents without home charging options.
- Pilot innovative mobility programs—including e-bike lending and carshare—within disadvantaged communities.
- Embed equity and community engagement throughout implementation to ensure benefits accrue to historically underserved neighborhoods.

Key Deliverables and Outcomes

Phase 2 delivered a comprehensive suite of initiatives:

- **EV Infrastructure Deployment:** Installed 34 Level 2 chargers (67 connectors) across 13 City-owned libraries, parks, and community centers, with over 80% of chargers located in disadvantaged communities.
- **Community CarShare and Transportation Incentives:** Partnered with the Sacramento Metropolitan Air Quality Management District to expand Our Community CarShare and launch a driving credit incentive program, to encourage program participation and reduce barriers for low-income residents to access clean mobility options.
- **E-bike Lending Pilot:** Operated a library-based lending program with 35 e-bikes (including tricycles and cargo bikes) at five libraries - Valley Hi–North Laguna, Colonial Heights, Belle Cooleage, South Natomas, and North Natomas libraries – offering affordable, active transportation alternatives.
- **Community Engagement & Equity:** Implemented a robust outreach strategy through local organizations, compensated Community Ambassadors, and developed an Equity Evaluation Framework to guide monitoring and reporting.
- **Creative EV Awareness Campaign:** Commissioned local artists to produce a Sacramento-specific comic series on electrification, equity, and climate change, distributed in print and digital formats as well as multiple languages.

- **Workforce Development:** Partnered with the California Conservation Corps to provide on-the-job training during electric vehicle supply equipment installations, building local capacity for future EV infrastructure projects.
- **Evaluation & Data:** Collaborated with UC Davis Institute of Transportation Studies to measure changes in EV awareness, adoption, and program impact, creating a replicable model for statewide scaling.

Impact and Replicability

The Sacramento EV Blueprint demonstrates how public facilities can serve as hubs for clean mobility, integrating EV charging, shared transportation, and active mobility options. By prioritizing equity and leveraging strong partnerships, the EV Blueprint Project addresses systemic barriers to zero emission vehicle adoption and provides a scalable template for inclusive electrification for other jurisdictions across California. Key lessons include:

- The importance of community-driven outreach and culturally relevant engagement.
- Leveraging public-private partnerships to maximize cost-effectiveness and operational sustainability.
- Embedding monitoring and equity metrics to inform future investments.

Keywords: California Energy Commission (CEC), City of Sacramento (City), Disadvantaged community (DAC), electric vehicle (EV), electric vehicle supply equipment (EVSE), mobility, zero-emission vehicle (ZEV), Our Community CarShare (OCCS), Sacramento Public Library (Library), Sacramento Metropolitan Air Quality Management District (Air District), electric bicycle or electric tricycle (e-bike)

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EXECUTIVE SUMMARY

The City of Sacramento (City) was a recipient of the California Energy Commission's Phase 2 Electric Vehicle (EV) Ready Communities Challenge. The goals of this project were to implement high-impact actions identified in the Phase 1 EV Blueprint and advance the City's EV Strategy, while aligning with statewide zero-emission vehicle goals. This report presents highlights and key lessons learned from the seven tasks and associated sub-tasks.

One of the key objectives of the Project Team was to ensure that outcomes of this implementation phase are useful to community partners and other jurisdictions as they continue their EV deployments and investments. Materials from project tasks will be made available on the City's website and by request. Each task was designed to accelerate equitable EV adoption, expand infrastructure, and integrate community engagement; some tasks built on previous planning efforts, while others introduced new programs and resources that can be replicated moving forward.

As a result of this effort, the City is better equipped to deliver inclusive, community-informed EV programs and policies. The team installed 34 Level 2 chargers (67 connectors) at 13 City-owned libraries, parks, and community centers, with over three-fourths located in disadvantaged communities. The project also launched an e-bike lending pilot and expanded EV carshare to remove barriers to clean mobility options for low-income residents. Additional initiatives included creative community engagement, paid community ambassadors, workforce training through the California Conservation Corps, and a comprehensive equity evaluation framework. The City partnered with UC Davis Institute of Transportation Studies to measure EV awareness and adoption, creating a replicable model for statewide scaling.

Several of the strongest recommendations from this report include grouping e-mobility programs at high use public facilities, best practices for scaling e-bike lending and carshare programs, integrating equity metrics into all mobility initiatives, and leveraging partnerships to sustain and grow clean transportation options. These actions position Sacramento as a leader in equitable electrification and provide a template for other jurisdictions seeking to advance zero-emission mobility.

Chapter 1:

Task 1 Administration

Summary

The City of Sacramento (City) worked with the California Energy Commission (CEC) to manage, administer and complete the proposed Phase 2 Electric Vehicle (EV) Blueprint Implementation Project (Project), meeting or exceeding the expectations established in the scope of work.

The City used CEC grant funds to bring sub-recipients and vendors onto the Project to support various tasks and deliverables. Contracting methods included sole source partnerships with key sub-recipients, who were selected during application for their unique abilities to deliver core project activities, as well as issuing requests for proposals and competitive procurement. The Project Team was selected due to their combined expertise and ability to complete technical tasks, administer program activities, prepare planning and reporting documents, and facilitate community engagement. The City leveraged City staff time to lead core project activities and to complete groundwork, analysis, and project management that guided consultant-lead project work.

The City further sought review and advice from local partners to provide guidance and feedback on the Project in a highly participatory manner.

Match funding was provided by the City as well as the Sacramento Metropolitan Air Quality Management District (SMAQMD), the Sacramento Municipal Utility District (SMUD), and North Natomas Jibe.

Additionally, City staff oversaw compliance with grant terms and conditions, provided effective project management and delivery, and disseminated work products and lessons learned.

Chapter 2:

Task 2 Monitoring and Equity Strategy

Summary

Task 2 focused on developing and implementing a Monitoring and Equity Strategy to ensure that the Sacramento EV Blueprint Phase 2 Project advanced equitable access to zero-emission transportation and provided measurable accountability for program outcomes. This task established a monitoring and equity strategy, tracking tool, and an equity baseline understanding related to the Project to ensure unique community dynamics and equity considerations continued to be integrated throughout the entire project implementation process.

The Project Team integrated the Monitoring and Equity Strategy into all project components, established a centralized dashboard to track program performance and equity metrics, and provided actionable insights for continuous improvement and replication in other jurisdictions.

Objectives

The primary objectives of Task 2 were to:

1. Develop an equity-based evaluation framework aligned with CEC grant goals.
2. Create a Monitoring Dashboard to track utilization and equity indicators for EV chargers, e-bike lending, and carshare programs.
3. Engage stakeholders and community partners in defining metrics of success.
4. Establish strategies for ongoing data collection, reporting, and program improvement.

These objectives supported the overarching Phase 2 goals of installing public access EV chargers, launching an e-bike lending program, expanding car share services, and embedding equity in all outreach and implementation activities.

Approach

The City partnered with AECOM to deliver the Monitoring and Equity Strategy. The approach included:

- Stakeholder Engagement: Three workshops with City staff, SMAQMD, SMUD, UC Davis Institute of Transportation Studies (ITS), Valley Vision, and community representatives to define metrics and dashboard functionality.
- Metric Development: Metrics organized under four categories—Impact, Knowledge, Availability, and Accessibility—to evaluate program performance and equity outcomes.
- Dashboard Design: A user-friendly platform that integrates automated data feeds (e.g., ChargePoint API for electric vehicle supply equipment (EVSE) usage) and manual inputs (e.g., e-bike checkouts, outreach events).
- Equity Framework: Strategies for program growth, public outreach, collaboration, and continuous improvement, ensuring benefits accrue to disadvantaged communities (DACs).

Existing Conditions and Benchmarking Analysis

The Phase 2 EV Blueprint Project is based on the robust foundation of EV policy and programs in Sacramento. To identify additional opportunities to build on these successes through the Phase 2 project and expand equitable transportation electrification in Sacramento, AECOM performed a review of selected peer cities' transportation electrification plans and developed five case studies (Boston, Columbus, Portland (OR), San Francisco, and Seattle).

Each case study included the following information:

- A community profile to contextualize how population demographics, environmental exposures, transit availability, and municipal budgets may inform the city's approach to transportation electrification.
- An overview of the city's transportation electrification objectives and the strategies identified to advance these objectives, as well as strategies enacted by the state, the electric utility, and other relevant public or non-profit organizations within the region.
- A review of how the city defines equity in the context of transportation electrification and how its plans will advance equity.
- A showcase of digital tools leveraged by the city to measure progress towards its transportation electrification and/or other priorities.
- A benchmark comparison to the City of Sacramento's ongoing and planned initiatives.

Recommendations from the case studies included developing an equity toolkit for transportation electrification, considering tax incentives for small businesses, exploring road pricing schemes, encouraging the Sacramento Regional Transit Authority to prioritize electrification, and creating a mapping tool to support equitable selection of new charging infrastructure and program investments.

Stakeholder Engagement

AECOM facilitated a metrics development focus group, workshop, and dashboard demonstration between October 2022 and January 2023 to support the development of the EV Blueprint Monitoring and Equity Strategy. These engagement efforts helped establish what success means to the programs, how success can be measured, and how it can be displayed to the City in a meaningful and useful way.

Metrics Development

The Project Team established the dashboard metrics by building upon the case studies in Task 2a, input gathered from the metrics development focus group in Task 2b, and the EV Blueprint Phase 2 Project goals and objectives. The metrics and associated benefits reflect the positive impacts of expanding EV access and adoption in DACs through zero emission vehicle (ZEV) transportation planning and programming that emphasize equitable investments for other jurisdictions and private industries to replicate.

Next, the Project Team assessed existing equity and sustainability metrics for applicability to the EV Blueprint Phase 2 programs. EV Blueprint Phase 2 goals and objectives can be measured through four measures of success: impact, knowledge, availability, and accessibility.

These measures formed the Equity Impact Framework for the final EV Blueprint Phase 2 Implementation Project metrics.

Figure 1: Equity Impact Framework

Equity Framework Component	Description	Goal #1 Impact	Goal #2 Increase EVSE	Goal #3 Build Relationships	Goal #4 Increase Equity	Goal #5 Template for Other
Impact	What are the long-term impacts of the Phase II EV Blueprint projects?	✓			✓	✓
Knowledge	How aware are residents of and comfortable with each Phase II EV Blueprint Project?	✓		✓	✓	✓
Availability	How completely has each Phase II EV Blueprint Projects been successfully deployed?	✓	✓		✓	✓
Accessibility	How well are residents able to access each Phase II EV Blueprint Project?	✓	✓		✓	

Source: AECOM staff

In total, the Project Team established 40 metrics to assess the potentially wide-ranging community-wide effects of equity-focused ZEV programs. These metrics are organized under four overall categories: Program-wide metrics, Public EV Charger Installation metrics, Car Share Access (Mobility Program) Metrics, and Electric Bike Lending Pilot Metrics.

Dashboard

The City displayed the metrics and progress towards goals via the City’s dashboard. The Project Team used gathered data to support these metrics from multiple sources including vehicle registration records, the City, the Library, ChargePoint, and Our Community CarShare’s (OCCS) third-party car share program manager. The Project Team collected most metrics for quarterly reporting, with some requiring annual updates. By displaying these metrics on an interactive dashboard, the City tracked and measured the positive impacts of expanding ZEV access and adoption in DACs through ZEV transportation planning and investments. The metrics and dashboard were also intended to monitor the performance of the three EV Blueprint Phase 2 implementation projects (EVSE, carshare, and e-bike lending) to allow for course correction and inform decision-making for increasing program impact.

Equity Evaluation

The Equity Evaluation summarized the EV Blueprint Phase 2 Project Task 2 efforts in two sections:

- The Equity Strategy outlined potential strategies for program growth, public outreach, collaboration and continuous improvement, as well as potential challenges to the activities.

- The Monitoring Strategy summarized the Equity Dashboard access and use, as well as the metrics that feed into the dashboard. Additionally, the Monitoring Strategy identified challenges and data collection improvement strategies.

Challenges and Lessons Learned

The City identified potential challenges in the Equity Strategy including uneven program utilization, downtime due to maintenance or theft, and accessibility barriers (e.g., language, licensing). Mitigation strategies include proactive outreach, enhanced security measures, streamlined application processes, and regular partner check-ins. Detailed descriptions of challenges and lessons learned are included in the e-bike Summary Report, CarShare Summary Report, and EVSE section of this Final Report.

The Project Team encountered an overarching challenge with the Equity Dashboard, with specified metrics not aligning with real world data collection processes. A few examples of this included:

- Metrics that were not available due to privacy reasons (e.g., patron data for e-bike checkouts).
- Metrics that were hyper-specific (e.g., carshare reservations made in other languages).

While it is important to develop metrics at the outset of a program in order to establish consistent tracking and monitoring procedures, the Project Team would have identified some of these misalignments through early program implementation. As a result, the Project Team identified two key lessons learned:

- Engage with implementing partners as part of metric development. For example, early engagement with the Sacramento Public Library and Our Community CarShare (OCCS) implementing organizations (e.g., SMAQMD, Breathe California, Zipcar) would have identified metrics that were not compatible with existing data collections and privacy procedures, or that may need to be supplemented in order to capture the full program impact.
- If possible, build in the budget and time to evaluate and adjust metrics and tracking procedures early in project implementation to determine if there are needed changes. While this may lead to inconsistency with data that is initially collected, early pivots to address misalignments can refine tracking procedures and metrics so that the final deliverables are more impactful.

Next Steps

The Monitoring and Equity Strategy provides a replicable model for integrating equity into transportation electrification initiatives. The Project Team identified immediate next steps during this task and then embedded them throughout implementation of the Project. These next steps included:

- Finalizing dashboard transfer to City systems and staff training.
- Establishing protocols for regular updates.
- Using dashboard insights to guide outreach and program adjustments.
- Sharing lessons learned with regional and statewide partners.

By embedding equity and accountability into program implementation, Task 2 ensures that Sacramento's EV Blueprint Phase 2 Project delivers measurable benefits to disadvantaged communities and serves as a template for inclusive electrification across California.

Chapter 3:

Task 3 Community Engagement & Relationship Building

Summary

Task 3 focused on community engagement and relationship building to ensure that Sacramento's EV Blueprint Phase 2 project implementation was inclusive, culturally relevant, and responsive to community needs. Led by Valley Vision, with support from Frontier Energy, ClimatePlan, and Diysl Consulting, this task aimed to increase awareness and adoption of zero-emission transportation options, particularly in disadvantaged and low-income communities.

Purpose

The purpose of community engagement and relationship building was to:

- Communicate Sacramento's leadership in providing access to low- and no-cost electric transportation to City residents at key "hubs" located primarily in disadvantaged communities.
- Ensure that community organizations and members around the hubs are engaged in implementation and have clear messaging that they can share with friends and neighbors.
- Help the City of Sacramento and Sacramento Public Library deepen their relationships with community members and community-based organizations.
- Develop a replicable model that Sacramento and other cities can leverage for similar efforts.

Goals

Engage community members to increase understanding and use of EV charging hubs, e-bikes, and carshare services, while encouraging the adoption of zero emission transportation. Metrics included:

- 5 paid community ambassadors promoting EV Blueprint
- 15 distinct partnerships with community-based organizations
- 50 survey responses from individual e-trike users
- 100 survey responses from EV infrastructure users
- 500 comic books printed to support outreach and engagement

Communication Tactics and Messaging

Valley Vision developed messaging to share information and gather input. Key tactics included:

- **Plain Language Messaging:** Materials avoided jargon, included visuals, and emphasized real-world benefits such as affordability, convenience, healthy lifestyle,

reduced air pollution, and fun. A summary 1-page flyer included a map of all the EV Blueprint locations and amenities.

- **Bilingual Materials:** The Project Team provided flyers, FAQs, and digital content in English, Spanish, and other languages to expand reach and accessibility. For example, the Project Team translated the e-bike Feedback Survey to multiple languages including Spanish, Chinese, Hmong, and Vietnamese.
- **Storytelling:** Messaging highlights Sacramento and local neighborhoods to connect EVs to lived experiences. The EV Blueprint Comic Book references local identifiable locations such as the Sacramento Zoo and Del Paso Road and terms like “City of Trees.”
- **Digital Engagement:** The Project Team shared updates on the City’s website and social media. The Project Team provided online feedback surveys for patrons who used the e-bikes.
- **Community Partnerships:** The Project Team engaged local organizations and community ambassadors as trusted messengers to distribute information and encourage participation.

Engagement Methods and Participation

Valley Vision used a combination of engagement methods to reach over 500 individuals with EV Blueprint information over the course of the Project.

- **Tabling at Community Events:** Valley Vision tabled at community events, including events such as La Familia Dia De La Tierra, multiple Earth Day events, Breathe Bike Festival, Our Community CarShare Launch Event, and Celebrate Oak Park. Valley Vision engaged an estimated 240 people with EV Blueprint information at these events.
- **Air Quality Community Meetings:** Valley Vision hosted four community meetings to share air quality education and EV Blueprint as a resource through the Statewide Mobile Monitoring Initiative, a CARB and California Climate Investments funded initiative. Valley Vision engaged an estimated 211 people about EV Blueprint information during these events.
- **e-bike Launch Event:** Valley Vision hosted an e-bike launch event, which introduced about 20 local community leaders, elected officials and activists to the EV Blueprint and the e-bike lending program and provided talking points to share with their constituents. This event included a group bike ride so that community leaders could get experience riding the e-bikes.
- **Community Ambassadors:** Valley Vision hired three community ambassadors to engage their neighbors and communities with the EV Blueprint resources. The Ambassadors outreached to local businesses; posted on social media platforms; engaged with community-based organizations like the Urban League, Habitat for Humanity, Asian Resources Inc, and WellSpace Health; and tabled at community events like National Night Out and the Chalk it Up Art Festival. The Ambassadors engaged with an estimated 90 individuals with EV Blueprint information.
- **EV Comic Book:** The Project Team worked with the Sacramento Public Library’s Systemwide Teen Advisory Board to develop a comic book that shared information

about the EV Blueprint Project and the importance of electric vehicles (Figure 2). The Project Team printed the comics in multiple languages to serve as a bilingual resource.

Figure 2: EV Comic Book



Source: <https://www.cityofsacramento.gov/public-works/mobility-and-sustainability/climate/Initiatives/transportation/ev-blueprint-implementation>

- **Postcards:** Breathe and Valley Vision each sent two rounds of recruitment mailers to income-qualified households within 1-mile of EV Blueprint OCCS expansion sites. These postcards included information regarding a limited-time \$100 driving incentive offer for new income-qualified OCCS members and the new public-access EVSE installed through the Project.
- **Media and news coverage:** The Project Team held an EV CarShare Press Conference (Figure 3) in November 2025 to increase visibility of the Project resources. Pre-event visibility included an online teaser by FOX40 and a live Zoom interview with KCRA. On-site media presence featured ABC10, CBS13, FOX40, and Capital Public Radio, with outlets sharing live, recorded, and written coverage.

Figure 3: EV Care Share Credit Press Conference



Source: City of Sacramento Staff

Key Findings and Recommendations

Key findings that emerged from resident engagement at community events and the e-bike survey included:

- **Equity and Access:** Many residents identify as renters. This emphasized the importance of equitable access to public EV charging infrastructure that benefits renters and multi-family tenants that do not have access to at-home charging.
- **Awareness and Education:** For many residents, this is their first introduction to EVs. At Project events, residents expressed excitement and interest in learning about the program. This emphasized the importance of continuing education and providing more opportunities for community members with limited knowledge about EV technology to interact with EVs.
- **Affordability:** All the respondents from the e-bike survey noted that the free rental was one of the reasons they checked out an e-bike. Affordability continues to be one of the main barriers to EV ownership by residents.
- **Public Health:** Residents in DACs are disproportionately burdened by poor air quality leading to higher rates of asthma and other health concerns. Residents strongly supported the transition to zero emission transportation to improve local air quality and reduce health burdens.

The engagement efforts had many successes and identified key lessons learned:

- **Expand Trusted Partnerships & Community Champions:** The engagement efforts successfully leveraged local organizations and community leaders as bridges between the City and residents. At the same time, it is important to allow sufficient time for relationship building work. Due to the delays for the EV charging installation and

subsequent launch of the OCCS expansion sites, many elements of the engagement and relationship building had less time for implementation. For example, the Ambassadors had a shortened period of time for their work and not all of the community partners that were engaged were able to participate. However, the Ambassadors were still a successful component of this work because of their enthusiasm.

- **Leverage Existing Events:** The EV Blueprint engagement efforts tabled at many existing community events in the targeted neighborhoods to amplify reach and meet people where they are at. These were successful touchpoints for engaging with many community members.
- **Use Multiple Coordinated Touchpoints:** The EV Blueprint engagement utilized multiple coordinated outreach touchpoints, which helped build name recognition, legitimacy, and overall interest. For example, Valley Vision and Breathe coordinated their messaging and engagement efforts for the OCCS program (Task 4). Additionally, Breathe and Valley Vision mailed multiple outreach postcards to households near EV Blueprint amenities. These postcards had consistent imagery and language to build up name recognition with the program, and they highlighted timely updates, including promotion of the driving incentive to enroll more participants into the OCCS program. As a result, OCCS received a record number of inquiries.
- **Leverage Incentives:** The Project Team found that incentives were a powerful way to encourage engagement, especially because the community members who may benefit most from the EV Blueprint resources have many competing priorities and limited time to engage. Incentives provided an extra benefit to help motivate action. For example, the driving incentives for OCCS member sign-ups successfully encouraged a much higher rate of engagement with the program.
- **Limited Success with Optional Surveys:** Due to the Sacramento Public Library's check-out system, the e-bike feedback survey could not be required as part of the e-bike return process. While the library branches had information available to encourage survey responses, it was up to the individual patrons to submit their response. Additionally, due to the Library's privacy policies, Valley Vision was not able to follow-up with patrons to encourage survey responses.

Chapter 4:

Task 4 Mobility Program

Summary

Task 4 focused on expanding zero-emission mobility options through the OCCS program, a partnership between the City of Sacramento, the SMAQMD, and Zipcar. This initiative aimed to provide affordable, clean transportation to disadvantaged and low-income communities, complementing EV infrastructure deployment under the EV Blueprint Phase 2 Project Task 5.

Goals

The goals of Task 4 were to:

- Launch at least one new all-electric carshare site in a DAC and operate for 18 months.
- Subsidize outreach and carshare trips for 150 eligible members.
- Provide translated materials and multilingual support for equitable access.
- Integrate carshare services with EVSE installations at libraries and community centers.

Outcomes and Operations

The SMAQMD is a local public agency focused on improving air quality in Sacramento County and surrounding areas through effective air pollution control strategies. As part of its mission, in 2017 SMAQMD launched the OCCS Pilot Program in partnership with Zipcar, the City, and Breathe California Sacramento Region (Breathe). This initiative aims to provide affordable, accessible, clean transportation to disadvantaged and low-income communities. OCCS offers zero- or near-zero emission vehicles for residents who drive, as well as ridesharing options for non-drivers. The program helps reduce greenhouse gas emissions while improving public health and supporting economic growth. Initially funded with \$5.8 million from the California Air Resources Board, the program has been rolled out in four phases, introducing an all-electric fleet, free-floating models, and zero-emission mobility hubs in multiple affordable housing communities. Expansion of operations through this EV Blueprint Project served as the third phase.

The partnership with Zipcar is critical for the successful operation of the OCCS program. Zipcar is a carshare service where members can reserve a car by the hour or by the day from a fixed location for car pick-up and return. Through the partnership with Breathe and SMAQMD, Zipcar has rolled out new carshare locations that are strategically targeted to reach low-income households that may not have access to a vehicle to support subsidized access to zero-emission mobility.

Program Expansion

The Project team implemented the first two phases of the OCCS program in partnership with the Sacramento Housing and Redevelopment Agency (SHRA) and Mutual Housing California between 2017 and 2023. These initial phases primarily targeted affordable housing locations and senior living facilities, with just two locations that were easily accessible to the public.

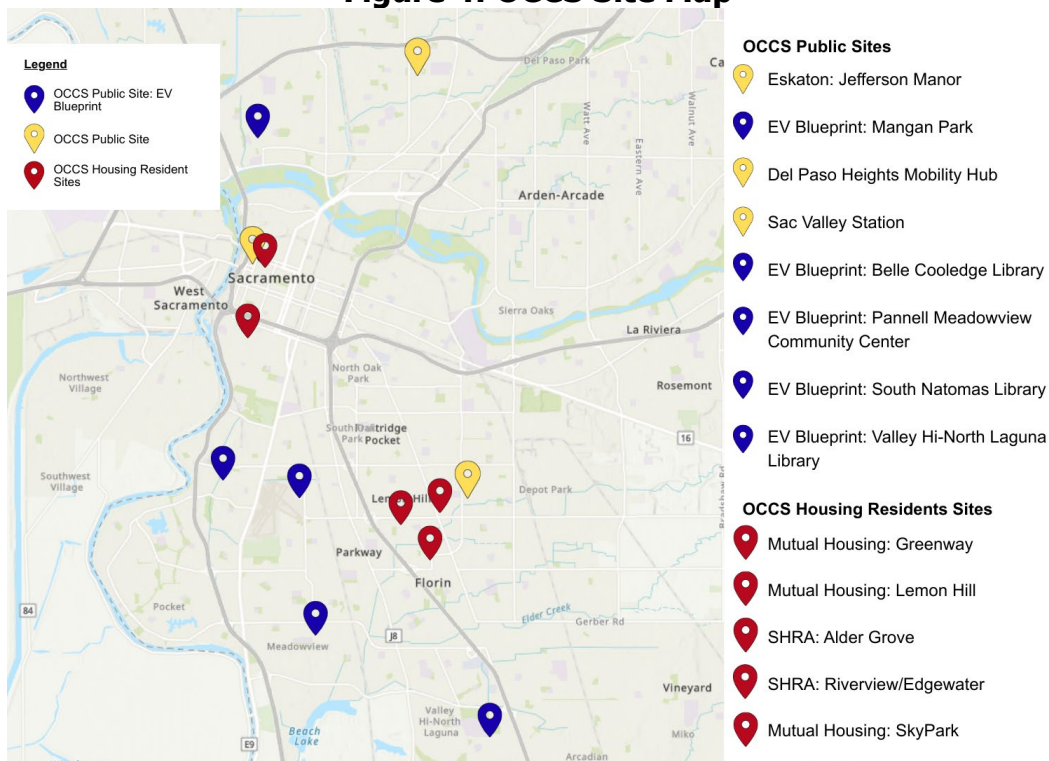
The original goal of EV Blueprint Phase 2 was to launch at least one new site of all-electric carshare in a DAC and operate the program for 18 months. The Project Team surpassed this goal, launching a total of 5 new carshare sites and 10 carshare vehicles during the grant term (Table 1). With the EV Blueprint Phase 2 project, the OCCS program expanded to Mangan Park, Pannell Community Center, Belle Cooleage Library, South Natomas Library, and the Valley Hi-North Laguna Library, with two OCCS vehicles at each location (Figure 4). This program expansion dramatically increased the citywide coverage of OCCS vehicles, making it more accessible for community members.

Table 1: EV Blueprint Carshare Expansion Sites: DAC Status

EV Blueprint Site	Located in a DAC	Carshare Vehicles	Launch Date
Mangan Park	Yes	2	July 2024
Belle Cooleage Library	No	2	January 2025
Pannell Community Center	Yes	2	February 2025
Valley Hi/North Laguna Library	Yes	2	September 2025
South Natomas Community Center	Yes	2	September 2025

Source: City of Sacramento Staff

Figure 4: OCCS Site Map



Source: City of Sacramento Staff

Membership and Utilization

One of the Task 4 goals was to subsidize OCCS trips for at least 150 eligible members. Throughout the project period, the Project Team recruited over 190 total new OCCS members.

This represents a dramatic increase from the 56 OCCS members in March 2024. To incentivize and accelerate registration, the Project Team distributed \$100 driving credit incentives, each worth 25 hours of free driving, for new OCCS members who registered between October 2025 and January 2026. In total, 50 new members received the driving credits.

Utilization of the electric carshare program is possible for both OCCS members and market rate users. OCCS members must meet geographic and/or income qualification requirements and receive program perks like waived Zipcar membership fees and reduced driving rates (\$4/hr OCCS compared to \$17/hr market rate).

The five EV Blueprint OCCS expansion locations were utilized by OCCS members a total of 261 times (Table 2) and were driven 14,183 miles (Table 2) between July 2024 and December 2025. All the EV Blueprint OCCS expansion locations are publicly available to both OCCS members and market rate users. However, as of December 2025, Mangan Park is the only expansion location that is being utilized by market rate Zipcar users. The other four sites are being exclusively utilized by OCCS members.

Table 2: EV Blueprint Carshare Expansion Sites: Number of Trips by OCCS Members by Quarter (2025)

Location Name	Qtr1	Qtr2	Qtr3	Qtr4	Total
Belle Cooleedge Library	N/A	6	19	19	44
Mangan Park	3	14	8	44	69
Pannell Community Center	6	30	24	29	89
South Natomas Library	N/A	N/A	N/A	51	51
Valley Hi-North Laguna Library	N/A	N/A	N/A	8	8
Total	9	50	51	151	261

Source: Sac Breathe and Zipcar data

Table 3: EV Blueprint Carshare Expansion Sites: Reservation Miles by OCCS Members by Quarter (2025)

Location Name	Qtr1	Qtr2	Qtr3	Qtr4	Total
Belle Cooleedge Library	N/A	285	1082	1,074	2,441
Mangan Park	171	686	370	2,169	3,396
Pannell Community Center	320	1884	2,160	1913	6,277
South Natomas Library	N/A	N/A	N/A	1669	1,669
Valley Hi-North Laguna Library	N/A	N/A	N/A	400	400
Total	491	2,855	3,612	7225	14,183

Source: Sac Breathe and Zipcar data

Equity and Impact

Four of the five EV Blueprint OCCS expansion sites are in DACs, as identified by CalEnviroScreen (Table 1). Income-qualified residents and individuals who live within 1 mile of

the carshare sites in DACs are eligible for OCCS membership, which includes a waiver for the annual Zipcar membership fee as well as discounted driving rates. Residents who do not meet the income or geographical qualifications can still utilize the program but must purchase a Zipcar membership and pay full price driving rates.

Challenges and Lessons Learned

The carshare program faced several challenges during implementation. Infrastructure delays significantly impacted the timelines for launching new sites and limited early outreach and member recruitment. Member recruitment proved challenging, particularly in DACs where barriers such as lack of driver's licenses, limited internet access, and unfamiliarity with EV technology were ongoing challenges.

Key lessons learned include the importance of flexibility in program design and strong partnerships to overcome operational constraints. Locating vehicles at community hubs increased trust and accessibility, but success depended on collaboration with organizations like the SMAQMD, Breathe, and Zipcar for outreach, training, and maintenance. It was essential for the Project Team to continually engage residents to build awareness and comfort with EV technology. These insights underscore that carshare programs in underserved areas require both infrastructure and sustained community engagement and operational support to achieve long-term adoption and equity goals.

Next Steps

The next steps for the OCCS program include funding sustainability, continuous program adaptation, and strong partnerships and support.

The SMAQMD will continue to operate the EV Blueprint carshare expansion sites through the coming year, as funding allows. Without sufficient funding, the program risks being unable to serve its members effectively, which would hinder progress toward healthier, safer, and more equitable living conditions. The communities served by OCCS cannot sustain the program independently. OCCS continues to rely on external funding to maintain operations and provide equitable access to clean transportation for DACs. While the introduction of a cost-share model in 2022 has generated revenue and improved financial sustainability, the program still depends heavily on subsidies to remain affordable. Long-term success will require a strategic focus on growing OCCS membership and attracting market rate site users, which can increase revenue streams. By expanding partnerships and enhancing outreach, OCCS aims to transition toward financial self-sufficiency while continuing to serve as a critical mobility resource for underserved residents.

To ensure the program continues to meet the evolving needs of these communities, continuous surveying and regular outreach events are essential. Members are encouraged to provide feedback, allowing the program to adapt and improve over time.

The success of the OCCS program is rooted in a strong network of partners working collaboratively to deliver equitable mobility solutions. Organizations such as the SMAQMD, Breathe, Zipcar, and other community-based partners provide critical operational management, boots-on-the-ground assistance, outreach, and member support, which has

driven steady growth in program participation. Many housing agencies hosting vehicles and City sites lack the capacity to manage operations independently, making these partnerships essential for routine maintenance, member engagement, and program sustainability. Continued collaboration will not only maintain service quality but also enable expansion, fill gaps in existing transportation options, and build a foundation for long-term financial viability through increased membership and revenue generation.

Chapter 5:

Task 5 Electric Vehicle Infrastructure Installation

Summary

Task 5 focused on expanding Sacramento’s public EV charging network and improving accessibility through strategic infrastructure deployment, wayfinding signage, and workforce development.

Goals

The goals of Task 5 were to:

- Install at least 34 Level 2 EV Chargers (a minimum of 66 EV connectors) across 13 sites
- At least 21 (or 62%) of the 34 EV chargers must be located within a census tract at or above the 50th percentile in CalEnviroScreen 3.0
- Procure and install EV wayfinding signage for the 13 Phase 2 sites and at least nine other City-owned locations with existing Level 2 charging infrastructure.
- Facilitate California Conservation Corps (CCC) members’ participation in preparing the charger sites. Oversee on-the-job training of CCC members for EV charger installation support.

Match Funding

Match funding proved critical to fund the higher-than-expected construction costs. Match funding was provided through SMAQMD incentives, SMUD rebates, and local City funding.

Infrastructure Deployment

The EV Blueprint Phase 2 Project successfully installed 67 Level 2 charging connectors across 13 City-owned sites, including libraries, community centers, and parks. The City strategically selected these locations based on CalEnviroScreen scores, proximity to multifamily housing, and their role as trusted community spaces. By prioritizing DACs, the City ensured that residents who lack access to home charging have convenient and reliable options. All chargers were integrated into the ChargePoint network, enabling real-time monitoring and user-friendly access for drivers. This deployment represents a significant step toward expanding Sacramento’s EV infrastructure and supporting equitable adoption of clean transportation.

Wayfinding Signage

To improve visibility and accessibility, the Project included the installation of 43 California Manual on Uniform Traffic Control Devices (MUTCD)-compliant wayfinding signs near EV charging sites. The Project Team placed these signs at key intersections and along major approaches to guide drivers to charging locations at libraries, parks, and community centers. Each sign featured directional arrows and modified panels for clarity, and Traffic Engineering carefully reviewed their placement to ensure compliance and avoid confusion. This signage network enhances the usability of the charging infrastructure and helps drivers easily locate EVSE sites throughout the city.

Workforce Development

Workforce development was a component of Task 5, aimed at creating pathways for residents to enter the growing clean mobility sector. The City partnered with the CCC to provide hands-on training through three site visits between January and May 2025. During these visits, CCC participants learned about EV charger installation, electrical systems, and ChargePoint operations. They practiced tasks such as reviewing electrical panels, understanding underground conduit work, and testing chargers in real time. Discussions also highlighted career opportunities and certifications, including the Electric Vehicle Infrastructure Training Program (EVITP).

Challenges and Lessons Learned

Implementing EV infrastructure across 13 sites presented several challenges that required adaptive strategies. Permitting and utility coordination delays were among the most significant hurdles, often extending installation timelines and impacting project sequencing. These delays highlighted the importance of early engagement with utility providers and streamlined permitting processes for future projects. The delays with the infrastructure not only extended installation timelines, but it also had a trickle-down impact on the other tasks in the EV Blueprint Project, in particular Task 3 Community Engagement and Task 4 Mobility Programs. The car share program and associated engagement efforts could not begin until the infrastructure was installed, electrified, and operational.

Additionally, the placement of wayfinding signage required multiple iterations to ensure compliance with traffic engineering standards and avoid driver confusion, underscoring the need for clear communication between design and field teams.

Workforce development efforts faced scheduling conflicts that limited participation after initial site visits, revealing that sustained engagement requires flexible scheduling and incentives. Overall, these lessons emphasize the need for proactive planning, interdepartmental coordination, and continuous stakeholder engagement to ensure timely and effective implementation.

Next Steps

Building on the successful installation of EV infrastructure, the City will focus on optimizing charger performance and expanding accessibility. Immediate priorities include monitoring utilization data through the ChargePoint network to identify high-demand sites and inform future investments. The City also plans to enhance community awareness through targeted outreach campaigns and partnerships with local organizations to ensure residents understand how to access and use the chargers. Workforce development efforts will continue by exploring additional training opportunities with the CCC and other partners, with an emphasis on certifications such as EVITP to prepare local talent for careers in clean transportation. Longer-term goals include leveraging lessons learned to streamline permitting and utility coordination for future EV infrastructure projects and implementing a fee-to-charge structure for users at EV charger sites. Charging has been offered free of cost during the initial rollout, but

introducing a modest fee is necessary to recover ongoing operations and maintenance expenses and ensure the long-term sustainability of the program.

Chapter 6:

Task 6 E-Bike Pilot

Summary

Task 6 focused on piloting an electric bicycle (e-bike) lending program, in partnership with the Sacramento Public Library to introduce more diverse and affordable zero-emission mobility options. This e-bike lending pilot expanded awareness of pedal-assisted e-bikes, which offer low-cost, energy efficient, and emission-free transportation with additional physical and health benefits. E-bikes are a complimentary part of overall vehicle electrification goals.

Goals

The goals of Task 6 were to:

- Purchase a minimum of 20 standard e-bikes and 10 cargo e-bikes and related equipment
- Procure supportive equipment for the e-bike lending pilot, such as any necessary helmets, bike pumps, bike chargers, bike locks, and related program needs
- Streamline bike parking and charging infrastructure siting, design, and installation with EV charging infrastructure developed in Task 5
- Expand library branches that offer the 'Library of Things' program to enable e-bike lending at least one priority library site, and other site(s) as appropriate
- Recruit, engage, and educate e-bike riders, providing translated materials or services as needed
- Manage the storage, maintenance, and associated rentals for the e-bike lending pilot
- Work with subcontractor for e-bike operations and maintenance
- Prioritize outreach among transit and active-transportation-dependent households

E-bike Lending Operations

The City partnered with the Sacramento Public Library to operate the e-bike lending pilot for a total of 16 months through the "Library of Things" program. Information about the pilot was available on the Sacramento Public Library's website, with multiple videos to provide engaging safety and operational information with patrons. The webpage also included a live translation feature.

Scope Changes

During initial grant implementation, the Project Team experienced multiple challenges that led to three key scope modifications:

1. **E-trikes instead of e-bikes:** As a result of supply chain disruptions that led to substantial delays in product delivery, the Project Team pivoted from the initial scope of e-bikes (standard and cargo) to instead provide electric tricycles (e-trikes) at all City-funded locations. E-bikes were available for check-out at the North Natomas Library Branch, through partnership with North Natomas Jibe.

2. **Lockers instead of charging infrastructure:** The initial concept was to install banks of e-bike racks with integrated charging infrastructure. However, the model of e-trikes that the Project Team selected for the pilot program had removable batteries, thus eliminating the need for charging infrastructure. The removable batteries also increased patron flexibility for the e-trikes, as patrons would be able to charge the batteries as needed at home, rather than needing to return the e-trike to a docking station to charge. Instead, the Project Team shifted the e-bike charging infrastructure budget to pay for the purchase and installation of secure e-bike lockers, as the libraries did not have sufficient room to store the e-trikes inside their facility.
3. **Helmets and bike pumps were not provided to each patron:** Due to the logistical burden that would have been imposed on library staff and the concern of potential thefts, the Project Team did not provide helmets and bike pumps to patrons. Patrons of the e-trike lending program were required to be 18 and older and were therefore not legally required to wear helmets. However, the program highly encouraged that patrons wear a helmet when they ride an e-bike.

Jibe Partnership

This e-bike lending pilot led to an additional partnership with North Natomas Jibe (Jibe), a non-profit transportation management association that encourages sustainable transportation choices in North Natomas. Jibe was very supportive of the e-bike lending pilot and sought to expand it to the North Natomas Library, which would not have otherwise hosted the e-trikes as it does not serve a DAC. To launch the North Natomas location, Jibe donated a total of six e-bikes (mix of standard and cargo), in addition to bike chains and locks, and entered into a contract with the City to provide up to \$10,000 to support e-bike maintenance through the City’s e-trike maintenance contract.

Metrics

The following table (Table 4) summarizes the total number of e-bike checkouts per library per month:

Table 4: Bike monthly check-out count per location

Month	Colonial Heights Library	Belle Cooledge Library	South Natomas Library	North Natomas Library	Valley Hi/North Laguna Library	Total
Aug-23	12	N/A	N/A	N/A	N/A	12
Sep-23	8	N/A	N/A	N/A	N/A	8
Oct-23	4	N/A	N/A	N/A	N/A	4
Nov-23	2	N/A	N/A	N/A	N/A	2
Dec-23	1	N/A	N/A	N/A	N/A	1
Apr-24	11	N/A	N/A	N/A	N/A	11
May-24	12	N/A	N/A	N/A	N/A	12
Jun-24	2	N/A	N/A	N/A	N/A	2
Apr-25	N/A	N/A	N/A	1	N/A	1

Month	Colonial Heights Library	Belle Cooleedge Library	South Natomas Library	North Natomas Library	Valley Hi/North Laguna Library	Total
May-25	N/A	8	5	10	6	29
Jun-25	N/A	6	11	10	7	34
Jul-25	N/A	7	3	8	8	26
Aug-25	N/A	3	2	8	10	23
Sep-25	N/A	7	4	3	1	15
Oct-25	N/A	3	6	9	3	21
Nov-25	N/A	2	0	3	0	5
Dec-25	N/A	0	0	4	0	4
Total	52	36	31	56	34	210

Source: Sacramento Public Library staff

Challenges and Lessons Learned

The e-bike lending pilot faced many challenges and lessons learned over 16 months of operation.

Branch Selection

The Project Team selected the library branches that hosted the e-bike lending pilot with consideration of multiple criteria, which ended up limiting the number of viable branches:

- Location in a DAC to facilitate engagement with communities that would benefit most.
- Sufficient outdoor space to house a bank of e-bike lockers.
- Preference given to branch locations with existing operation of the Library of Things, as this service did not exist branch-wide. For all other locations, library branch staff had additional work to launch the e-bike lending pilot.

The City first launched the e-bike lending pilot in August 2023 with five e-trikes at the Colonial Heights Library (CHL). By January 2024, all e-trikes had been stolen. The e-bike lending pilot relaunched at CHL in May 2024 with an addition ten e-trikes. However, by July 2024, all e-trikes were either stolen or damaged. In July 2024, there was a substantial fire in CHL that forced CHL to close for repairs.

As a result, the Project Team pivoted to launch the pilot at other library branches, which required an updated agreement with the Sacramento Public Library and new lockers. In April 2025, the e-bike lending pilot launched at the South Natomas Library, Belle Cooleedge Library, Valley Hi-North Laguna Library, and North Natomas Library. The pilot operated continuously between April 2025 and December 2025.

Maintenance Costs

Regular e-bike maintenance was essential to maintaining the safety of individuals who checked out the e-bikes. This regular maintenance led to an average cost of \$200 per e-bike checkout, not including the cost of replacement e-bikes or staff time to manage the program.

There were multiple contributing factors to the high maintenance costs:

1. **Maintenance between checkouts:** To ensure patron safety, the maintenance contractor checked the safety of each e-bike between checkouts, requiring regular site visits by the maintenance contractor. To help control costs, the following strategies were used:
 - a. Minor repairs were conducted on-site, rather than in the maintenance shop.
 - b. All maintenance work took place once per week, on Mondays. Rather than traveling to maintain each e-bike as it is returned
2. **Battery charging:** The e-bike batteries must be fully charged for each patron check out. However, Library branch staff were unable to take on maintenance responsibilities for the e-bikes (including battery charging). As a result, the maintenance contractor picked up the e-bike batteries on Mondays, charged the batteries, then returned the batteries to the libraries. The Project Team considered strategies to reduce the cost associated with charging the batteries. The most feasible approach was to purchase extra e-bike batteries that could be swapped in on Mondays. However, this tactic was not implemented in the pilot due to the discontinuation of the e-trike model after the pilot launched.
3. **Branch locations:** The five e-bike lending locations that were operational over the course of the e-bike lending pilot—North Natomas, South Natomas, Colonial Heights, Belle Coolidge, and Valley Hi-North Laguna—cover the full Sacramento region and require substantial travel to reach. The two most distant locations (North Natomas and Valley Hi-North Laguna) are approximately 20 miles apart. This broad geographic coverage benefited patron access. However, substantial travel time was unavoidable given the pilot program only had one maintenance contractor serving all sites.

E-Bike Damage and Repairs

The Project Team experienced multiple challenges with frequent and costly e-bike damage and repairs. Minor repairs included: adjusting the brakes, repairing or replacing the saddle, tightening the display, reattaching pedals, adjusting the chain guard, and replacing the bike tube. Moderate to major repairs included: replacing the motor, throttle, crank arm, chain, and display.

Two key sources of challenging repairs were patrons traveling more miles than expected on the e-bikes and patrons attempting to fix minor damage to the e-bikes themselves (thus leading to major damage).

Further complicating the repairs was the discontinuation of the e-trike model that was deployed in the pilot. As a result, the maintenance contractor was not able to easily purchase proprietary parts.

To select the e-bike/e-trike model, the Project Team had initially considered UL certification of battery, whether the battery was removable, and near-term availability. A key lesson learned is to consider additional elements including the reputability and longevity of the manufacturer and e-bike model, as well as e-bike durability for high-volume use.

E-Bike Theft

Soon after launching the e-trike lending program in August 2023 with five bikes at CHL, all e-trikes were stolen. It quickly became clear that multiple programmatic changes were needed:

- **Lending period:** The Project Team reduced the e-bike checkout period from 3 weeks to 1 week.
- **Sign-up process:** The City established a sign-up process to collect patron data in case of an overdue or stolen e-trike. Due to Library patron privacy procedures, the City had to independently manage a Formstack where patrons submitted their full name, an email address, proof of home address, and a recent photo to participate in the program. This information was only used by the City in the case of an overdue or stolen bike.
- **Unique identifiers:** The Project Team increased the identifiability of the e-trikes by adding “cow spot” stickers and “City of Sacramento” stickers that leave a blacklight mark if removed.

Figure 5: Example of E-trike with Unique Identifiers



Source: City of Sacramento staff

- **GPS tracking:** The Project Team installed GPS tracking devices on each e-bike to facilitate recovery of overdue e-bikes. The Project Team looked for tracking devices that were a discreet size, had a long battery life, low maintenance cost, and did not make noise, and ultimately selected the Tile Sticker model. However, this tracker still posed limitations, as the tracking information did not provide precise live location information and required regular replacement, with multiple trackers reaching the end of their battery life after less than one year of use (despite being advertised to last up to three years).

For ongoing e-bike lending program management, operators need to have clear procedures regarding the cost of lost or damaged parts to ensure ongoing cost-recovery, as well as clear thresholds for patron eligibility to participate (e.g., in the case of past overdue, damaged or stolen bikes).

Inventory Management

Over the multiple iterations of the e-bike lending pilot program, multiple unique tracking numbers were assigned to each e-bike and e-bike subcomponent, including a City-assigned

number, a Library-assigned barcode, a battery number, a battery key number, a tracking device number, a locker number, a locker key number, and a bike lock key number. Some of these numbers were assigned by the manufacturer (e.g., the battery key number, locker key number, bike lock key number); others were generated through a formalized process in order to manage the program (e.g., the Library-assigned barcode) or were informally generated and evolved in their tracking ability over time (e.g., the City-assigned number, the tracking device number).

Based on the multiple approaches tested by the Project Team for tracking the e-bikes and associated items, the following best practices have emerged:

- Organize all tracking information into a single spreadsheet or database to link the e-bike with its associated battery, tracking device, locker, and bike lock, while still being able to track each subcomponent as distinct items.
- Develop tracking numbers that can reflect the interchangeability of multiple items, e.g., e-bikes that are lost will be replaced with new e-bikes and each should have unique IDs; batteries or locks (and associated keys) may be switched between e-bikes.

Update the tracking information regularly, including for overdue, lost, stolen, and replaced items. Frequent updates are essential for having a clear understanding of the program assets.

Staff Capacity

Ongoing management of the e-bike lending pilot required substantial City and Library staff capacity. The staff support necessary to operate the program exceeded the projected staff time that was estimated in the grant application and was a challenge to accommodate during pilot implementation.

Library staff:

- The e-bike lending pilot was an added responsibility for the host branches, particularly for branches that did not already have the “Library of Things.”
- Library staff were responsible for tracking overdue e-bikes, availability e-bikes for check out, patron eligibility, communication with the maintenance contractor as e-bikes were returned or needed repairs, and communication with the City as e-bikes are overdue.
- Library safety procedures required that two Library staff escort the patron to pick up the e-bike from the locker. Library staff did not allow patrons to open the lockers themselves because of potential theft concerns; as a result, check-outs were difficult to manage during busy periods.

City staff:

- The pilot required substantial City staff time to launch and operate. Tasks included managing the maintenance contractor, issuing theft notices, tracking overdue bikes, coordinating with the host branches and maintenance contractor on repair and replacement needs as well as purchases, and general program tracking. As staff had capacity, efforts were directed toward e-bike recovery, although those efforts led to limited success.

- The City did not recover the costs for staff time spent managing this program; however, it is estimated that annual operations of this pilot would cost over \$20,000 in City staff time.

Next Steps

Despite strong utilization and positive patron experiences, the critical challenges of the program (theft, high maintenance costs, and administrative staff capacity) and the end of grant funding made long-term implementation of the program infeasible under current conditions. An estimated ~\$100,000 in annual funding would be required to continue the pilot to pay for the maintenance contract, e-bike replacement costs, and staff time to operate the program.

It is clear from this pilot that e-bikes provide an effective mobility solution for many individuals with limited transportation options. Additionally, e-bikes support the City's efforts to reach carbon neutrality by 2045 through advancing mode shift to active transportation¹.

However, this e-bike lending model is limited by the short duration of the rentals and the high cost per checkout. This suggests that a voucher program to support individuals with purchasing an e-bike or e-trike would be an effective potential next step.

¹ Measure TR-1 from the City's Climate Action and Adaptation Plan targets 6% active transportation mode share by 2030 and 12% by 2045.

Chapter 7:

Task 7 Evaluation of EV Awareness and Adoption

Summary

Task 7 assessed the impact of Sacramento’s EV Blueprint Phase 2 investments on consumer awareness, perceptions, and adoption of electric mobility options. Conducted by UC Davis ITS, this evaluation built on a 2018 baseline study and measured changes in EV knowledge, attitudes, and consideration, and awareness of related programs.

Goals

The goals of Task 7 were to:

- Design, program, and administer a questionnaire survey
- Develop and conduct interview questions
- Submit a study design inclusive of survey and interview questions
- Clean and merge the survey data with previous survey data from the 2018 Sacramento study
- Analyze the data to understand changes since 2018, the impact of the project on EV awareness, EV adoption, and electric mobility, and the direct impact of the project on the populations targeted, including impacts on disadvantaged communities
- Prepare a findings report summarizing research, survey results, and interview takeaways for project impacts on EV awareness, EV adoption and electric mobility and equity

Methodology

UC Davis ITS conducted the evaluation through a survey administered between May and July 2025 to households in the Sacramento region. UC Davis ITS distributed the survey to two primary samples: a City of Sacramento database of 9,046 addresses and a list of 30,000 SMUD customers. In total, 1,237 households initiated the survey and 1,054 completed it. The survey included questions on EV awareness, perceptions, and adoption, as well as familiarity with related mobility programs such as e-bike lending, car sharing, and public charging infrastructure. Several questions mirrored those from a 2018 baseline study, enabling longitudinal comparisons. After data collection, responses were cleaned, merged with prior datasets, and analyzed to identify trends in EV knowledge, attitudes, and behavioral intentions, with particular attention to DACs and the impact of recent EV Blueprint investments.

Key Findings

Growing Awareness and Exposure to EVs

Awareness of EV infrastructure and vehicles has increased significantly since 2018. Over 80% of respondents reported seeing battery electric vehicles (BEVs) in their community, and 55% had seen public charging stations in several locations, up from 43% in 2018. Most respondents

could correctly identify an EV make and model, with Tesla being the most frequently named. Knowledge of BEV driving range was generally accurate, averaging 272 miles, while home charging times were estimated close to real-world performance. However, fast-charging times were overestimated at 71 minutes for 20–80% charge, indicating persistent misconceptions.

Consideration and Adoption

Interest in EVs remains polarized. About 26% of respondents agreed their next vehicle would be a BEV, and nearly half expect to purchase one eventually. At the same time, a growing share reported they would never consider buying an EV. While 63% believe BEVs can meet daily mobility needs, fewer than half perceive them as ready for the mass market. Concerns about charging time, range, and reliability remain strong barriers to adoption.

Policy Awareness and Support

Moderate awareness of California’s emissions regulations was observed. While many respondents identified smog checks and MPG standards, only 67 respondents correctly cited the 2035 zero-emission sales mandate. Despite limited detailed knowledge, support for 100% ZEV sales exceeded opposition (48% vs. 40%), reflecting a foundation of public backing for electrification policies.

Awareness of Related Mobility Options

Respondents were widely aware of e-bike sharing, EV charging, and public transit, but only 34% knew about community car sharing. Willingness to use these options was low, except for EV charging infrastructure, which 42% of respondents said that they were likely to use compared to 35% unlikely.

Next Steps

The evaluation revealed that while factual knowledge of EV attributes has improved, perceptions of convenience and readiness have not kept pace with technological advancements. Misconceptions about fast-charging times and persistent concerns about range and reliability suggest that education and outreach remain critical. Additionally, awareness does not always translate into usage—particularly for shared mobility programs—highlighting the need for strategies that address behavioral barriers and improve program visibility.

Sacramento residents are increasingly familiar with EVs and charging infrastructure, and social support for EV adoption is strong. However, skepticism about practicality and cost continues to limit adoption. These findings underscore the importance of continued investment in infrastructure, targeted education campaigns, and policy support to accelerate the transition to zero-emission transportation.

Future efforts should focus on correcting misperceptions about charging speed and range, expanding outreach in DACs, and leveraging partnerships to promote shared mobility options. UC Davis ITS recommends integrating behavioral research into program design and exploring incentive structures that encourage both EV adoption and use of alternative mobility services.

GLOSSARY

BATTERY ELECTRIC VEHICLE (BEV) - Also known as an “All-electric” vehicle (AEV), BEVs utilize energy that is stored in rechargeable battery packs. BEVs sustain their power through the batteries and therefore must be plugged into an external electricity source in order to recharge.

CALIFORNIA ENERGY COMMISSION (CEC) - The California Energy Commission is the primary energy policy and planning agency for California.

CALIFORNIA-DESIGNATED DISADVANTAGED COMMUNITIES - The California Environmental Protectional Agency (CalEPA) identifies four types of geographic areas as disadvantaged: (1) census tracts receiving the highest 25 percent of overall scores in CalEnviroScreen 4.0; (2) census tracts lacking overall scores in CalEnviroScreen 4.0 due to data gaps, but receiving the highest 5 percent of CalEnviroScreen 4.0 cumulative pollution burden scores; (3) census tracts identified in the 2017 DAC designation as disadvantaged, regardless of their scores in CalEnviroScreen 4.0; (4) and areas under the control of federally recognized Tribes.²

CARSHARE - Carshare is a mode of car rental where customers rent cars for short periods of time, often by the hour. Carsharing typically works by providing a network of cars to pre-screened members for short-term use, with rental time generally measured in hours rather than days like traditional car rental. The service is ideal for mid-to-long range trips (five to 20 miles, or more). A single hourly price generally includes the costs of fuel and insurance, and often parking and tolls. Rentals are exclusively self-service, relying on apps and transponders that allow remote access to vehicles.³

CHARGERS - Chargers, often referred to as electric vehicle supply equipment, are manufactured units that safely deliver electricity to charge the battery of a plug-in electric vehicle. A charger may have one or multiple connectors.⁴

ELECTRIC BICYCLE (E-BIKE) - An “electric bicycle” is a bicycle equipped with fully operable pedals and an electric motor that does not exceed 750 watts of power.⁵

ELECTRIC TRICYCLE (E-TRIKE) - An “electric tricycle” is a tricycle equipped with fully operable pedals and an electric motor that does not exceed 750 watts of power.⁵

ELECTRIC VEHICLE - A broad category that includes all vehicles that are fully powered by Electricity or an Electric Motor.

ELECTRIC VEHICLE CHARGING STATION (EVSE) - Infrastructure designed to supply power to EVs. EVSE can charge a wide variety of EVs including BEVs and PHEVs.

² <https://www.energy.ca.gov/programs-and-topics/programs/federal-ev-infrastructure-programs/californias-national-electric>

³ <https://www.energy.ca.gov/sites/default/files/2024-04/CEC-600-2024-016.pdf>

⁴ <https://www.energy.ca.gov/data-reports/energy-almanac/zero-emission-vehicle-and-infrastructure-statistics-collection/electric>

⁵ https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=312.5.&lawCode=VEHe

ELECTRIC VEHICLE INFRASTRUCTURE TRAINING PROGRAM (EVITP) - The Electric Vehicle Infrastructure Training Program provides training and certification for electricians installing electric vehicle supply equipment.⁶

LEVEL 2 CHARGER - Level 2 chargers use alternating current electricity to charge a plug-in electric vehicle at 208 to 240 volts and can provide about 14 to 35 miles of range per hour of charging.⁷

PROJECT - A "project" is defined as a "whole action" subject to a public agency's discretionary funding or approval that has the potential to either (1) cause a direct physical change in the environment or (2) cause a reasonably foreseeable indirect physical change in the environment.⁸

PUBLIC CHARGERS - Public chargers are located at parking space(s) designated by a property owner or lessee to be available to and accessible by the public.⁹

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT (SMAQMD) - An agency that monitors, promotes, and improves air quality in the County of Sacramento.¹⁰

SACRAMENTO MUNICIPAL UTILITY DISTRICT (SMUD) - An electric utility serving the greater Sacramento, California, region.

ZERO EMISSION VEHICLE - Vehicles which produce no emissions from the on-board source of power (e.g., an electric vehicle)

6 <https://www.energy.ca.gov/programs-and-topics/programs/clean-transportation-program/clean-transportation-funding-areas-2-0>

7 <https://www.energy.ca.gov/data-reports/energy-almanac/zero-emission-vehicle-and-infrastructure-statistics-collection/electric>

8 https://www.lci.ca.gov/wp-content/uploads/20210809-CEQA_101.pdf

9 <https://www.energy.ca.gov/data-reports/energy-almanac/zero-emission-vehicle-and-infrastructure-statistics-collection/electric>

10 <https://www.airquality.org/about-us>