## City of Sacramento

# 2017 ELECTRIC VEHICLE STRATEGY

www.cityofsacramento.org/ev

## PUBLIC DRAFT

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# ABBREVIATIONS

## EV ABBREVIATIONS & KEY TERMS

| | |
|---|---|
| **BEV** | **Battery-electric vehicle:** a vehicle that runs completely on electricity stored in batteries with an electric motor instead of a gasoline engine; BEVs are a type of ZEV |
| **DCFC** | **Direct current fast charge:** a charger at 400 to 500 volts and 50 kilowatts or more, providing an 80% charge in less than 30 minutes |
| **EV** | **Electric vehicle:** a vehicle that is recharged by electricity; can include BEVs and PHEVs |
| **FCEV** | **Fuel-cell electric vehicle:** vehicle powered by hydrogen, with hydrogen converted into electricity by a fuel cell– the only emissions are water vapor and heat |
| **L1** | **Level 1 charger:** charger at 110-120 volts, 4-6 miles of range per hour of charge |
| **L2** | **Level 2 charger:** charger at 208-240 volts, 10-20 miles of range per hour of charge |
| **PEV** | **Plug-in electric vehicle:** another term for BEVs, referring to a vehicle that is recharged by electricity; can include both BEVs and PHEVs |
| **PHEV** | **Plug-in hybrid electric vehicle:** a vehicle that has both an electric motor that can be plugged in and a gasoline engine |
| **ZEV** | **Zero-emission vehicle:** vehicle that emits no exhaust from vehicle sources of power, with zero tailpipe emissions – includes BEVs and FCEVs |

# OTHER ABBREVIATIONS

| | |
|---|---|
| **ARRA** | American Recovery and Reinvestment Act of 2009 |
| **BERC** | Business Environmental Resource Center |
| **ITS** | Institute of Transportation Studies, UC Davis |
| **RT** | Regional Transit |
| **SacEV** | Sacramento EV Association |
| **SACOG** | Sacramento Area Council of Governments |
| **SCCC** | Sacramento Clean Cities Coalition |
| **SMAQMD** | Sacramento Metropolitan Air Quality Management District |
| **SMUD** | Sacramento Municipal Utility District |
| **VMT** | Vehicle miles traveled |

# 1 INTRODUCTION


This Electric Vehicle (EV) Strategy serves as the City of Sacramento's first EV Strategy to advance the adoption of EVs and zero emission vehicles (ZEVs). The plan establishes the City's vision to advance ZEVs, bringing together recent City initiatives and new opportunities to establish a clear path for priorities and implementation. Strategies in this plan provide near-term action items for initiation by 2020 and full implementation by 2025, outlining the City's desired trajectory for zero-emission mobility. While the plan identifies goals and targets, metrics presented in this plan will be monitored, revisited, and updated over time. The primary focus of this plan is advancement of light-duty, all-battery electric EVs (BEVs), due to market readiness and early City efforts. However, the strategy also supports other ZEV technologies such as fuel-cell electric vehicles (FCEVs) and plug-in hybrid electric vehicles (PHEVs). While light-duty passenger vehicles are a key near-term opportunity, this strategy also recognizes the potential for medium-duty and heavy-duty applications in fleets, transit, and freight.

The guiding vision of the City of Sacramento General Plan is to establish Sacramento as the most livable city in America. Sacramento's concept of livability includes creating a healthy city, maintaining a vibrant economy, and developing a sustainable future. The EV Strategy specifically implements General Plan Mobility Goal 1.5, which calls for the use of emerging transportation technologies and services to increase transportation efficiency. General Plan Mobility Policy 1.5.5 further commits the City to support the rapid adoption of zero-emission and low-emission vehicles. ZEVs are a key strategy to achieve the General Plan vision. These emerging technologies provide significant benefits for local air quality, the economy, and environmental sustainability.

EVs have increasingly become a more feasible, cost-effective option for consumers. More than thirty 2017 BEV and PHEV models are available, with increasing range. As of 2017, both Tesla and Chevrolet offer BEV models with range that extends beyond 200 miles. Within the next several years, BEVs are anticipated to become even more cost-competitive with internal combustion engine vehicles. The City plays a key role in enabling and accelerating this transition to cleaner fuel types. This strategy identifies how the City will strive to ensure access and maximize benefits across Sacramento's diverse communities from ZEV technologies.

| ABBREVIATIONS | |
|---|---|
| **BEV** | Battery-electric vehicle |
| **DCFC** | Direct current fast charge |
| **EV** | Electric vehicle |
| **FCEV** | Fuel-cell electric vehicle |
| **L1** | Level 1 charger |
| **L2** | Level 2 charger |
| **PEV** | Plug-in electric vehicle |
| **PHEV** | Plug-in hybrid electric vehicle |
| **ZEV** | Zero-emission vehicle |

# USER'S GUIDE

This strategy is presented in eight main sections. Together, this content provides a recap of major City and regional initiatives, identifies the City's vision and goals, and outlines an action plan to attain those vision goals. Sections are organized as follows, with the following key content:

1. **Introduction:** document purpose and scope.
2. **EV Context:** EV initiatives in the region, including historic and current projects, efforts of other agencies, and public-private partnerships.
3. **EV Adoption and Forecasts:** existing and forecast EV adoption rates countywide and for the City of Sacramento, from analysis completed by the Sacramento Area Council of Governments (SACOG).
4. **Opportunities and Issues:** the role of ZEVs in achieving transportation priorities in Sacramento, in addition to ZEV benefits and key issues for expansion.
5. **Vision and Goals:** Sacramento's vision and goals for ZEV adoption and mobility, outlining priorities for increased access, and achieving the appropriate balance of infrastructure.
6. **Targets and Actions:** Performance targets for 2025 that serve as benchmarks for achievement of EV strategy vision and goals, supported by actions to initiate by 2020 and entities responsible for implementation.
7. **Implementation:** The City's approach to implement and monitor plan outcomes.
8. **Additional Resources:** Website links, citations and sources, and photo credits.

# 2 EV CONTEXT


Sacramento has been a long-standing leader in electrification. Much of this leadership can be attributed to the Sacramento Municipal Utility District (SMUD) who is a nationally recognized leader supporting electric transportation for more than 25 years. Electrification in the Sacramento region is a collaborative enterprise. Together with other agency and community partners, Sacramento has implemented a range of initiatives to deploy EV programs and infrastructure. Recent public-private partnerships also provide a foundation for future efforts.

## CITY BACKGROUND

City ZEV efforts have focused primarily on EV parking, infrastructure, and the City fleet.

### EV Parking Program

In 1994, City Council adopted a policy that first established the City's EV Parking Program, providing free or discounted parking and charging to EV drivers. The original charging infrastructure supporting this effort was installed by SMUD in both the City Hall and Capitol parking garages. This was the City's first program to specifically encourage EVs. The City continues to operate the program, providing free or reduced parking for 316 participants as of August 2017. Participants receive free parking up to certain program thresholds. Once EV parking transactions exceed 5% of overall parking transactions in any one garage, all EV program participants for that garage will be charged 50% of regular parking fees for the garage. To date, the EV Parking Program has served as the City's primary community EV program.

### Infrastructure

The City currently owns and operates 91 chargers at City facilities, 78 of which are available for public or employee charging. The original charging infrastructure installed by SMUD was upgraded in 2010 through federal and state grants. Additional charging units have also been installed in City garages since the first installation. EV charging is provided at no additional charge to all parking patrons, except for the pay-to-charge direct current (DC) fast charger at

the Sacramento Valley Station owned and operated by SMUD. These chargers comprise approximately 20% of all workplace and public charging available in city limits. In August 2017, the City released a public interactive EV parking map application to identify charging options and parking information for the community.

### City Fleet

Since 2011, the City of Sacramento's fleet has been consistently recognized as one of the Top 40 green fleets in North America by the Government Green Fleet Awards Program. In 2013, Sacramento achieved recognition as the #1 Green Fleet through this program. First adopted in 2007, the City's Fleet Sustainability Policy established a procurement commitment for 30% of the City fleet to be powered by alternative fuels, without any specific requirement for ZEVs. As of late 2017, 49% of approximately 2,400 City vehicles run on alternative fuels. The City fleet currently has 12 ZEVs, including 10 BEVs and 2 FCEVs. These vehicles comprise just 1% of the City's light-duty vehicle fleet. The original charging infrastructure for the fleet was installed through American Recovery and Reinvestment- (ARRA) era grants in cooperation with SMUD and other electric vehicle service providers, with recent additions completed by the City with the expansion of PHEVs and BEVs in the fleet. Recent ZEV acquisitions for the fleet include one of the nation's first BEV refuse trucks. The procurement of 31 Chevy Bolts is currently underway. While the City estimates that the upfront cost of the Bolts will be 64% more than a traditional gasoline-powered sedan, annual operations and maintenance costs will be 66% lower. This drastic reduction in upkeep costs leads the City to anticipate a return on investment for each Bolt to be less than one year.

**AVERAGE COSTS FOR CITY FLEET OPERATIONS AND MAINTENANCE**

**Gasoline sedans:**

- $0.062 per mile per vehicle
- $17,770 annually per vehicle

**EV sedans:**

- $0.030 per mile per vehicle
  *51% reduction from gasoline sedans*
- $6,550 annually per EV historically in the City fleet
  *66% reduction from gasoline sedans*

## CURRENT PARTNERSHIPS

The City's EV leadership is part of a broader electrification push with other agencies, community groups, and private partners.

### Sacramento Area PEV Collaborative

Together with other partners, the City recently participated in development of the county-wide *Electric Vehicle Readiness and Infrastructure Plan* (2017). This effort was completed in June 2017 by the Sacramento Area Plug-in Electric Vehicle (PEV) Collaborative, a partnership of local and regional agencies and community partners working to improve EV-readiness and

increase accessibility to EV charging infrastructure in the region.[1] The primary focus of the plan was to identify the number and types of chargers to meet public needs while avoiding an excess of chargers. Sacramento County led this countywide planning effort in partnership with the Sacramento Area Council of Governments (SACOG), with the intent of advancing coordinated countywide EV planning and implementation. The Sacramento Area PEV Collaborative plan serves as a foundation for the City's EV Strategy.[2]

## Our Community Car Share

In early 2017, the Sacramento Metropolitan Air Quality Management District (SMAQMD) launched the Our Community CarShare program. This inaugural effort is the state's first low-income ZEV car share program. The City is supporting the program with construction of two EV chargers dedicated for the program at the Sacramento Valley Station. Funded by the California Greenhouse Gas Reduction Fund and operated by Zipcar, 300 free memberships are available to residents of three affordable housing developments in Sacramento – Alder Grove, Edgewater, and Mutual Housing at Lemon Hill. Many residents at these locations do not own vehicles, and personal transportation can be a challenge. With the program, residents now have up to nine free hours weekly to use an all-electric Kia Soul. Mutual Housing has also developed a chauffeuring option for the program, allowing paid staff to provide rides for residents who can't drive.


[1] As of September 2017, Sacramento Area PEV Collaborative members include the City of Sacramento, Sacramento County, Sacramento Metropolitan Air Quality Management District, Sacramento Municipal Utility District, the Sacramento Area Council of Governments, Sacramento Clean Cities Coalition, Sacramento EV Association, and Valley Vision.

[2] The Sacramento Area PEV Plan is available on the City website, including a link to a GIS web-based map developed by SACOG that identifies the top 100 charging locations in the plan: www.cityofsacramento.org/ev.

## Sacramento Municipal Utility District Programs

SMUD has had an active electric transportation program since 1990. Much of the EV related activities in the region can be attributed to their efforts through that program. The majority of early EV charging infrastructure in downtown Sacramento was installed by SMUD in the early 1990s and has been upgraded to provide service today. The City of Sacramento participated in two federal ARRA grants SMUD won with General Motors and Chrysler. Under these two grants, the City acquired fleet charging infrastructure, PHEVs, and participated in EV test demonstrations.

SMUD has also supported charging infrastructure and EV acquisition for other community organizations including CSUS, UC Davis, Los Rios Community College District, the County of Sacramento, City of Citrus Heights, City of Folsom, City of Elk Grove, City of Rancho Cordova, County Libraries, Sacramento International Airport, and the SCCC. SMUD was also instrumental in engaging other regional entities in regional EV-readiness planning through the receipt of ARRA grants, including SACOG. SMUD has deep organizational relationships with most of the major auto manufacturers and EV charging equipment suppliers. Currently, SMUD owns and operates a network of 6 DCFC stations in Sacramento County. Two of those stations are inside city limits at the Sacramento Valley Station and at the Sacramento Natural Food Cooperative.

In addition, SMUD has also supported other EV-related technologies for heavy duty trucks, forklifts, and airport ground support equipment. Heavy duty truck technologies include truck idle reduction infrastructure at the 49er Travel Plaza and electric truck refrigeration unit infrastructure at two refrigerated warehouses in Sacramento.

As of late 2017, SMUD offers incentive for EV buyers by offering free electricity for two years ($599 value) or a free residential charger. SMUD also has $1,500 incentives for workplace and multi-family charging, and $100,000 incentive to spur more DCFC in the region for qualified participants.

In addition, SMUD has also been expanding access to charge EVs with solar power. In mid-2017, the City joined SMUD’s Commercial SolarShares program. As an alternative to installing costly photovoltaic (PV) cells on-site, SMUD will dedicate a 13-megawatt off-site solar array to the City. This installation will provide approximately half the electricity for 103 of the largest City accounts, including City Hall, parking garages, police stations, firehouses, community centers, and water treatment plants. Through SolarShares, EV patrons of City parking garages can now charge with electricity that is estimated at 57% carbon free.

## EVgo High Power Charging Plaza

On July 17, 2017, the Sacramento City Council approved an agreement with EVgo for the first curbside charging project for Sacramento. EVgo will install up to six high power, 150-kilowatt (kW) high power charging stations in the public right-of-way to serve curbside parking at Southside Park. This new generation of technology can provide up to 240-mile range in as few as 20 to 30 minutes. EVgo operates the largest public fast-charging network in the nation. Partnership with EVgo allows for installation of an innovative EV technology at no cost to the City. The chargers will be available as a paid service for drivers of EVs.

Through the pilot, the City is collaborating with EVgo to understand opportunities for curbside and high-power charging options. Supporting this innovative EV implementation enables the City to evaluate new types of EV applications. This approach is a first step to expanding permit processes to accommodate curbside charging city-wide.

## Electrify America Green City Initiative

The City is undertaking a significant partnership with Volkswagen subsidiary Electrify America to expand ZEV access in the community. Electrify America has designated Sacramento as the first Green City in its ZEV Investment Plan. Under this initiative, Electrify America will invest $44 million in Sacramento by 2020 to catalyze a transformational shift in mobility to zero-emission technologies by installing charging infrastructure, conducting outreach and education, and implementing programs designed to increase access to and use of ZEVs.

Electrify America's initial investment in Sacramento will be focused on the following activities:

- Construction and operation of a network of Level 2 chargers, DC fast chargers, and high-power charging
- Launch of a new EV car share program
- Study opportunities for zero-emission delivery fleets and e-taxis
- Expanding access to ZEV technologies access for disadvantaged and low-income communities

While all investments are Electrify America’s to lead, the City will work as a partner to streamline, support, and guide efforts. City Council adopted Resolution 2017-0311 on August 2, 2017, directing staff to support Electrify America and ensure delivery of ZEV initiatives that are transformational for the community.


This unprecedented investment is part of Electrify America's ten-year, $800 million investment in California. This investment is required by a settlement agreement between Volkswagen, the United States Environmental Protection Agency, the United States Department of Justice, and the California Air Resources Board (CARB), after Volkswagen admitted to installing "defeat devices" that allowed its diesel vehicles to cheat emissions tests and emit higher levels of emissions allowed by US EPA and CARB. Electrify America is a wholly owned subsidiary of Volkswagen whose mission is to develop and implement its ZEV investments.

As Electrify America developed its proposed ZEV Investment Plan earlier this year, the City of Sacramento submitted a Green City proposal. The proposal outlines the City's priorities for investment, including enhancing mobility options for low-income residents in disadvantaged communities, strengthening first-mile/last-mile connections to transit, workforce development and training, and establishing Sacramento as a hub for research and development in zero-emission technologies.[3]

[3] The City's Green City proposal is available online: http://www.cityofsacramento.org/Green-City.

## Other Regional EV Programs and Efforts

Other partners implement an array of EV programs. Community education and ride-and-drive events to promote EVs are offered by SMUD, the Sacramento Clean Cities Coalition (SCCC), and the Sacramento EV Association (SacEV).

SCCC, an affiliate of the Department of Energy's Clean Cities Program, prioritizes the reduction of petroleum use in transportation. SCCC facilitates the endeavors of public and private sectors to improve air quality in the region. The coalition promotes alternative fuel vehicles, national energy security, and regional EV planning efforts. SCCC also provides networking and partnership opportunities as well as access to EV funding and resources. SCCC hosts many technology showcases and workshops, including the Annual Northern California Clean Technology Forum and Equipment Expo.

SacEV is a non-profit organization that engages over 630 volunteers to perform critical EV outreach. SacEV hosted thirty EV events in 2017 alone, holding over 7,500 conversations and providing approximately 640 test drives. These conversations and events help to increase the visibility of EVs and communicate EV benefits to the public. SacEv also provides educational scholarships for automotive technology programs, develops EV training material for automotive dealerships, and publishes articles on EV events and activities. The organization works closely with local and regional stakeholders to coordinate EV initiatives across the region.

# 3 EV ADOPTION AND FORECASTS


## ADOPTION RATES

Sacramento has been recognized as one of the leading metropolitan areas for EV promotion activities, yet EV adoption rates still lag behind other areas of the state and nation. For example, in an evaluation of the 50 most populous US metropolitan regions, the International Council on Clean Transportation ranked the Sacramento region as the fourth highest for its EV promotion actions (2017). Yet EVs comprise approximately just 2% of new vehicles in the Sacramento region, in comparison to regions such as San Jose, where EVs exceed 10% (Ibid).

**EVS IN SACRAMENTO**

**0.36%** of county residents have purchased or leased an EV

~**2,000 EV rebates** issued to residents of the City of Sacramento

**~1%** of Sacramento households have a ZEV

Currently, Sacramento has approximately 430 EV chargers in city limits. Analysis by SACOG (2017) indicates that approximately 1% of Sacramento households have a ZEV based on the 2,000 rebates issued by the California Vehicle Rebate Project (CVRP). However, this estimate undercounts likely ZEV ownership. CVRP data does not capture those who purchased EVs before 2010, and only includes the purchasers or lessees of new EVs who applied for a rebate.

# FORECASTS

California Governor Jerry Brown has called for the increased adoption of ZEVs, with a goal of 1.5 million ZEVs on California roads by 2025 established in Executive Order B-16-2012. Senate Bill (SB) 1275, the Charge Ahead California Initiative, also established incentives to increase the availability of ZEVs and near-zero-emission vehicles, with a focus on disadvantaged and low- and moderate-income communities. Analysis conducted by the Sacramento Area Council of Governments (SACOG) for the Sacramento Area PEV Collaborative plan indicates that to realize Sacramento County's share of the Governor's target, agencies should aim to support approximately 66,000 to 84,000 ZEVs by 2025. To realize these levels, the current countywide fleet of roughly 5,400 ZEVs would need to grow by more than twelve times.

At the City scale, analysis by SACOG indicates that the City should strive to support approximately 17,000 to 74,000 ZEVs by 2025 (2017). This level of growth assumes a significant increase in the estimated 2,000 EVs currently in city limits, with growth of anywhere from seven to thirty times. The lower-growth scenario is based on SACOG's regression analysis of factors affecting EV sales, such as gas prices, the number of unique EV models anticipated to be available, and EV stock. By comparison, the high-growth scenario reflects the trajectory to achieve the local share of the Governor's targets by 2025. The Governor's statewide targets are ambitious, indicating the need for more aggressive action that would exceed the rate of historical adoption observed to date.

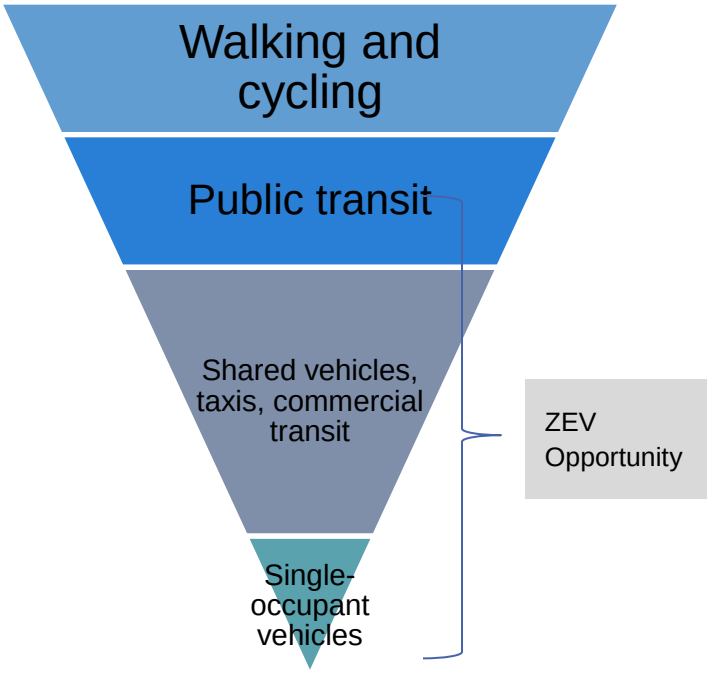
The amount of public and workplace charging needed to support the forecasted range of local vehicles by 2025 is estimated at approximately 900 to 4,000 chargers in city limits alone. Based on SACOG's 2036 travel-demand model SACSIM, SACOG anticipates that a majority of the top 100 countywide destinations for EV charging will continue to be in city limits in 2036. As outlined in the Sacramento Area PEV Collaborative *EV Readiness and Infrastructure Plan* (2017), major charging destinations for Sacramento will be located within Downtown; at universities, colleges, and hospitals; and along highway and major roadway corridors.

As a major employment destination with more than 20,000 businesses and 290,000 jobs, Sacramento will continue to function as a major backbone for regional charging needs. Chargers in Sacramento support commuters from around the region, enabling ZEV trips that provide air quality and climate benefits to the entire region.

# 4 OPPORTUNITIES AND ISSUES

## ROLE OF ZEVS IN THE TRANSPORTATION SYSTEM

**Figure 1: Priorities for People Movement**




Active transportation, transit, and shared vehicle modes are priorities for a vibrant and safe multi -modal system. General Plan goals commit the City to reduce reliance on private automobiles and foster emerging transportation technologies and services to increase transportation efficiency. Maximum increases in transportation efficiency can be realized with reductions in single-occupant vehicle trips. This EV Strategy recognizes these principles. The City seeks to catalyze the deployment of ZEVs in transit and shared vehicle applications. The City also seeks to foster ZEVs while achieving overall reductions in vehicle miles travelled (VMT) within the community. Fostering active transportation and public transit will also serve as key strategies, along within increasing shared rides. The City will prioritize active and shared travel modes over single-occupant trips.

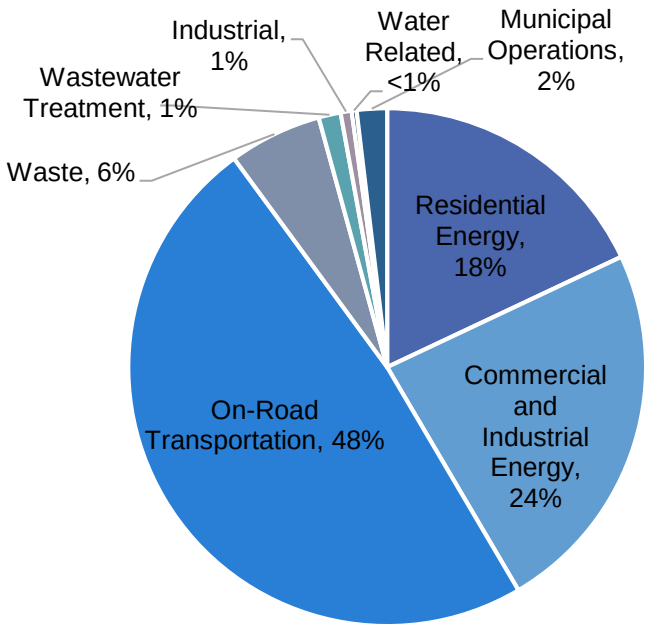
The City's efforts to transition to ZEVs are one part of a multi-prong approach to improve the transportation system. According to the 2011-2015 American Communities Survey, approximately 73 percent of commuters in Sacramento drove alone to work. Attainment of the City's goals for transportation and mobility must be realized with reductions in the overall number of these single-occupant trips. But for vehicle trips with no other viable alternative, the City is working to shift both shared and single-occupant trips into ZEV technologies.

Advances in electrification and shared-use vehicles are part of emerging transportation trends that the UC Davis Institute of Transportation Studies describes as the "Three Revolutions." Together with vehicle automation, shared electric fleets present new opportunities to change the standard mobility paradigm away from personal vehicles to on-demand systems of shared, electric, and automated fleets (2017). This EV Strategy anticipates the potential opportunity of these revolutions for the transportation system. The City will further explore these topics in development of a Transportation Technology strategy and the pending General Plan update, anticipated to launch in 2018.

# ZEV BENEFITS

Advancing ZEVs while realizing the City's goals of reducing VMT offers a broad array of benefits to the community. Together, these strategies implement local goals while delivering measurable environmental and cost benefits. Yet not only do these strategies provide benefit, but widespread ZEV adoption is essential for attainment of state air quality and climate goals. The California Air Resources Board (CARB) also notes that such adoption is key for economic prosperity and energy security (2017).

**Figure 2: Sacramento Community GHG Emissions, 2005**




## Climate and Air Quality

Electrification of the transportation sector is an important strategy to achieve locally-adopted climate targets. Climate goals in the General Plan commit to a 15 percent reduction below baseline community-wide greenhouse gas (GHG) emission levels by 2020, and to strive towards a 49 percent and 83 percent reductions by 2035 and 2050, respectively. Transportation is the largest single contributor to Sacramento's GHG emissions, accounting for 48 percent of baseline GHG emissions. Electrification of this sector will reduce transportation emissions, while delivering other air quality and community benefits.

The adoption of ZEVs and expansion of clean transportation choices are both critical to improving air quality in California's most heavily-impacted communities. The movement of people and goods is responsible for a large portion of local air pollution challenges.

In addition to GHG emissions, exhaust from vehicles also creates pollution such as ozone and particulate matter. The impacts of high pollution levels are numerous, such as increased levels of cardiovascular and respiratory illness, damage to respiratory systems, and even shortened life spans. The Sacramento metropolitan area is classified as a severe nonattainment area for federal ozone levels and a moderate nonattainment area for federal 24-hour PM-2.5 levels. The Sacramento metropolitan area is also a nonattainment area for state annual PM-10 levels. The American Lung Association has designated the Sacramento-Roseville metropolitan area

as the eighth most-polluted area in America for ozone, and fourteenth most-polluted for 24-hour particle pollution (2017). In a study of the ten U.S. states with ZEV sales programs, the American Lung Association estimates that each tank of gasoline used costs $18.42 in health and climate costs. Across the ten ZEV states, attainment of ZEV targets is anticipated to result in average household savings of $1,045 annually, with cost savings to Californians estimated at $13.5 billion by 2050 (2016).

Yet beyond the economic benefits of clean air, transitioning to ZEVs reduces tailpipe emissions from vehicles and helps to deliver significant health benefits. These benefits can be most pronounced for vulnerable populations, including children and the elderly. Often the communities most impacted by air quality are those living near major roadways and least able to afford reliable transportation options, let alone ZEV technologies.

## Cost Benefits

At the household level, BEVs can be cheaper to drive and maintain. According to the California PEV Collaborative, charging at home during off-peak hours is equivalent cost to paying for gasoline that costs less than $1 per gallon (2017). In addition, electricity prices are also more stable than oil prices. Electricity comes from more predictable, domestic sources. Rates for electricity in Sacramento are also established by an elected Board of Supervisors at SMUD, a publicly-owned municipal utility. These public officials are accountable to local voters, unlike the business structures associated with the fossil fuel industry.

ZEVs offer the added benefit of lower maintenance costs. Both BEVs and FCEVs vehicles lack an internal combustion engine, not requiring oil changes or smog checks and with fewer moving parts. The U.S. Department of Energy reports that BEVs cost 28 percent less per mile for tires and maintenance than gasoline counterparts. While fueling options and cost savings differ for FCEVs, a common manufacturer incentive for vehicles such as the Toyota Mirai is the provision of free hydrogen refueling for the duration of the initial lease period.

ZEV-fuel industries are also an emerging economic opportunity for the region. In 2016, the Sacramento Capital Region had approximately 700 jobs in advanced transportation sectors (Valley Vision, 2016), representing 65 percent growth from 2011. As the Capitol of California, Sacramento has opportunity to sit at the confluence of both policy and transportation innovation, serving as a testing bed of highly-visible transportation demonstrations that exemplify California’s transportation evolution. Sacramento is poised to catalyze these industries. In 2016, Sacramento created the Innovation and Growth Fund to establish Sacramento as a hub of innovation, technology, and entrepreneurship. The fund encourages new types of investment, seeking to incentivize private-sector initiatives. City Council also adopted a Demonstration Partnerships Policy on April 25, 2017, which calls for the City to streamline partnerships and encourage innovative solutions for City services and community

needs. These foundational steps establish a strong foundation to accelerate the local pace of innovation and job creation in alternative fuels.

# ZEV ACCESS

Despite the opportunities associated with ZEVs, several barriers constrain the potential for advancement. To date, household income and wealth strongly predict early PEV sales (De Shazo et al, 2017). Low-income and multi-family households are especially challenged to take advantage of ZEV benefits.

## Low-Income and Disadvantaged Communities

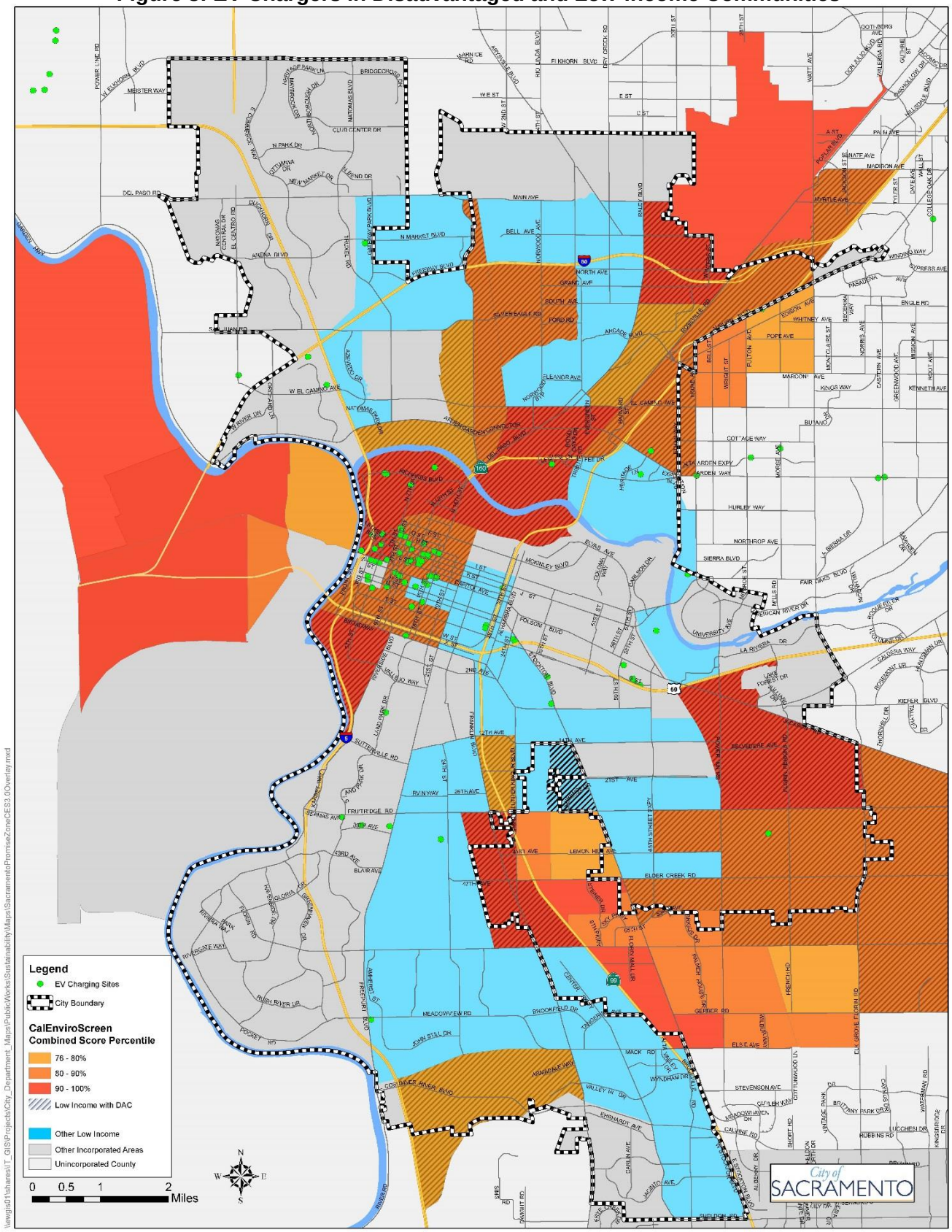
The barriers low-income residents face to accessing ZEV technologies are many. State agencies have been exploring these barriers and opportunities to overcome them pursuant to Senate Bill 350, the Clean Energy and Pollution Reduction Act of 2015. CARB has identified several primary barriers for low-income residents (2017), including the following:

- Inability to afford higher upfront costs for advanced technologies,
- Absence of infrastructure in low-income communities,
- Lack of exposure to ZEV options and lower understanding of benefits, and
- Limited funding options.

Currently, access to ZEV technologies assumes access to capital and the ability to own and maintain a private vehicle. While state and local rebates are available to those who purchase a ZEV, these rebates require upfront investment by the consumer. Vouchers or some other financial incentive that offset upfront costs can help facilitate greater adoption.

The absence of charging infrastructure is also an obstacle to increasing access. Within Sacramento, charging infrastructure is heavily concentrated in the Downtown core and along major roadway corridors. Some of Sacramento's most disadvantaged communities lack charging options. **Figure 3** presents the location of existing chargers in Sacramento along with low income areas and CalEnviro Screen 3.0 designations. The State of California developed CalEnviro Screen 3.0 rankings to identify disadvantaged communities that are disproportionately burdened by multiple sources of pollution and socioeconomic vulnerability. Within Sacramento, 36% of residents live in the top 25% of disadvantaged census tracts statewide. While many chargers in Sacramento are in census tracts that are designated as disadvantaged communities, most of these chargers are concentrated in Downtown and are not distributed throughout the community. Many chargers are concentrated at parking garages within Downtown. The remaining chargers are distributed at destinations such as the UC Davis Medical Center, Sacramento State University, the Arden Way corridor, and the City's South Area Corp Yard.

**Figure 3: EV Chargers in Disadvantaged and Low-Income Communities**



## Multi-Family Housing

Sacramento's housing stock also poses challenges to accelerated EV adoption. For residents with personal vehicles, charging EVs in multi-family units can present more challenges than charging in single-family homes. While state legislation has sought to remove many impediments to tenant installations and granted tenants the right to request and install charging installations at the tenant's expense,[4] tenants may still face site-related challenges that prevent charger installation. Yet even if a site could accommodate an on-site charger, many tenants may be unwilling to invest or the price of the installation may be cost-prohibitive. Many tenants, particularly on the Downtown Grid, also lack access to dedicated off-street parking. When the absence of dedicated parking is combined with lack of awareness of public charging options, EVs are perceived as infeasible by a larger portion of the population.

Infrastructure access for multi-family dwelling units is a key issue for Sacramento. Within the city, 38 percent of all housing units are multi-family, approximately 70,000 housing units. By 2020, the number of multi-family units is expected to increase by 26 percent to more than 90,000 dwelling units. Multi-family units are anticipated to comprise more than 40 percent of total dwelling units by 2020.[5] Installing charging infrastructure in new multi-family development during initial construction is a critical opportunity. The installation of turn-key charging infrastructure in new development has been found to pose minimal increase in the total cost of new construction, with sizeable savings compared to the costs of retrofitting for chargers after construction is complete.[6]

[4] Assembly Bill 2565, Rental property: electric vehicle charging stations.
[5] Based on land use modeling for the City's 2035 General Plan. Existing housing unit data represents 2012 data. This inventory will soon be updated as part of the City's General Plan update, anticipated to launch in early 2019.
[6] Energy Solutions (November 17, 2016). *Plug-in Electric Vehicle Infrastructure Cost-Effectiveness Report for San Francisco.*

# 5 VISION AND GOALS

Sacramento has developed this strategy to advance the near-term deployment of ZEV initiatives. This plan establishes a vision of Sacramento serving as the ZEV “Green City” Capital of California, with a robust ZEV system that provides significant improvements in local air quality, mobility, and access. With an expansion of ZEVs, Sacramento is working to increase mobility and access for disadvantaged and low-income communities. This strategy outlines a path to distribute the benefits of ZEVs and increase opportunities for residents who are challenged to easily access employment, housing, and services. Sacramento envisions the expansion of ZEVs as a key component of local transportation initiatives, coupled together with increasing active transportation and shared rides. The City seeks to foster this new technology while increasing the efficiency of each vehicle trip on the road, working to consolidate trips with more passengers in fewer vehicles. Efforts to expand ZEVs will prioritize shared mobility opportunities, and ensure that ZEVs are working to fill the first-mile/last-mile gap to transit and improve the connectivity of areas underserved by transportation options. Sacramento seeks to not just encourage ZEVs, but to also establish them as a highly visible cornerstone of the region’s mobility system. This will include innovative deployments, such as electrified charging hubs and demonstration projects. The City’s deployment of ZEVs also seeks to establish a vibrant alternative fuel transportation industry. ZEV programs can spur local business and

encourage new economic enterprises, delivering jobs to Sacramento's workforce. The City seeks to leverage ZEVs as part of a broader electrification push within the region, using ZEVs to maximize the contribution of renewable power and spur advanced vehicle-to-grid applications that optimize the grid. Implementation of this vision will require sustained partnership and increased levels of collaboration with public and private stakeholders, including new levels of engagement with community leaders in ZEV mobility issues.

This strategy establishes goals that define this vision, supported by a series of core performance targets and actions to achieve them. The City will maintain and update this strategy as a living document over time. Due to the rapidly evolving nature of ZEV technology and emerging opportunities, this strategy establishes near-term actions to advance the City's ZEV vision by 2020, and achieve full implementation by 2025. However, technologies are anticipated to continue to evolve quickly. The City will collaborate with key partners over time to revisit actions and adjust goals as appropriate.

# EV STRATEGY GOALS

1. Establish Sacramento as the ZEV Green City Capital of California.
2. Increase and accelerate ZEV use and adoption levels within the Sacramento region.
3. Advance the next generation of transformational and highly-visible ZEV mobility applications and programs.
4. Achieve equitable access to ZEV technologies and benefits by low-income populations and disadvantaged communities.
5. Strengthen the local ecosystem of ZEV innovation and industry.
6. Advance an efficient distribution of residential and public charging infrastructure that is optimized for future technologies and demand.
7. Support sustainable ZEV programs characterized by private investment in infrastructure construction and operations, with any public spending prioritized to incentivize rider trips and reduce trip costs.
8. Ensure that ZEV programs complement active transportation and transit modes.
9. Encourage shared ZEV options that reduce vehicle trips and the need for personal vehicle ownership.
10. Support the use of renewable energy and advanced energy technologies to balance the grid.

# 6 TARGETS AND ACTIONS

The City will measure progress towards ZEV goals based on the following performance targets. Targets represent full implementation of the City's EV Strategy, to be achieved by 2025. These have been developed in collaboration with local and regional partners, drawing on the early work of the Sacramento Area PEV Collaborative Electric Vehicle Readiness and Infrastructure Plan. Regional data and forecasts were used to develop city-specific targets that represent local implementation consistent with the Governor's 2025 goal to attain 1.5 million ZEVs on California roads by 2025. These are targets the City will strive towards in collaboration with its partners, stakeholders, and other agency partners.

## Performance Targets

| Action Category | Metric | Current | Target | Data Source |
|---|---|---|---|---|
| **1. Community Charging and Infrastructure** | Public or workplace chargers by 2020 - L2s, DCFC, and high power | 430 | 2,200 | US DOE Alternative Fuels Data Center, SACOG, SMUD |
| | DCFC - subset of total chargers above | 7 | 100 | SMUD |
| | HHs with EVs | 1.2% | 10% | SACOG - CVRP Rebates, SMUD |
| **2. Green City** | Electrify America investment in Sacramento | - | $44M | Electrify America |
| | Green City charger installations | - | 75 | Electrify America |
| | Percent of Green City investment made in disadvantaged and low-income communities | - | 35% | Electrify America |
| **3. City Facilities - Charging** | Chargers at City facilities available for public or employee workplace charging | 91 | 100 | Facilities and Fleet Divisions |
| | EV Parking Program participants | 355 | 500 | Parking Division |
| **4. Fleet** | Annual City fleet light duty replacements to be ZEV | 12% | 50% by 2018, 75% by 2020 | Fleet Division |
| | Private employers or fleets to complete a ZEV commitment | 0 | 20 | SMAQMD, Sacramento Clean Cities Coalition |
| **5. Economic development and Innovation** | Advanced Transportation Jobs | 770 | 1,000 | Valley Vision, Business Database |
| | OEM or transportation company partnerships for ZEV deployments | 2 | 5 | City |
| **6. Partnerships, Programs, and Engagement** | Annual test drives | 640 | 3,200 | SacEV Association, Electrify America |
| | Annual events | 30 | 52 | |

## Actions

The following pages present the City's actions to initiate by 2020 and achieve full implementation between 2020-2025. These consist of actions to be completed or already underway. While the City will serve as a lead for many actions, implementation will continue to be a highly-collaborative effort. Successful attainment of plan goals will require ongoing partnership with other agencies, community-based organizations, non-profits, businesses, and industry. This EV Strategy establishes a path to guide the City's ongoing efforts with these partners to achieve the City's ZEV goals.

## Abbreviations

Tables on the following pages identify actions and responsible entities for implementation. This includes both actions led by the City, and actions implemented by other entities but supported by the City. The first column of each table identifies City-led actions with a "#", versus actions led by other entities where the City will provide a supporting role. Actions that are already underway are noted with a "*".

The last column of each table identifies implementing entities. Lead entities appear in bold text, using the following the abbreviations:

| | |
|---|---|
| **City department and division abbreviations** | CCS – Convention and Cultural Services<br>CDD-Planning – Community Development Department, Planning Division.<br>CDD-Building – Community Development Department, Building Division<br>CMO – City Manager's Office<br>DPW – Department of Public Works.<br>DPW-Parking – Department of Public Works, Parking Division<br>DPW-SM – Department of Public Works, Sustainability Manager<br>OIED –Office of Innovation and Economic Development<br>PRK – Parking Division, a division of DPW |
| **Other agency and partner abbreviations** | ITS – Institute of Transportation Studies, UC Davis<br>RT – Regional Transit<br>Sac County – Sacramento County<br>SacEV – Sacramento Area EV Association<br>Sac PEV Collaborative – Sacramento Area PEV Collaborative[7]<br>SMUD – Sacramento Municipal Utility District<br>SMAQMD – Sacramento Metropolitan Air Quality Management District |

[7] As of September 2017, Sacramento Area PEV Collaborative members include City of Sacramento, Sacramento County, the Sacramento Metropolitan Air Quality Management District, the Sacramento Municipal Utility District, the Sacramento Area Council of Governments, the Sacramento Clean Cities Coalition, the Sacramento EV Association, and Valley Vision.

| Community Charging and Infrastructure | | | |
|---|---|---|---|
| **1.1 Encourage installation of chargers in existing private development.** | | | |
| City-led | No. | Action | Lead |
| # | 1.1.1 | Support the co-location of EV charging infrastructure at existing community amenities, and encourage these as additions to existing parking areas. | DPW, CDD-Planning |
| # | 1.1.2 | Streamline the planning review process for installation of EV chargers in existing parking lots with mechanisms such as the Administrative Parking Permit process, which allows applicants to avoid the site and plan review entitlement process for installation of EV charging in existing parking lots. * | CDD-Planning |
| # | 1.1.3 | Maintain brochures, handouts, and other resources at City permitting counters and the City website for installation of home and workplace EV charging. * | CDD-Building, DPW |
| # | 1.1.4 | Continue to provide 24-hour permit review for single-family residential EV supply equipment applications and five-day permit review for commercial and multi-family EV supply equipment applications, * and update City forms and review cycles to formalize this. | CDD-Building |
| # | 1.1.5 | Allow for paper or electronic plan check for EV supply equipment applications. | CDD-Building |
| # | 1.1.6 | When approved EVSE construction projects submit a request for inspections, continue to provide inspections within a 24-hour period. * | CDD-Building |
| **1.2. Facilitate EV charging in new private development.** | | | |
| # | 1.2.1 | Explore incentives and development of an educational program to encourage installation of EV charging in multi-family projects outside of the central city, to further incentivize charging in projects not eligible to waive parking requirements per City Code. | DPW, CDD-Planning |
| # | 1.2.2 | Develop materials on EV resources to share in pre-application meetings for planning entitlements and parking plans, to encourage the installation of EVs in new development. | DPW, CDD-Planning |

| **1.3. Foster new types of ZEV uses.** | | | |
|---|---|---|---|
| # | 1.3.1 | Identify opportunities to encourage the conversion of conventional fueling stations into ZEV charging hubs. | DPW-SM, CDD-Planning |
| # | 1.3.2 | Encourage the integration of ZEV infrastructure and ZEV sharing programs at multi-modal mobility hubs and transit-oriented development centers. | DPW-SM, RT, CDD-Planning |
| # | 1.3.3 | Amend the planning and development code to define a separate land use for electric vehicle fuel charging stations. | CDD-Planning |
| # | 1.3.4 | Support and evaluate implementation of Sacramento's first high-speed charging plaza at Southside Park, developed in partnership with EVgo. | DPW |
| # | 1.3.5 | Continue to use the City's Demonstration Partnerships Policy to encourage public-private partnership for the expansion of public charging and ZEV infrastructure, including high-power charging technologies. | DPW |
| # | 1.3.6 | Analyze truck routes and concentration of freight activity in Sacramento, and explore opportunities for ZEV freight applications in Sacramento that serve both regional and interstate operations. | DPW, SMAQMD, SMUD, Sac PEV Collaborative |
| # | 1.3.7 | Identify priority areas for the co-location of ZEV infrastructure that supports both light-duty and heavy-duty vehicles. | CDD, DPW, SMAQMD |
| # | 1.3.8 | Provide parking incentives to ZEVs, such as preferential business merchant permits for ZEV parking.. | DPW-Parking |
| | 1.3.9 | Collaborate with partners for development of an electric aircraft program at Sacramento airports, starting with small personal aircraft, to install charging infrastructure and replace aircrafts with internal combustion engines with all-electric models. | SMAQMD, Sac County, Calstart, DPW, McClellan Jet Services/McClellan Business Park, Executive Airport |
| # | 1.3.10 | Advocate for deployment of new ZEV services that provide first-mile/ last-mile connections and support active transportation and transit ridership. * | DPW |
| # | 1.3.11 | Identify priority locations and opportunities to develop integrated multi-modal mobility hubs that include ZEV infrastructure. | DPW, CDD-Planning |

| **1.4 Prioritize public charging for those without other charging options, and encourage high charging turnover and at-home charging by users when feasible.** | | | |
|---|---|---|---|
| # | 1.4.1 | Pending state authorization, amend City Code to allow for designation and enforcement of on-street parking spots for EVs, including assignment of a curb color or striping policy and appropriate signage. | DPW-Parking |
| # | 1.4.2 | Provide guidance for issuing permits for private installations of charging infrastructure in the right-of-way, with priority for applications that serve multi-family and workplace charging needs. * | DPW |
| # | 1.4.3 | Site charging infrastructure in the right-of-way and at City facilities to avoid conflicts with non-vehicular modes. The installation of new infrastructure shall be prohibited where charging infrastructure would pose a direct conflict with existing or planned bicycle, pedestrian, or public transit infrastructure improvements. | DPW |
| # | 1.4.4 | Ensure high charging turnover for any new public charging infrastructure at City facilities or in the right-of-way by phasing in requirements for charging be provided as a paid service, except for installations designed to primarily serve low-income or disadvantaged communities. | DPW |

## 2. Electrify America Green City Initiative

### 2.1 Support Electrify America Green City initiatives.

| City-led | No. | Action | Lead |
|---|---|---|---|
| # | 2.1.1 | Collaborate with Electrify America to support the development and implementation of Green City initiatives and California ZEV investments. | DPW-SM, DPW, OIED, CDD-Planning |
| # | 2.1.2 | Facilitate engagement of key partners, stakeholders, and the public for Green City program development and implementation. | DPW-SM |
| # | 2.1.3 | Use existing City processes to streamline planning and building applications for Green City implementation, including five-day building permit review for commercial EV supply equipment applications.* | CDD-Building, CDD-Planning, DPW |
| | 2.1.4 | Support Electrify America efforts to secure site access agreements with private and public property owners for EV charging installations. | DPW |
| # | 2.1.4 | Allow for the testing of new car share models with Electrify America on a pilot basis, and support program launch prior to updates to the citywide car share framework. | DPW |
| # | 2.1.5 | Support deployment of highly-visible ZEV installations, such as an all-electric boulevard serving as a concentrated DCFC EV charging destination. | DPW, CDD-Planning |
| # | 2.1.6 | Leverage City investment in public infrastructure and assets to support Green City initiatives to the extent feasible, such as the testing of intelligent transportation system controls in key project corridors. | DPW |
| # | 2.1.7 | Connect Electrify America to opportunities for site access in new development, including the hosting of open houses, and provision of program information in pre-application meetings with applicants. | DPW, CDD-Planning |

### 2.2. Maximize local and regional benefits of Green City initiatives

| | | | |
|---|---|---|---|
| # | 2.2.1 | Collaborate with Electrify America to advance investment benefits for Sacramento's diverse communities, with a focus on disadvantaged and low-income communities. | DPW, OIED |

| 2. Electrify America Green City Initiative | | | |
|---|---|---|---|
| # | 2.2.2 | Encourage Electrify America's outreach efforts to include local community-based organizations, youth curriculum and programs, and ZEV-workforce training. | DPW, OIED |
| # | 2.2.3 | Leverage Green City programs to attract further investment and partnership opportunities to develop a local research and development center for zero-emission technologies, and establish Sacramento as a test bed for innovative ideas to advance the clean economy. | OIED |
| # | 2.2.4 | Work with partners to implement complementary ZEV business efforts, such as workforce development programs, local business support services, and expansion of a competitive, creative economy. | OIED |
| # | 2.2.5 | Explore how Electrify America's initiatives can support social services and other community programs. | DPW-SM, CMO |

| 3. Public Charging – City Facilities | | | |
|---|---|---|---|
| **3.1. Support public and employee charging at City facilities.** | | | |
| # | 3.1.1 | Continue to provide and maintain charging for public use at City facilities with public parking, such as parking facilities, community centers, and facilities with public service counters. * | DPW |
| # | 3.1.3 | Pursue grant funding to upgrade charging infrastructure at City parking garages to allow for submetering of charging activity, improvement remote management capabilities, and increase charging options. | DPW |
| # | 3.1.4 | Participate in California's Low Carbon Fuel Standard Program upon upgrades to City charging infrastructure, for the sale of credits and reinvestment of funds into City EV charging initiatives. | DPW |
| # | 3.1.5 | Prioritize development of chargers at facilities for public and workplace charging that meet at least one of the following criteria when installing public EV chargers at City facilities:<br>– Location in a disadvantaged community<br>– Multi-use facility, with public access | DPW |

| 3.2 Improve availability and utilization of chargers at City parking facilities. | | | |
|---|---|---|---|
| # | 3.2.1 | Require all new or renovated City-owned buildings to provide chargers at all mandatory EV-ready spots required by CalGreen, and require the provision of additional EV-ready spaces pursuant to CALGreen Tier 2 standards for electric vehicle charging. | DPW |
| # | 3.2.2 | Develop a phased approach to update the City's EV Parking Program to increase charging access, encourage at-home charging by patrons when feasible, and ensure the availability of chargers for broad use. | DPW |
| # | 3.2.3 | Update the City's workplace charging program to expand charging access for City employees and encourage those converting from internal combustion engines. | DPW |
| # | 3.2.4 | Obtain real-time EV charging data for City parking applications with new technology applications and integrate into the City's Parking Mobile system, upon upgrades to City charging infrastructure. | DPW |
| # | 3.2.5 | Locate new charging installed at City parking facilities to serve multiple vehicles simultaneously and avoid conflicts with non-PEV parking. | DPW |
| # | 3.2.6 | Include installation of 240-volt electrical outlets or conduit for future charging stations when conducting renovations or new construction at City facilities within or adjacent to parking areas. | DPW |
| # | 3.2.7 | Encourage installation of electric ports for workplace Level 1 charging, and allow for Level 1 charging at City facilities by City fleet and employee vehicles. | DPW |
| # | 3.2.8 | Locate charger installations that serve the City fleet to allow for daytime public charging and nighttime fleet charging, when feasible. | DPW |

## 4. Fleets

### 4.1. Increase ZEVs in the City fleet

| City-led | No. | Action | Lead |
|---|---|---|---|
| # | 4.1.1 | Amend the City's Fleet Policy to require a minimum of 50% of annual light-duty vehicle purchases be ZEV by 2018, and 75% of annual light-duty purchases by 2020. | DPW |
| # | 4.1.2 | Procure ZEV vehicles for any vehicle replacement when suitable ZEV options are available with equivalent operational capability; but allow for an exemption process for vehicle users based on criteria such as emergency response performance, charging challenges, and other operational issues. | DPW |
| # | 4.1.3 | Increase the overall fleet target for alternative vehicle procurement from 30% to 50%, inclusive of electricity use. | DPW |
| # | 4.1.4 | Test and evaluate new ZEV options as they become available for all vehicle categories, including heavy duty, and share metrics and performance outcomes with the public and partner agencies. * | DPW |
| # | 4.1.5 | Continue to establish a process to budget for EV infrastructure costs as part of annual EV replacements. * | DPW |
| # | 4.1.6 | Continue participation in joint agency procurements for discounted EV models. | DPW |
| # | 4.1.7 | Develop a system to monitor billing and electricity use for each ZEV in the City's fleet, to allow for tracking, allocating, and reporting of cost-benefits. | DPW |
| # | 4.1.8 | Support establishment of public-private partnerships to enable City staff to use cost-effective private ZEV mobility options to augment City fleet and employee transportation needs. | DPW |

### 4.2. Support electrification of public and private fleets.

| | | | |
|---|---|---|---|
| # | 4.2.1 | Participate in grant efforts with other agency partners to electrify public or private fleets. * | DPW |
| | 4.2.2 | Identify opportunities for co-location of high power charging infrastructure to serve RT and other fleet needs. | DPW, RT |

| 4. Fleets | | | |
|---|---|---|---|
| | 4.2.3 | Collaborate with RT to encourage the co-location of EV charging and ZEV car share sites at RT park-and-ride lots and light rail stations. | DPW, RT |
| # | 4.2.4 | Collaborate with SMAQMD and the Sacramento Clean Cities Coalition to promote EV incentives and rebates to members of chambers of commerce, business associations, and business improvement districts for acquisition of EV fleets, and explore creation of an EV-designation pledge for employers taking minimum steps for ZEVs. | DPW, OIED, SMAQMD, Sac PEV Collaborative, SacEV |
| | 4.2.5 | Support local efforts to develop a used bulk group-purchase buy program for used or discounted EVs. | DPW, Sac PEV Collaborative, SacEV |
| | 4.2.6 | Educate businesses about financing options for EV charger installations, such as the CalCAP Electric Vehicle Charing Station Program, or property assessed clean energy financing. | DPW, Sac PEV Collaborative, SacEV |
| | 4.2.7 | Collaborate for advancement of a local program to transition medium- and heavy-duty delivery fleets to ZEV models. | DPW, Sac PEV Collaborative, SacEV |
| | 4.2.8 | Support the launch of new types of shared use shuttles and high-occupancy mobility services with ZEV models. | DPW, RT, Sac PEV Collaborative |
| | 4.2.9 | Support the County Airport System in its efforts to expand electric shuttle bus fleet from terminals to parking lots, in support of shuttle electrification targets proposed by CARB by 2031. | Sac County Airports, SMAQMD, SMUD, City DPW |
| | 4.2.10 | Support efforts by the County Airport System to increase use of renewable diesel by ground service equipment (GSE) owned or contracted by Airlines. Expand to electric GSE as technology for applications such as medium and heavy-duty tractors, street sweepers, and gang mowers, become available. | Sac County Airports, SMAQMD, City DPW |
| | 4.2.11 | Engage with car rental companies to provide ZEVs as part of the available car rental fleet, including County Airports. | Sac County, BERC, SMAQMD, City DPW |
| | 4.2.12 | Support the State of California, as the City's largest employer, in efforts to increase its ZEV fleet. | DPW, State of California |

## 5. Economic development and innovation

### 5.1 Support a vibrant ZEV transportation industry and establish Sacramento as an economic center for alternative fuels.

| City-led | No. | Action | Lead |
|---|---|---|---|
| # | 5.1.1 | Target a certain portion of the City's funds for local competitive economic development grants to alternative-fuel enterprises. | OIED |
| | 5.1.2 | Collaborate with local partners, dealers, and OEMs to understand the local market for EVs and penetration into EV sales. | OIED, DPW-SM, Sacramento Area PEV Collaborative, SacEV |
| # | 5.1.3 | Pursue partnerships with OEMs to advance ZEV deployment when partnerships provide for collaborative learning, increased ZEV service, workforce training and jobs creation, and community investment. | OIED, DPW-SM, Sacramento Area PEV Collaborative |
| # | 5.1.4 | Partner with other agencies, OEMs, and ZEV mobility companies such as Electrify America to showcase ZEV technologies at public events, or for display at City-owned or other public facilities. | DPW-SM, OIED, Sacramento Area PEV Collaborative |
| # | 5.1.5 | Secure sponsorship and funding to develop a showcase or research and development center for electrification. | OIED |

### 5.2 Expand the ZEV workforce.

| | | | |
|---|---|---|---|
| # | 5.2.1 | Encourage and support efforts to recruit ZEV manufacturers to the region. | OIED |
| | 5.2.2 | Collaborate with local universities and colleges to strengthen career pathways in Sacramento for the ZEV industry. | OIED, DPW-SM |
| # | 5.2.3 | Explore developing a youth ZEV ambassadors initiative or educational program, with opportunity to use the Summer at City Hall internship program. | OIED, DPW-SM |
| | 5.2.4 | Promote and support efforts to expand local ZEV-workforce training programs, such as the American River College Alternative Fuels Certificate and Electronic Systems Technology Programs, and Green Tech youth workforce training programs. | OIED, DPW-SM |

| 5. Economic development and innovation | | | |
|---|---|---|---|
| | 5.2.5 | Support partner efforts to fund development of a ZEV service center in Sacramento, to service new ZEV models and provide the necessary technical support for fleet purchasers and small manufacturers using new ZEV technologies. | OIED, DPW-SM, Calstart, Sac PEV Collaborative |
| **5.3 Spur local ZEV innovation and enterprise.** | | | |
| # | 5.3.1 | Encourage regional autonomous vehicle efforts to prioritize pilots for autonomous, shared, and electric vehicles. | OIED |
| | 5.3.2 | Consider future charging needs of automated, shared, electric vehicles when evaluating investments in ZEV charging infrastructure. | OIED, DPW-SM |
| | 5.3.3 | Collaborate with SMUD, UC Davis, and Sacramento State University, to investigate and pilot the viability of vehicle-to-grid technologies. | DPW-SM, OIED |
| | 5.3.4. | Encourage the deployment of integrated solar photovoltaics and energy storage with ZEV infrastructure. | DPW, SMUD |
| | 5.3.5 | Explore opportunities for grid-optimized charging to manage grid impacts and maximize economic benefits of EVs. | DPW, SMUD |
| | 5.3.6 | Support SMAQMD efforts to conduct regional ZEV infrastructure planning, and identify opportunities to establish infrastructure for hydrogen infrastructure, and other next-generation ZEV technologies. | DPW-SM, SMAQMD |

| 6. Other Programs, Partnerships, and Engagement | | | |
|---|---|---|---|
| **6.1 Integrate ZEV requirements into local programs.** | | | |
| City-led | No. | Action | Lead |
| # | 6.1.1 | Include the provision of EV charging for car share as a transportation demand management strategy. | DPW |
| # | 6.1.2 | Encourage a minimum target for local hire and employment of residents within Sacramento's disadvantaged communities in partnerships for the delivery of ZEV services. | DPW |

| | | | |
|---|---|---|---|
| **6. Other Programs, Partnerships, and Engagement** | | | |
| # | 6.1.3 | Support local hire for private installation of EV chargers in the public right-of-way. | DPW |
| **6.2 Collaborate with local agencies and partners to monitor and advance ZEV deployment.** | | | |
| # | 6.2.1 | Continue to participate in the Sacramento Area PEV Collaborative for joint planning and coordination of EV efforts with other agencies, non-profits, and community-based organizations. | DPW, Sac PEV Collaborative |
| # | 6.2.2 | Collaborate with ZEV companies and partners for development of engagement and partnership programs to expand public awareness and increase public understanding of ZEV feasibility and benefits, with programs that involve local groups, community and business organizations, neighborhood associations, and other stakeholders. | DPW, Sac PEV Collaborative, SMUD, SacEV |
| | 6.2.3 | Participate in regional efforts for ZEV fuel infrastructure planning, including the siting of hydrogen infrastructure. | DPW, SMAQMD, Sac PEV Collaborative |
| | 6.2.4 | Encourage partner and community-based efforts for ride-and-drive events, EV showcases, and other ZEV educational initiatives. | DPW, Sac PEV Collaborative, SacEV, OIED |
| | 6.2.5 | Collaborate with local partners to develop a discounted group-buy or leasing program for used EVs. | DPW, Sac PEV Collaborative, SacEV |
| | 6.2.6 | Support efforts by the National Center for Sustainable Transportation and ITS, UC Davis, to conduct a baseline EV study and develop a comprehensive database to track data over time on EV usage, sales, and consumer perceptions in the region | DPW, ITS-Davis |
| | 6.2.7 | Engage UC Davis, Sacramento State, and other research partners to collaborate for evaluation of EV penetration, deployment of pilots, and shared learning activities. | DPW, ITS-Davis, Sacramento State University |
| | 6.2.8 | Work with local partners and auto dealerships to identify appropriate methods to increase sales of EVs, such as incentives, dealer training, and increasing EV inventory. | SMUD, DPW-SM, OIED, SMAQMD |

| 6. Other Programs, Partnerships, and Engagement | | | |
|---|---|---|---|
| # | 6.2.9 | Require that all providers of charging in the right-of-way provide "charging event" data for each EV charging station on a regular basis, and provide application programming interface (API) to the City of Sacramento and any other applicable web or app platform of the City of Sacramento's choosing. | DPW-SM |

| 6.3 Spur ZEV access and increase mobility for disadvantaged and low-income communities. | | | |
|---|---|---|---|
| | 6.3.1 | Continue to support car share programs for low-income mobility options, and encourage program expansion to other neighborhoods and community facilities. | DPW, SMAQMD, Sac PEV Collaborative, the Sacramento Housing and Redevelopment Agency (SHRA) |
| # | 6.3.2. | Review the City's ordinances to develop guidance for car share programs that incentivize ZEV deployments, and prioritize providers that offer service in disadvantaged and low-income communities. | DPW |
| | 6.3.3 | Promote the Air District's EFMP "scrap and replace" program to provide rebates to low-income households living in DACs for the ZEVs or PHEVs | DPW-SM, SMAQMD, SHRA |
| | 6.3.4 | Coordinate with agency partners and support efforts to pursue funding opportunities for new ZEV efforts, such as ZEV ride hailing, commuter shuttles, or ZEV car share. | DPW, Sac PEV Collaborative, SHRA |
| | 6.3.5 | Encourage SMAQMD to leverage rebate and incentive funds to transition low-income workers into ZEVs, either with ZEV ride hail, financial incentives, or scrap and replace programs. | DPW, SMAQMD, Sac PEV Collaborative, SHRA |
| # | 6.3.6 | Collaborate with local partners to develop a discounted group-buy or leasing program for used EVs for low- and medium-income households. | DPW, Sac PEV Collaborative, SacEV, SHRA |

| | | | |
|---|---|---|---|
| **6.3 Spur ZEV access and increase mobility for disadvantaged and low-income communities.** | | | |
| | 6.3.7 | Collaborate for the co-location of ZEV demonstrations at workforce training centers, community-based organizations, and community centers in Sacramento's disadvantaged communities. | DPW, Sac PEV Collaborative, SHRA, Sacramento Employment and Training Agency |
| **6.4 Increase the visibility of ZEVs throughout the community.** | | | |
| # | 6.4.1 | Maintain an EV website with information on ZEV resources and rebates for consumers and drivers. | DPW-SM |
| # | 6.4.2 | Maintain an online EV parking map application integrated with City parking garage information to inform the public of EV charging options and demonstrate the viability of EVs. | DPW-SM |
| # | 6.4.3 | Explore creation of a public art program for public art displays on utility boxes and equipment associated with EV charging infrastructure. | DPW, CCS |
| | 6.4.3 | Encourage development of elementary and high school curriculum on ZEV mobility options. | DPW, Sac PEV Collaborative |
| # | 6.4.4 | For any City facilities with publicly-accessible charging, the City shall install EV signage at the facility entrance to help increase consumer awareness at the facility and from any key adjacent roadways | DPW |
| | 6.4.5 | Collaborate with other EV providers and agencies to increase EV signage and wayfinding throughout the community, improving the visibility of EV options to EV drivers and non-EV drivers alike. | DPW, Sac PEV Collaborative |
| # | 6.4.6 | Explore sponsorship partnerships that allow for ZEV educational displays and signage in City parking garages. | DPW |

# 7 IMPLEMENTATION

This strategy establishes the City's first set of comprehensive targets and actions for ZEVs and EVs. Implementing this strategy will require City leadership and widespread coordination with partners. This document will serve as a guide, while also functioning as an implementation tool of the General Plan. Actions presented in **Section 6** (Targets and Actions) identify the City's priorities to attain the vision and goals established in this plan. Implementation will initiate by 2020, to achieve full attainment of targets by 2025. Responsible departments or partners are also identified in **Section 6**. Attainment of targets will require involvement from multiple departments, agencies, business and industry partners, and the community.

To ensure the success of this EV Strategy, the City of Sacramento will integrate the goals and actions of this plan into other local and regional plans as applicable, and implement the programs and activities identified herein. Key goals, targets, and metrics in this EV Strategy will inform the anticipated 2018 update to the City's General Plan and Climate Action Plan. As the City progresses with updating these and other strategic documents, staff will ensure that updates support and are consistent with the adopted EV Strategy.

Staff will monitor progress on an ongoing basis and submit an annual update to City decision-makers. Not all actions in this strategy may be necessary for the City to achieve its EV targets. During implementation, the City may elect to alter or remove individual actions to allow Sacramento to achieve its goals and targets in a manner that better meets community needs and values. Technology and ZEV applications are anticipated to evolve quickly, with potential for new or unanticipated opportunities to better achieve adopted goals and targets of the strategy. The City's Sustainability Manager of the Department of Public Works will serve as the lead for implementation of this strategy and submission of annual reports. The Sustainability Manager will also serve as an ongoing advisor and coordinator to other departments, agencies, and partners for implementation. City staff will evaluate the effectiveness of actions and provide recommendations for updates. Over time, if implementation does not occur as anticipated, the City may modify and add additional actions to ensure attainment of targets and goals.

While this strategy builds on existing efforts in the region, the strategy also demonstrates the City commitment to increase EV engagement with the community. Actions in **Section 6** outline the City's priorities for engagement and goals to work towards. Increased levels of engagement and partnership with the community, public partners, and the private sector are key for successful implementation.

# 8 ADDITIONAL RESOURCES

## CITY RESOURCES

www.cityofsacramento/ev

www.cityofsacramento/demonstration-partnerships

## PHOTO CREDITS

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