# Sustainability Roadmap 2018-2019: Zero Emission Vehicles

Progress Report and Plan for Meeting
the Governor's Sustainability Goals
for California State Agencies

**Department of Motor Vehicles**

Edmund G. Brown Jr. Governor

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# Department of Motor Vehicles Sustainability Roadmap 2018-2019: Zero Emission Vehicles

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# Acronyms

| | |
|---|---|
| **AB** | Assembly Bill |
| **CALGreen** | California Green Building Code |
| **CNRA** | California Natural Resources Agency |
| **DAC** | Disadvantaged Communities |
| **DMV** | Department of Motor Vehicles |
| **EHT** | Extreme Heat Threshold |
| **EO** | Executive Order |
| **FY** | Fiscal Year |
| **EVSE** | Electric Vehicle Supply Equipment (charging equipment) |
| **GHGe** | Greenhouse Gas Emission Reductions |
| **HVAC** | Heating Ventilation and Air Conditioning |
| **LEED** | Leadership in Energy and Environmental Design |
| **MM** | Management Memo |
| **PHEV** | Plug In Hybrid Electric Vehicle |
| **SB** | Senate Bill |
| **SAM** | State Administrative Manual |
| **ZNE** | Zero Net Energy |
| **ZEV** | Zero Emission Vehicle |

# EXECUTIVE SUMMARY

## DEPARTMENT OF MOTOR VEHICLES (DMV)

### Mission

DMV proudly serves the public by licensing drivers, registering vehicles, securing identities, and regulating the motor vehicle industry.

### Vision

A trusted leader in delivering innovative DMV services.

### DMV Building Portfolio - Overview

The majority of DMV's customer services and programs are administered at field offices located throughout the state. The building portfolio consists of both state-owned and leased facilities. The most familiar of these is the traditional public field office, which comprises approximately 51% of the department's portfolio based on square footage. Another 14% is divided among Industry Business Centers, Call Centers, Commercial Driver License, Driver Safety, Investigations, Occupational Licensing, and Training offices. Often these separate programs are co-located in the same facility as a public field office. The balance of DMV's portfolio includes headquarters, warehouse/storage, and support facilities.

Nearly 50% of the department's facilities are state-owned by DMV, the California Highway Patrol (CHP), or the Department of General Services (DGS)], and 62% of the state-owned facilities were built during, or prior, to 1980. With a state-owned portfolio that averages approximately 40 years in age, these aged buildings are in need of replacement or reconfiguration to meet the department's ongoing and diverse programmatic needs and to address code deficiencies.

Below is a chart showing an inventory of buildings and sites by ownership that DMV occupies.

| *DMV INVENTORY BY OWNERSHIP* | | |
|---|---|---|
| **Building/Site Ownership** | **Number of Buildings/Sites** | **Square Footage** |
| **DMV Owned** | 100 | 1,565,444 |
| **DMV Leased** | 139 | 1,210,707 |
| **CHP Owned** | 6 | 10,770 |
| **DGS Owned** | 4 | 17,716 |
| **Totals** | **249** | **2,804,673** |

### DMV Fleet Vehicles and Energy Conservation - Overview

DMV's Fleet Management Unit began the process of purchasing three ZEV's in fiscal year 2015/16 to replace older gasoline powered fleet vehicles. DMV has also installed Electric Vehicle Supply Equipment (EVSE), or charging equipment, at its Sacramento headquarters to support Zero Emission Vehicles (ZEV) fleet vehicles. DMV has installed EVSE at the Fresno field

office, and has specified EVSE infrastructure at six new sites throughout the state, including a future EVSE project for employee use at its headquarters. In addition, DMV has integrated EVSE for employee and public use at all proposed facility construction projects in compliance with current California Green Buildings Standard Code (CalGreen) requirements.

DMV operates 281 fleet vehicles, of which, 183 are for the Investigations Division (INV) and must be able to travel long distances between refueling, transport investigative equipment, and carry investigator gear. Current available ZEVs cannot support these critical program needs. As such, the DMV obtains the necessary exemptions from the DGS for these, and several other special-use vehicles, from the ZEV goals until functionally appropriate and reasonably priced ZEV replacement vehicles are commercially available. With these current exemptions, DMV is meeting the ZEV fleet purchasing goals set forth in the Executive Orders for the balance of its vehicle purchases.

**Jean Shiomoto**
Director

# SUSTAINABILITY GOALS

The Governor has directed California State Agencies to demonstrate sustainable operations and to lead the way by implementing sustainability policies set by the state. Sustainability includes the following general initiatives:

- Greenhouse Gas Emissions Reductions
- Building Energy Efficiency and Conservation
- Indoor Environmental Quality (IEQ)
- Water Efficiency and Conservation
- Monitoring Based Building Commissioning (MBCx)
- Environmentally Preferable Purchasing (EPP)
- Financing for Sustainability
- Zero Emission Vehicle (ZEV) Fleet Purchases
- Electric Vehicle Charging Infrastructure
- Monitoring and Executive Oversight

The Governor has issued numerous executive orders directing sustainable state operations. The orders relevant to zero emission vehicles are:

## Executive Order B-18-12

EO B-18-12 and the companion *Green Building Action Plan* require state agencies to reduce the environmental impacts of state operations by reducing greenhouse gas emissions, managing energy and water use, improving indoor air quality, generating onsite renewable energy when feasible, implementing environmentally preferable purchasing, and developing the infrastructure for electric vehicle charging stations at state facilities. The Green Building Action Plan also established two oversight groups; the staff level Sustainability Working Group and the executive level Sustainability Task Force, to ensure these measures are met.

## Executive Order B-16-12

EO B-16-12 directs state agencies to integrate zero emission vehicles (ZEVs) into the state vehicle fleet. It also directs state agencies to develop the infrastructure to support increased public and private sector use of ZEVs. Specifically, it directs state agencies replacing fleet vehicles to replace at least ten percent with ZEVs, and by 2020 to purchase at least 25% replacement fleet as ZEVs.

## Executive Order B-30-15

EO B-30-15 declared climate change to be a threat to the well-being, public health, natural resources, economy, and environment of California. It established a new interim statewide greenhouse gas emission reduction target of 40 percent below 1990 levels by 2030, and reaffirms California's intent to reduce greenhouse gas emissions by 80 percent below 1990

levels by 2050. To support these goals, this order requires numerous state agencies to develop plans and programs to reduce emissions.

## 2016 Zero Emission Vehicle Action Plan

The plan establishes a goal to provide electric vehicle charging to 5% of state owned parking spaces by 2022. It also advances the ZEV procurement target to 50% of light duty vehicles by 2025.

## AB 32 Scoping Plan

The scoping plan assumes widespread electrification of the transportation sector as a critical component of every scenario that leads to the mandated 40% reduction in GHG by 2030 and 80% reduction by 2015.

## Public Resources Code §25722.8

Statute requires reducing consumption of petroleum products by the state fleet compared to a 2003 baseline. Mandates a 10 percent reduction or displacement by Jan. 1, 2012 and a 20 percent reduction or displacement by Jan. 1, 2020.

## State Administrative Manual & Management Memos

The following sections of the State Administrative Manual (SAM), and associated Management Memos (MM), currently impose sustainability requirements on the department under the Governor's executive authority:

- MM 15-03: Minimum Fuel Economy Standards Policy
- MM 15-07: Diesel, Biodiesel, and Renewable Hydrocarbon Diesel Bulk Fuel Purchases
- MM 16-07: Zero-Emission Vehicle Purchasing and EVSE Infrastructure Requirements

# FLEET VEHICLES

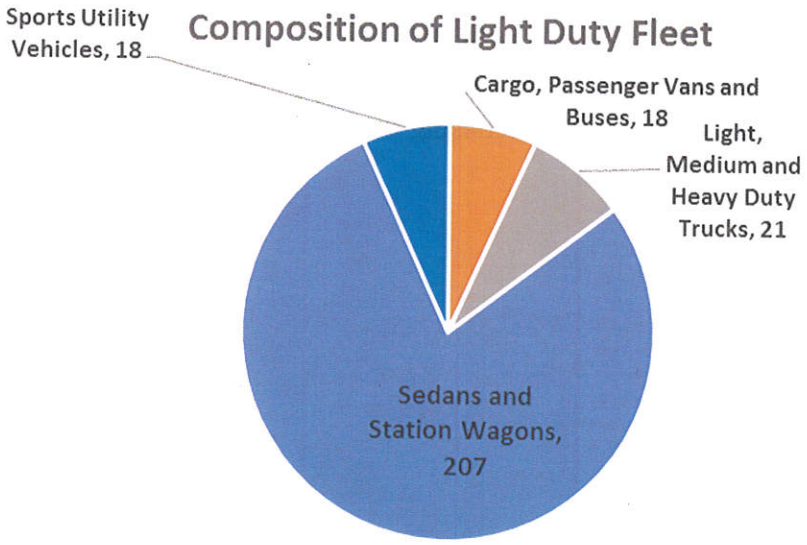
## Department Mission and Fleet

**Administrative Services Division - Facilities maintenance staff** use vehicles to travel daily to field offices throughout the state performing routine inspection, maintenance, contract administration, and repair activities in support of the departments mission critical activities in serving the public.

**INV - Law Enforcement Officials** use vehicles to engage in both overt and undercover police work. This includes, but is not limited to, arresting suspects, serving warrants, and inspecting businesses engaged in selling, repairing, or dismantling vehicles.

**Field Operations Division** use vehicles to support and carry out relief assignments, mission critical training and the transportation of exam materials and various staff to several field office locations.

**Licensing Operations Division** use vehicles to conduct physical inspections of the licensee's business locations for statutes and regulations compliance. They also use vehicles to attend trainings, outreach meetings and for officers to travel to assist other district offices with administrative hearings when necessary.




The majority of DMV fleet vehicles are driven on paved roads in cities and on highways.

1. The average mile per gallon of the department fleet is 21, not including diesel trucks.

**Table 1: Total Purchased Fuel 2016 Calendar Year**

| Purchased Utility | Quantity | Cost ($) |
|---|---|---|
| Gasoline | 147,089 Gallons | $ 381,980 |
| Diesel | 8,165 Gallons | $ 19,053 |
| Renewable Diesel | 0 Gallons | $ 0 |
| **TOTAL GGE** | **155,254 Gallons** | **$ 401,033** |

# Incorporating ZEVs into the State Fleet

A widespread shift to Zero Emission Vehicles is essential for California to meet its Green House Gas (GHG) emission goals. State departments are now required to incorporate larger numbers of ZEVs in their vehicle fleets. Starting in FY 17/18 the percentage of new light duty vehicles that must be Zero Emission Vehicles increases by 5% each year, reaching 25% in FY 19/20 and 50% in FY 24/25.

| Plug-in Hybrids Uses | Battery Electric Uses | Fuel Cell Uses |
|---|---|---|
| Drive to various field offices. No limit of range. (Not used by law enforcement, maintenance staff or for hauling equipment) | Drive to attend various training/meetings. This vehicle can only be driven locally since travel is limited to the range of the battery. (Not used by law enforcement, maintenance staff or for hauling equipment) | Utilize based on the availability of fueling stations.<br>(Not used by law enforcement, maintenance staff or for hauling equipment) |

Vehicles that meet specified mileage and age thresholds are eligible for replacement. Currently ZEVs are available on statewide commodity contracts in the sub-compact, compact, mid-size sedans and mini-vans vehicle classes. DMV has one vehicle in its fleet eligible for replacement in vehicle classes for which ZEVs are available on contract.

**Table 2: Vehicles in Department Fleet Currently Eligible for Replacement**

| | Sub-Compact Sedan | Compact Sedan | Midsize Sedan | Mini Van | Total |
|---|---|---|---|---|---|
| # of vehicles eligible for replacement | 0 | 0 | 0 | 1 | 1 |

The table below shows the estimated number of ZEVs that have been or are anticipated to be added to the department fleet in coming years.

**Table 3: ZEV Additions to the Department Fleet**

| Table Header Format | 14/15 | 15/16 | 16/17 | 17/18 | 18/19 | 19/20 | 20/21 | 21/22 |
|---|---|---|---|---|---|---|---|---|
| Battery Electric Vehicle | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 2 |
| Plug-in Hybrid Vehicle | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fuel Cell Vehicle | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ***Percent of total purchases** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Required ZEV Percentage** | 10% | 10% | 10% | 15% | 20% | 25% | 30% | 35% |
| **Total number of ZEVs in Fleet** | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 2 |

# Telematics Plan

Telematics is a method for monitoring vehicle use. Using GPS and on-board diagnostics, telematics provides valuable information that often results in fuel savings and improved vehicle utilization. Telematics is especially important for verifying that Plug-in Hybrid Vehicles are maximizing the use of electric fuel rather than gasoline. The rule requiring 50% of ZEVs purchased to be ZEVs is not in place for fleets making use of telematics for all ZEVs. As the DMV's fleet of ZEVs and Plug-in Hybrid Electric Vehicles (PHEVs) grows, it will consider opportunities to install telematics in order to have PHEVs count toward the statewide goals for converting fleets to ZEVs.

# Public Safety Exemption

Currently no sworn officers are driving ZEV's for DMV. DMV will continue requesting the exemption from the ZEV requirements due to the nature of their operations.

# ZEV INFRASTRUCTURE

## Introduction to the Department of Motor Vehicles Parking Facilities

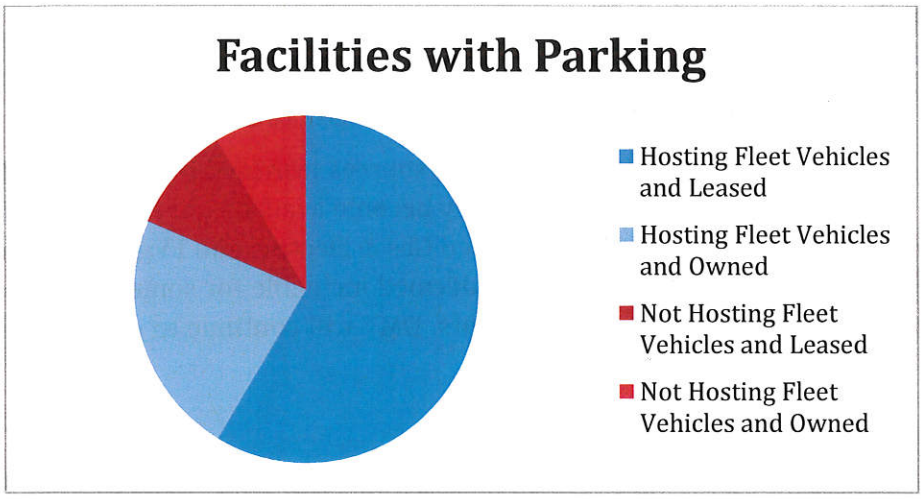
The DMV operates 249 facilities: 100 DMV owned, 136 privately leased, 6 owned by the CHP, 4 DGS owned-leased facilities, and 3 owned by the Department of Transportation. DMV does not own or operate any parking garages. DMV's field offices have surfaced parking spaces on a shared and first-come/first served basis. Field office parking is shared between employees, customers and vendors making deliveries. There is no delineation of spaces, reserved parking or secured parking, with the exception of spaces for fleet vehicles; however, only 13 DMV offices have spaces designated for DMV fleet vehicles.

Most DMV field offices designed with parking met California code at the time of construction. Over time, as California's population has grown and more customers are being served, the amount of available parking spaces has become deficient in most DMV locations.

EO B-18-12 requires the development of infrastructure for EVSE at all state facilities where feasible. In compliance with executive orders, the DMV specifies EVSE infrastructure planning for all new facility construction projects, and considers EVSE improvements for major renovation projects where feasible.

**Graph 2: Parking Facilities**

(This graph not populated by DMV, which has no garages/parking facilities)




Given the nature of the department's fleet operations, the length of stay for visitors and employees, DMV has determined that L2 chargers should make up 100% of chargers in employee parking areas and 100% within fleet parking areas. DMV's field offices do not have designated parking for employees. Employees and the public share parking on a first come/first serve basis. L1 chargers are impractical as the public spends limited time conducting their

business and DMV would desire more than one employee to access the limited charging stations on site.

Based on estimates of future ZEV fleet purchases and a count of visitor and workplace parking spaces, it has been determined that the Department will install all L2 chargers to adequately serve fleet vehicles and achieve the goals established in the ZEV Action Plan.

The facilities with the most urgent need for EV charging are identified below. These are the locations of DMV's largest employee parking lots. Replacement of existing parking with EV charging spaces would be least impactful to the current parking deficiencies and provide the most opportunities for employee use.

**Table 4: High Priority EVSE Projects**

| Facility Name | Total Parking Spaces | Existing L1 Chargers | Existing L2 Chargers | New L1 Chargers Needed | * New L2 Chargers Needed |
|---|---|---|---|---|---|
| Headquarters East Building | 1074 | 0 | 2 Pending Installation | 0 | 10 |
| Headquarters West Building | 675 | 0 | 0 | 0 | 2 |
| Headquarters South Building | 107 | 0 | 2 Fleet EVSE | 0 | 2 |
| Headquarters Annex Building (Leased) | 100 | 0 | 0 | 0 | 2 |
| **Total** | 1956 | 0 | 0 | 0 | 16 |

**** The California Building Code Section: 11B-228.3.2.1 establishes the required number of EVSE at new state facility construction projects***

## Outside Funding Sources for EV Infrastructure

DMV considers opportunities from outside funding sources provided by regional utilities, California government, and private sources as they become available. In 2016/2017 DMV worked with Southern California Edison, San Diego Gas & Electric, and EVgo to explore their EV infrastructure and funding programs. DMV was deemed ineligible for some of these programs due to their installation and program requirements. DMV will continue to explore outside funding opportunities in the future.

## Hydrogen Fueling Infrastructure

Given the nature of the department's operations, the length of stay for customers and employees, DMV has determined the return on investment for commercially available hydrogen fueling technology will require additional research for the DMV to consider installation.

## Comprehensive Facility Site and Infrastructure Assessments

The DMV conducts annual assessments of its facility portfolio to determine outstanding space deficiencies. The assessment data, captured in the DMV 5-Year Infrastructure plan, includes

EVSE infrastructure. In compliance with EO's, the DMV identified three grade-5 offices and one grade-4 office in high population density areas to have pilot EVSE surveys completed by EVgo. Upon completion of the surveys, DMV met with the EVgo representative to review the alternatives on each site and associated costs. DMV also discussed EVgo's contracting requirements, cost recovery processes, and the potential operational impacts to DMV's field offices.

Based on the surveys, the following challenges continue to exist:

- Incentives for infrastructure (not chargers) are low and do not cover the costs to install the infrastructure at the appropriate site locations.
- Loss of parking spaces due to conversions is a significant concern for DMV's programs/field operations.
- Installation of charging stations will trigger very expensive path of travel improvements (for ADA compliance), which would require significant additional funding, architecture and engineering design by DGS, and competitive bidding through the state's standard processes
- EVgo indicated it would only utilize their own contracts; however, DMV policy prohibits signatures on other entities contract documents.
- Accounting issues to recover costs from merchant vendor contracts for the use of charging.
- DMV does not have funding approved to install EVSE infrastructure at the more than 90 existing DMV field offices throughout the state. Additional costs for maintenance and vendor services would also be required for a successful program.

EVSE identified in the DMV 5-Year Infrastructure Plan will be included in new and future capital outlay construction and major renovation projects in compliance with current California Building Code and in support of the Executive Orders.

Site Assessments are performed to establish the cost and feasibility of installing needed EV infrastructure. The table below lists the facilities that have been evaluated with Site Assessments.

**Table 4: Results of Site Assessments**

| Facility Name | L1 Chargers with Current Electrical System | L2 Chargers with Current Electrical System | Total cost for Project using Current Electrical System | L1 Chargers with Electrical System Upgrades | L2 Chargers with Electrical System Upgrades |
|---|---|---|---|---|---|
| Fresno | 0 | 2 | Included in project | 0 | 0 |
| DMV HQ | 0 | 4 | $25,000 | 0 | 0 |
| * West Covina | 0 | 0 | $20,784 | 0 | 10 |
| * Fullerton | 0 | 0 | $14,518 | 0 | 10 |
| * Montebello | 0 | 0 | $9,934 | 0 | 6 |

| Facility Name | L1 Chargers with Current Electrical System | L2 Chargers with Current Electrical System | Total cost for Project using Current Electrical System | L1 Chargers with Electrical System Upgrades | L2 Chargers with Electrical System Upgrades |
|---|---|---|---|---|---|
| * Hollywood | 0 | 0 | $7,561 | 0 | 6 |
| **Total** | 0 | 6 | $77,437 | 0 | 32 |

* *Offices included in the pilot assessment by EVgo. Costs do not include mandatory path of travel (ADA) requirements including both design and construction costs, which would be triggered by EVSE.*

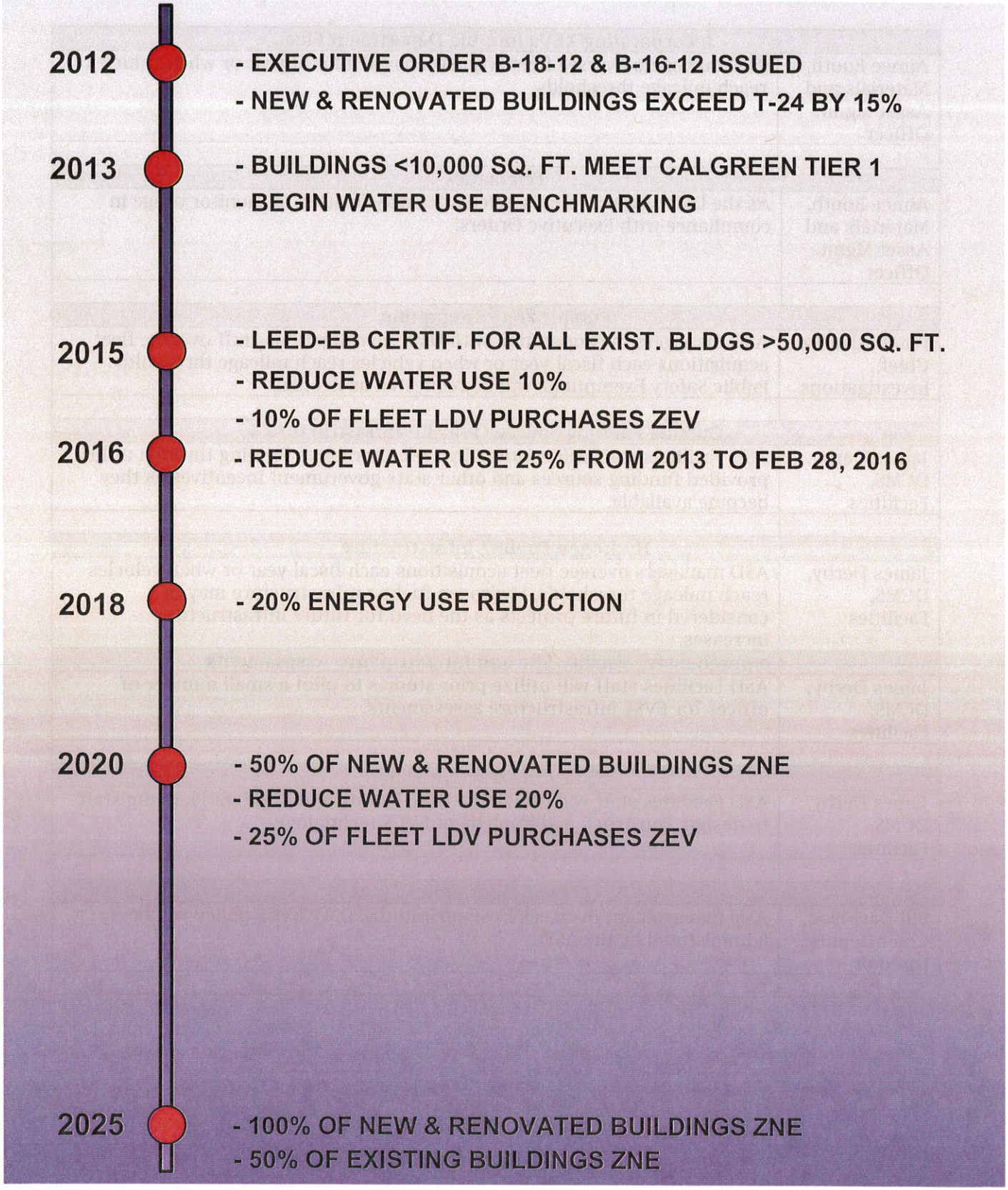
## EVSE Construction Plan

The DMV will include new EVSE installation as new facility construction or major renovation projects are authorized and funded. Currently, DMV has several projects in various stages of authorization, planning and construction. The recently authorized projects in Grass Valley, Inglewood, Delano, Santa Maria, San Diego (Normal St.), and Reedley will include EVSE. All new projects will be designed and constructed to current CalGreen code. Each new DMV capital outlay project is also proposed as Zero Net Energy (ZNE).

## EVSE Operation

The DMV will operate EVSE using commercially available online monitoring software. The software will allow the DMV to monitor usage, collect fees, identify maintenance issues, and set time-limit and cost recovery protocol. DMV Administrative Services Division (ASD) will administer EVSE policy.

# SUSTAINABILITY MILESTONES & TIMELINE



# DEPARTMENT STAKEHOLDERS

| | |
|---|---|
| **Incorporating ZEVs Into the Department Fleet** | |
| Aimee Booth, Materials and Asset Mgmt. Officer | ASD managers oversee fleet acquisitions each fiscal year or when vehicles reach mileage thresholds. |
| | |
| **Telematics** | |
| Aimee Booth, Materials and Asset Mgmt. Officer | As the DMV acquires ZEV's, telematics may be used to monitor usage in compliance with Executive Orders. |
| | |
| **Public Safety Exemption** | |
| Frank Alvarez, Chief, Investigations | ASD managers in cooperation with DMV investigations staff oversee fleet acquisitions each fiscal year or when vehicles reach mileage thresholds. Public Safety Exemptions will be requested as needed. |
| | |
| **Outside Funding Sources for ZEV Infrastructure** | |
| James Derby, DCMS, Facilities | ASD Facilities staff will continually seek alternative funding through utility provided funding sources and other state government incentives as they become available. |
| | |
| **Hydrogen Fueling Infrastructure** | |
| James Derby, DCMS, Facilities | ASD managers oversee fleet acquisitions each fiscal year or when vehicles reach mileage thresholds. Hydrogen fueling infrastructure may be considered in future projects as the need for future infrastructure increases. |
| **Comprehensive Facility Site and Infrastructure Assessments** | |
| James Derby, DCMS, Facilities | ASD Facilities staff will utilize prior studies to pilot a small number of offices for EVSE infrastructure assessments. |
| | |
| **EVSE Construction Plan** | |
| James Derby, DCMS, Facilities | ASD Facilities staff will utilize the DGS, Private and Resident Planning staff to design, construct, and implement EVCS technology. |
| | |
| **EVSE Operation** | |
| Bill Davidson, Chief Deputy Director | ASD management oversees EVSE operations. DMV EVCS policy will be administered by the ASD. |
| | |