Sustainability Roadmap 2018-2019: Zero Emission Vehicles

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

Health and Human Services Agency

Edmund G. Brown Jr., Governor

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Department of Rehabilitation Sustainability Roadmap 2018-2019: Zero Emission Vehicles

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Acronyms

EO	Executive Order
EVSE	Electric Vehicle Supply Equipment (charging equipment)
GHGe	Greenhouse Gas Emissions
MM	Management Memo
SAM	State Administrative Manual
ZEV	Zero Emission Vehicle

EXECUTIVE SUMMARY

The Governor's Office requested that departments owning or managing buildings prepare a Roadmap to Achieving Executive Orders B-18-12 and B-16-12 by December 16, 2013. Additional direction and guidance regarding meeting the state's sustainability goals has been provided through Executive Order B-30-15 and other policy documents. In response, the Department of Rehabilitation (DOR) has prepared this roadmap document to describe the status and steps to achieving the objectives, targets and requirements related to zero emission vehicles.

The mission of the DOR is to work in partnership with consumers and other stakeholders to provide services and advocacy resulting in employment, independent living and equality for individuals with disabilities in California. Since it was established in 1963, the DOR has reported to the Health and Human Services Agency, with functions and responsibilities contained in Section 19000-19856 of the California Welfare and Institutions Code. The DOR is the designated state administrative unit responsible for the State's vocational rehabilitation program authorized by the Federal Title IV of the Workforce Innovation and Opportunity Act (WIOA)), which incorporates the Federal Rehabilitation Act of 1973, as amended.

The aforementioned laws were enacted to ensure all Americans have the opportunity to learn and develop skills, engage in productive work, make choices about their daily lives, and participate fully in community life. The DOR provides vocational counseling, guidance, and services to individuals with disabilities to prepare for, obtain and maintain employment, and to live independently in their communities.

The DOR provides vocational rehabilitation and independent living services to over 130,000 consumers annually through 84 field offices statewide. The DOR has over 1,800 employees with approximately 1,300 employees in the field providing direct services to individuals with disabilities.

The majority of DOR office locations are within 74 private leased office spaces and 9 Department of General Services (DGS) managed buildings. However, the DOR owns and manages the Orientation Center for the Blind (OCB), a three-building campus located in Albany, California. The OCB fosters independent living for the blind or visually impaired adults through an immersion program in a residential environment. This live-in, dorm style community operates 24 hours a day, 7 days a week.

The DOR maintains a small vehicle fleet of 11 DGS lease vehicles and 15 department owned vehicles. The usage of DOR fleet vehicles ranges from providing driving evaluations, transporting OCB students, meeting with DOR consumers and stakeholders and administrative functions. Due to the small fleet and specialized use of the majority of the DOR owned vehicles, replacement of vehicles is infrequent. However, when a vehicle replacement is warranted, the DOR always explores ZEV options first.

One area where vehicle replacement is a challenge is within the Mobility Evaluation Program (MEP). 11 of the 15 DOR owned fleet vehicles are hosted at the MEP in Bell, California. The MEP utilizes nine light vans and two sedans, modified with adaptive equipment to assist drivers with different physical disabilities in operating a vehicle. These vehicles are used in training and assessment of an individual's driving capabilities. Unfortunately, not all vehicles can be modified with adaptive equipment, limiting the options for purchasing ZEV vehicles. However as new vehicle designs and technology evolves in the growing ZEV market, future opportunities for ZEV vehicle purchases may be available for the MEP.

It has been and continues to be the DOR's practice to identify the most fuel efficient option when replacing an existing owned or leased vehicle. Of the DOR's owned fleet of 15 vehicles, four light vans were replaced with Flex Fuel light vans and four of the 11 DOR's leased vehicles were replaced with hybrid sub-compact sedans.

Despite the small fleet size, the DOR has identified two areas were ZEV vehicles may be employed with success. This includes the DOR owned mailroom light van and two light vans hosted at the OCB. Along with the ZEV purchases, both locations are being investigated for electronic vehicle charging stations. Research on these two efforts continues and the DOR anticipates much headway in 2018.

The DOR continues to work diligently towards the targets and requirements of Executive Orders B-18-12, B-16-12, B-30-15 and other policy documents, and is committed to its ongoing efforts in accomplishing these goals and working with the DGS Office of Sustainability towards meeting the identified objectives.

Joe Xavier
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

This ZEV Report and Plan demonstrates to the Governor and the public the progress the Department has made toward meeting the Governor's sustainability goals related to Zero Emission Vehicles. This report identifies successful accomplishments, ongoing efforts, outstanding challenges and future efforts.

The mission of the DOR is to work in partnership with consumers and other stakeholders to provide services and advocacy resulting in employment, independent living and equality for individuals with disabilities in California. The DOR provides vocational counseling, guidance, and services to individuals with disabilities to prepare for, obtain and maintain employment, and to live independently in their communities. It is through the use of the DOR fleet vehicles that the department is able to carry out its mission.

The DOR's typical vehicle usage can be broken down based on the location the vehicles are hosted: the MEP, the OCB, DOR field offices, or the DOR Central Office.

MEP

The MEP utilizes nine DOR owned light vans and two DOR owned sedans, modified with adaptive equipment to assist drivers with different physical disabilities in operating a vehicle. As part of the DOR's vocational rehabilitation program, these vehicles are used in training and assessment of an individual's driving capabilities through short trips on paved city roads.

OCB

The three DOR owned vehicles at the OCB include one truck and two light vans. They are primarily used for facility maintenance needs and transportation of OCB students within the city. The most frequent usage is short trips on paved city roads.

DOR field offices

The vehicles used in DOR field offices are leased and include six sedans, two light trucks and two light vans. These vehicles are used to meet with DOR clients and community partners as part of DOR's vocational rehabilitation program. Their usage varies between long and short trips on paved city and highway roads.

DOR Central Office

The DOR Central Office in Sacramento houses in its loading dock a DOR owned mailroom light van. This vehicle makes two trips every weekday to deliver and collect mail, primarily in the downtown Sacramento area. These consist of short trips on paved city roads. Additionally, the DOR leases a sedan for use by the DOR Director. This vehicle is hosted at the DGS Lot #55 at

802 Q Street, Sacramento. This vehicle is utilized a few times per week, normally for day trips on paved roads, both in the city and on the highway.

Below is a listing of the DOR owned and DGS leased vehicles which comprise the DOR Fleet.

Table 1: Department Owned and Leased Fleet Inventory

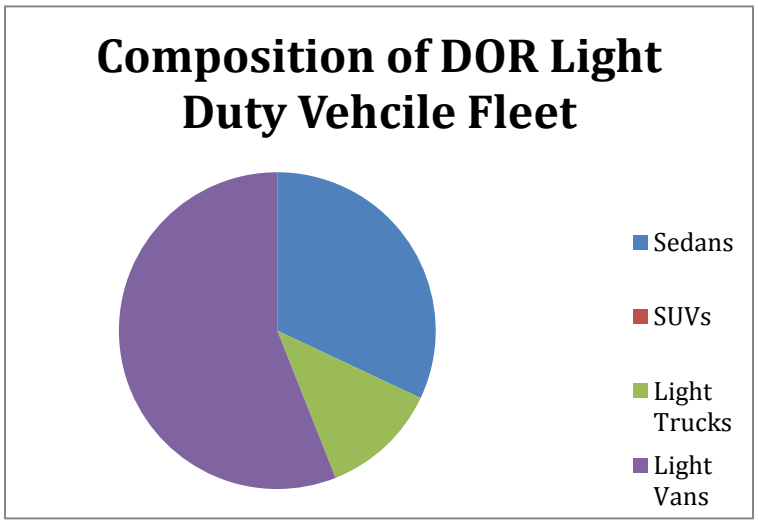
DOR OWNED

#	Make	Model	Year	Vehicle Type	Location	Acquired	Mileage	Efficiency
1	Dodge	Mini-Van	1999	Light Van	MEP	6/30/1999	30,458	
2	Ford	E-150	2000	Light Van	MEP	2/4/2000	7,311	
3	Chevrolet	Monte Carlo	2001	Sedan	MEP	5/19/2001	58,424	
4	Ford	E-150	2001	Light Van	MEP	7/21/2001	30,177	
5	Ford	E-150	2001	Light Van	MEP	7/5/2006	67,346	
6	Dodge	Mini-Van	2006	Light Van	MEP	2/21/2013	21,405	
7	Toyota	Sienna	2015	Light Van	MEP	7/1/2015	1,691	
8	Chevrolet	Impala	2016	Sedan	MEP	2/2/2017	155	
9	Dodge	Mini-Van	2016	Light Van	MEP	2/2/2017	238	Flex Fuel
10	Dodge	Mini-Van	2017	Light Van	MEP	5/11/2017	100	Flex Fuel
11	Dodge	Mini-Van	2017	Light Van	MEP	5/11/2017	112	Flex Fuel
12	Dodge	Caravan	1997	Light Van	OCB	4/19/1998	64,521	
13	Dodge	Truck	2000	Light Truck	OCB	7/26/2000	41,395	
14	Dodge	Caravan	2014	Light Van	OCB	2/16/2014	13,310	Flex Fuel
15	Ford	E-150	2005	Light Van	Central Office	5/4/2006	62,513	

DGS LEASED

1	Chevrolet	Impala	2013	Sedan	Central Office	4/23/2014	23,051	
2	Toyota	Prius	2008	Sedan	LA (BEP)	8/29/2008	133,976	Hybrid
3	Ford	Focus	2014	Sedan	LA (BEP)	2/24/2014	58,952	
4	Chevrolet	Colorado	2008	Light Truck	Eureka	6/19/2008	99,668	
5	Chevrolet	Silverado	2000	Light Truck	S. Lake Tahoe	11/1/2007	120,410	
6	Chevrolet	Activan	2003	Light Van	Merced	8/26/2016	59,338	
7	Toyota	Prius	2008	Sedan	Santa Barbara	8/27/2008	135,706	Hybrid
8	Toyota	Prius	2009	Sedan	Riverside	6/12/2014	85,533	Hybrid
9	Toyota	Prius	2016	Sedan	El Centro	2/2/2016	17,791	Hybrid
10	Ford	Focus	2007	Sedan	Chico	3/29/2010	86,806	
11	Dodge	Caravan	2015	Light Van	Visalia	12/1/2014	31,850	

Graph 1: Composition of Department's Light Duty Fleet



The average Mileage per Gallon (MPG) of the DOR fleet is 20.5. This amount has remained relatively unchanged from 2012 through 2016, within a one MPG variance. This average is consistent with the majority of DOR fleet vehicles being non-ZEV light vans and light trucks, as well as the small size of the fleet and infrequency that DOR replaces vehicles.

Table 2: Total Purchased Fuel 2016

Purchased Utility	Quantity	Cost ($)
Gasoline	1363.13 Gallons	$ 3,838.96
Diesel	0 Gallons	$ 0
Renewable Diesel	0 Gallons	$ 0
TOTAL GGE	**1363.13 Gallons**	**$ 3,838.96**

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.

The most likely vehicle role which could be replaced by a Zero Emission Vehicle is the DOR owned Central Office mailroom light van. Two Central Office mailroom Office Assistants make two mail deliveries in the downtown Sacramento area each weekday. Because of the daily volume of mail collected and delivered, a sedan can be utilized instead of a light van. The role of this vehicle could be accomplished by a battery electric sub-compact or compact sedan. Because the mailroom light van is hosted in the DOR Central Office mailroom loading dock, a single charging station could be employed, dedicated to that one vehicle. Because of limited

space and daily deliveries, there would not be room to include an additional vehicle in the loading dock area.

A second potential location that ZEV vehicles can be employed is at the OCB. The OCB has a dedicated parking lot consisting of 32 parking spaces within the campus grounds. The main parking area is available for employees and visitors of the OCB and three additional parking spaces are available on the South side of the campus, for three DOR owned vehicles, one truck and two light vans. The DOR is researching the installation of electronic vehicle charging stations at this location. Although options are limited, the most likely replacement vehicles would be for battery electric light vans, to assist OCB staff in transporting OCB students within the city of Albany. An electronic vehicle charging station at OCB would also encourage staff to purchase personal ZEV vehicles, if charging at the campus was an option.

At the current time, employing ZEV vehicles at the MEP has very limited options. Although the greatest concentration of DOR owned vehicles resides at this location, nine light vans and two sedans, based on the alterations needed to add adaptive equipment to the vehicles, currently available ZEV vehicles cannot be modified. Light vans are more often used when adapting a vehicle, because wheelchair lifts and ramps are often required and the floor of the vehicle is lowered to accommodate a wheelchair. Due to the placement of the battery in ZEV light vans, the floor of the ZEV vehicles cannot be lowered, making alterations to available ZEV products is not possible. However, as new models are produced, the MEP reviews the potential for adding these vehicles, as replacements are needed, to the DOR vehicle fleet.

Vehicles over 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. There are currently three leased and zero owned vehicles in our fleet that are currently eligible for replacement in vehicle classes for which ZEVs are available on contract.

Table 3: Vehicles in Department Fleet Currently Eligible for Replacement

	Sub-Compact Sedan	Compact Sedan	Midsize Sedan	Mini Van	Total
# of vehicles eligible for replacement	3 leased Prius Hybrids				3

The table on page 9 shows the estimated number of ZEVs that have been or are anticipated to be added to the department fleet in coming years.

Although the DOR does not currently plan to add any vehicles to the DOR fleet when a vehicle replacement is warranted, the DOR always explores ZEV options first. The chart below estimates the replacement to existing owned vehicles to coincide with installation of EVSE infrastructure in the Central Office mailroom loading dock and OCB.

Table 4: 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				1				2
Plug-in Hybrid Vehicle								
Fuel Cell Vehicle								
Percent of total purchases				100%				100%
Required ZEV Percentage	10%	10%	10%	15%	20%	25%	30%	35%
Total number of ZEVs in Fleet				1				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 BEVs is not in place for fleets making use of telematics for all ZEVs.

The DOR currently does not utilize telematics in tracking vehicle usage. However, in acquisition of new vehicles the DOR will purchase vehicles with GPS's and/or on-board diagnostics, so the usage of telematics can be implemented towards fuel savings and improved vehicle utilization.

ZEV INFRASTRUCTURE

Introduction to the Department of Rehabilitation Parking Facilities

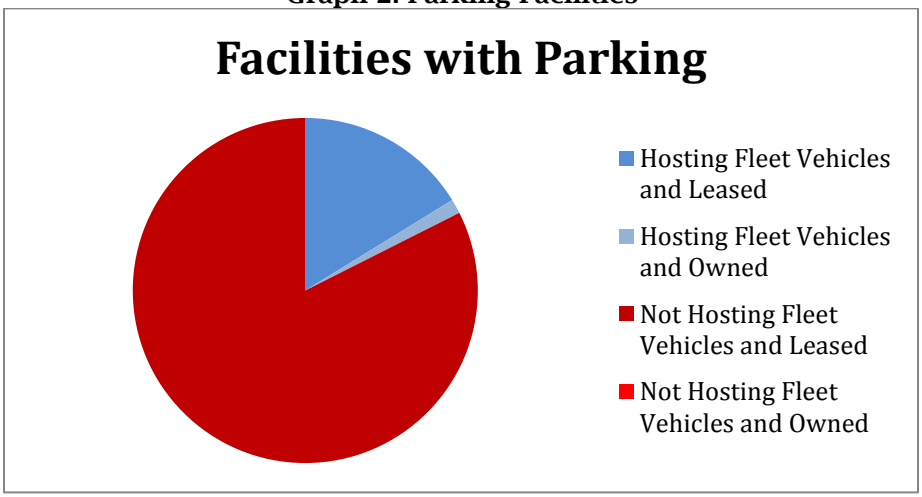
The DOR maintains 74 privately leased offices, 9 offices in DGS managed buildings and one owned facility, the OCB. 88% of DOR facilities are located in privately leased office space and 12% in state owned buildings (11% in DGS managed buildings and 1% in DOR owned buildings). Of the total 84 DOR facilities, 13 locations host fleet vehicles or 15% of DOR facilities.

For the 74 privately leased offices, parking spaces are identified in the lease language for use by DOR consumer and community partners, unless a DGS leased vehicle(s) is also hosted at the office location. The leased parking spaces for DOR privately leased offices are frequently part of a larger parking lot, for other tenants of the building. The parking lots are at or adjacent to the building which hosts DOR field offices. The exception to this is the MEP, which hosts 11 DOR owned fleet vehicles in a leased garage in the same building as the MEP office. Dedicated employee parking is provided in any DOR leased parking agreements.

Of the 9 offices located in DGS managed buildings, the only parking spaces associated with those locations are associated with fleet only parking. Two leased sedans are hosted in a privately leased garage in Los Angeles, one leased sedan is hosted in the DGS Lot #55 in Sacramento, and one DOR owned light van is hosted in the DOR Central Office mailroom loading dock.

At the DOR owned OCB campus there are a total of 32 parking spaces. 29 parking spaces are available to visitors and OCB staff and the remaining three are fleet only parking spaces dedicated to the three fleet vehicles hosted at this location.

Graph 2: Parking Facilities



Given the nature of the department's fleet operations and the length of stay for visitors and employees we have determined it appropriate that L1 chargers should make up approximately 7% of chargers in employee parking areas and 33% of chargers in fleet parking areas, with the remainder being L2.

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 need three L1 and two 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 listed below.

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
DOR Central Office	1			1	
OCB	32			2	2
Total	33			3	2

Outside Funding Sources for EV Infrastructure

The DOR is exploring outside funding sources for potential installation of electronic vehicle infrastructure at the OCB in Albany and inside the Central Office mailroom loading dock in Sacramento.

Additionally, in 2018 the DOR will be contacting the lessors and garage owners adjacent to the buildings the DOR leases and/or where DOR staff and consumers park when visiting DOR offices. This communication will encourage the lessors and garage owners to consider transitioning existing parking spots to EV charging stations. This communication will provide

benefits to the transition and supply some funding sources which may aid in addressing the costs of the modifications.

Hydrogen Fueling Infrastructure

The DOR does not have plans to install hydrogen fueling infrastructure at any DOR facility.

Comprehensive Facility Site and Infrastructure Assessments

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
DOR Central Office	1		To be determined		
OCB				2	2
Total	1			2	2

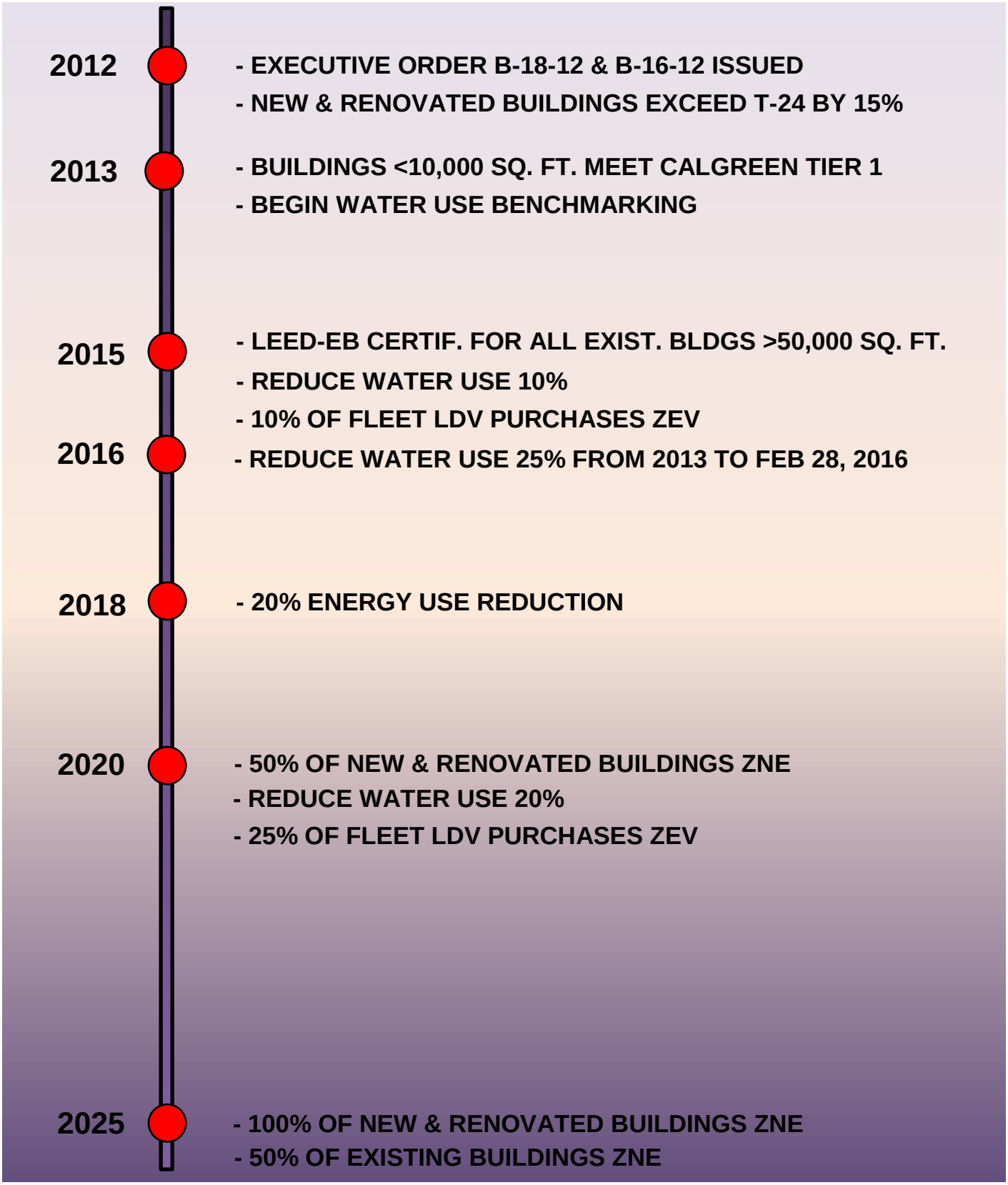
EVSE Construction Plan

The DOR will continue to formulate its electronic vehicle supply equipment construction plan in 2018.

EVSE Operation

In 2018 the DOR will continue researching best practices and gathering data towards efficient and effective operations of EV charging infrastructure.

SUSTAINABILITY MILESTONES & TIMELINE



DEPARTMENT STAKEHOLDERS

Incorporating ZEVs Into the Department Fleet	
Business Services Section	Victor Abila, Vehicle Coordinator Joseph Carmena III, Chief of Business Services Reviews vehicle requests and approves based on ZEV preferences

Telematics	
Business Services Section	Victor Abila, Vehicle Coordinator Joseph Carmena III, Chief of Business Services Researching telematics options and developing plan for department adoption

Outside Funding Sources for ZEV Infrastructure	
Business Services Section	Melissa Corker, Leasing and Space Planning Specialist Joseph Carmena III, Chief of Business Services Victor Abila, Vehicle Coordinator Researching and application of funding sources for planned ZEV infrastructure projects

Hydrogen Fueling Infrastructure	
N/A	N/A

Comprehensive Facility Site and Infrastructure Assessments	
Business Services Section	Joseph Carmena III, Chief of Business Services Melissa Corker, Leasing and Space Planning Specialist Victor Abila, Vehicle Coordinator Survey and plan ZEV infrastructure adoption at the Central Office and OCB
OCB	Jessica Grove, OCB Administrator Assessing OCB fleet usage and viability of infrastructure placement at OCB

EVSE Construction Plan	
Business Services Section	Victor Abila, Vehicle Coordinator Melissa Corker, Leasing and Space Planning Specialist Joseph Carmena III, Chief of Business Services Develop implementation plan and coordinate construction at Central Office and OCB
OCB	Jessica Grove, OCB Administrator Develop implementation plan and coordinate construction at OCB

EVSE Operation	
Business Services Section	Victor Abila, Vehicle Coordinator Joseph Carmena III, Chief of Business Services Development of policy and monitoring usage of EVSE Operations.