Sustainability Roadmap 2024–2025

Department of Water Resources

Sustainability Master Plan
and Biennial Progress Report on Legislative Sustainability Mandates and the
Governor's Sustainability Goals
for California State Agencies

Department of Water Resources
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DEPARTMENT OF WATER RESOURCES

Sustainability Road Map 2024–2025

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EXECUTIVE SUMMARY

As part of the Strategic Plan (2023), DWR has identified five core values that will serve as the guideposts for all strategic planning documents and actions:

- **World Class Safety Organization.** Public safety is the first priority among all aspects of management and operation of DWR's infrastructure.

- **Partnership Development and Transparency.** Across communication platforms, DWR is committed to providing timely, accurate, and accessible information to the public, partners, and media. DWR values its relationships with federal, State, and local governments, Tribes, academia, and nongovernmental organizations.

- **Science Drives Our Decision-Making.** DWR uses science as a basis for all planning and project development actions while sharing expertise gained through this work with the national and international water community.

- **Environmental Stewardship.** DWR is incorporating environmental benefits into programs and projects at appropriate scales that recognize this environmental context and regional setting and integrating ecological principles, including traditional and local knowledge, into infrastructure planning and project design.

- **Professionalism and Respect.** The Department is responsible for conducting business in a professional, courteous, ethical, and safe manner by demonstrating integrity, honesty, good judgment, courtesy, and respect at all times. By maintaining positive relationships at work, DWR is able to provide the best public service to all Californians. DWR strives to create a trusting and welcoming workplace where employees embrace diverse viewpoints and treat each other with civility and respect.

DWR has identified the following Strategic Plan goals:

- Be an employer of choice.

- Build community capacity.

- Pursue innovative infrastructure solutions.

- Respond to public safety emergencies.
- Integrate and transform California water management.

Climate Change Adaptation

Although this report focuses on the impact of climate change on State facilities and operations, it is important to note that, for some State agencies, climate change also affects their overall mission. DWR's 2023 revised mission statement declares that we are “to sustainably manage the water resources of California, in cooperation with other agencies, to benefit the state’s people and protect, restore, and enhance the natural and human environments.” DWR’s mission will be severely challenged by climate change impacts. Despite these challenges, DWR is committed to its mission and continues to meet these climate change challenges. The following paragraphs highlight DWR’s Climate Leadership accomplishments.

Climate Leadership and Preparedness

In 2024, DWR released the California Water Plan Update 2023, which put forth the state’s strategy to sustainably and equitably manage water resources, in the face of accelerating climate change. This plan was built around three themes of addressing climate urgency; strengthening watershed resilience; and achieving equity in water management. This plan highlights watershed resilience planning pilot studies. It also included science-driven climate vulnerability assessments and shows collaboration across multiple water-related sectors, both of which represent best practices that can be applied in other parts of the state.

In 2024, DWR released its Climate Action Plan Phase 1: Greenhouse Gas Emission Reduction Plan Update (2023). In this updated plan, DWR established an ambitious goal to supply 100 percent of electricity load with zero-carbon resources and achieve carbon neutrality by 2035. These goals were also moved into the SWP’s Strategic Plan as Initiatives.

Vulnerability and Adaptive Capacity

DWR engineers and constructs facilities and selects equipment to withstand a broad range of expected increases in temperature. DWR does not anticipate that the structures themselves will be impacted. Further, DWR's new facility planning has integrated climate change effects into facility specifications and operations.

In 2024, DWR released its final 2023 State Water Project Delivery Capability Report, which presents a new and enhanced analysis of current and future expectations for the SWP water supply if no new climate-related adaptation actions are taken. The 2023 Delivery Capability Report introduces two new innovative approaches to characterize current climate change conditions and emphasizes the uncertainty in future climate change projections. The first is an approach to account for changes in operations from the climate change that has already occurred. The second is an approach for developing a range of future climate scenarios. Both additions have undergone independent peer review and are considered significant improvements over previous methods.

Zero-Emission Vehicles (ZEVs)

DWR continues to transition to a ZEV fleet by making strategic vehicle purchases and building out fueling infrastructure. When utility vehicles and vans are included in DWR's totals, 88 percent of the fleet consists of vehicles that are suited to rough terrain. SWP's Operations and Maintenance (O&M) staff have installed 57 "Level 2" charging stations (using higher capacity refueling ports) at five of the State Water Project (SWP) locations and at one Division of Flood Operations location. In the next two phases of the project, an additional 106 "Level 2" and several "Level 3" charging stations are planned throughout all five SWP Field Divisions (at 39 sites) in the next few years.

Energy

Retail Energy Use

DWR's retail source energy use was 21,540,187 thousand British Thermal Units (kBtu) in the baseline year of 2003. The overall retail energy consumption has reduced by 22 percent from the baseline year, primarily due to various energy efficiency measures implemented at the SWP and Division of Flood Operations' subcenters and replacement of end-of-life equipment with higher efficiency equipment. This is a positive indicator toward reducing overall retail energy use and achieving carbon neutrality. DWR's three largest facilities by size are also the largest retail energy consumers (Oroville O&M Center, Delta O&M Center, and San Joaquin O&M Center). Oroville O&M Center, being close to the Lake Oroville Dam, typically consumes more energy than other O&M facilities due to the increased activities related to the dam.

The average Energy Use Intensity (EUI) at our buildings remains steady against the baseline year of 2003. There was a large jump between 2023 and 2024, and the department average now stands at 85 kBtu per square foot over all our buildings. In 2024, DWR conducted energy audits of all of its facilities and identified energy efficiency upgrade measures which will be implemented in the next few years. These projects will further reduce energy consumption and improve the energy use intensity (EUI) of the facilities. However, there were no new energy savings projects performed in 2023 or 2024.

Demand Response Programs

DWR plays two unique roles in demand response. First, DWR is the largest single supplier of demand response in the California Independent System Operator (CAISO) market via a participating load agreement under which DWR bids SWP load to be curtailed by CAISO when the price of energy in the CAISO market reaches DWR's bid price. Because of DWR's water delivery priority, these bids are normally restricted to contingency events.

The second unique action is through DWR's Electricity Supply Strategic Reliability Reserve Program (ESSRRP). For the summer of 2024, ESSRRP had about 3,150 MW of available capacity. These resources are a mix of emergency temporary generators that DWR and partners installed in 2021 during the Governor's Emergency Proclamation. In the reporting period, new types of generation were installed, including once through cooling (OTC) generators (2024) and additional emergency generators.

During 2024, DWR had 10 buildings enrolled with DGS's selected demand response aggregator, Enersponse. These buildings participated in market-driven curtailments and saved 21 KW overall. For various reasons, just over 60 percent (16 of 26) of department buildings submitted to Enersponse were determined ineligible to participate.

DWR published and distributed its first Energy Alert Action Plan (EAAP) in July 2024. The EAAP covers how DWR's facilities respond when an alert is called. DWR also participated in a tabletop exercise with DGS to test its draft plan in June 2024. The team used checklists distributed and then submitted by several facilities to ensure compliance. DWR is hindered by the lack of networked thermostats, making any Demand Response a manual endeavor.

On-site Renewable Energy Generation

DWR has a 9.5 MW onsite solar generation plant at its SWP Pearblossom O&M Subcenter. Renewable generation from this plant may be used for the state's Zero Net Energy Buildings (ZNE) goal. DWR has signed power purchase agreements for a total capacity of 178.5 MW or 492,900 MWh per year.

Most of DWR's GHG emissions are associated with energy purchased to operate the SWP. Consequently, DWR has created a Clean Energy Procurement Plan (CEPP) to replace energy from thermal and unspecified sources with renewable energy. Since implementation of its CEPP, DWR has executed contracts to procure renewable energy from multiple sources, including solar, hydroelectric, geothermal, and landfill gas.

Zero Net Energy Buildings

DWR has been working toward the State's goals for Zero Net Energy (ZNE) since 2017. DWR achieved the ZNE milestone of "50 percent existing building area to be net ZNE" based on 2024 energy consumption. Sixteen buildings, consisting of 62% of the total building stock have met the ZNE goal.

Decarbonization

Greenhouse Gas Reductions

DWR began reporting its Greenhouse Gas (GHG) emissions to the California Climate Registry in 2007 and then transitioned to The Climate Registry (TCR) in 2010. In 2012, DWR released its Climate Action Plan (CAP) that committed to reducing its GHG emissions to 50 percent below 1990 levels by 2020 and 80 percent below 1990 levels by 2050. DWR achieved its target emissions reduction for 2020 in 2015, five years ahead of schedule.

DWR has received numerous awards for its efforts in reducing GHG emissions and meeting its climate action goals. DWR has received the prestigious national Climate Leadership Award from the United States Environmental Protection Agency, The Climate Registry (TCR), and the Center for Climate and Energy Solutions for excellence in greenhouse gas management. This award recognizes organizations that publicly report and verify organization-wide GHG inventories and set and achieve aggressive GHG emissions reduction goals. More recently, DWR was recognized by TCR

and awarded the Climate Registered Accelerator Hero level for its ambitious carbon neutrality goal and consistent, verifiable progress toward that vision.

DWR's CAP was updated in 2020 to include a mid-term goal of emissions reduction of 60 percent below 1990 levels by 2030, which DWR met nine years early. In 2023, the CAP went through another update, with DWR committing to achieve carbon neutrality by the beginning of 2035 and procuring 100% zero-carbon electricity for operations by the end of 2035.

Equipment Inventory of Buildings and Decarbonization Projects

DWR has created a baseline analysis of the equipment within department-owned facilities that are powered by fossil fuels. In an analysis performed by a consultant to DGS, it was found that DWR could likely reduce greenhouse gas emissions and utility costs by implementing both an all-electric replacement of its gas-powered equipment and multiple energy efficiency projects. The analysis was only provided in late 2025, so there are no firm plans to be reported in this Roadmap. DWR is committed to making its buildings compliant with SB 1203 by 2035, and staffing assignments have been made to develop workplans and budgets.

Water Efficiency and Conservation

DWR facilities do not have submeters to separate potable and processed water use. DWR currently monitors and reports water use for 22 State-owned facilities. Seven facilities reside along the SWP's open canals and reservoirs and rely on water available from the aqueduct. Additionally, three facilities are in remote locations where municipal water is unavailable, and so these facilities rely on groundwater to operate and maintain daily functions. Water used to operate these facilities is based on factors such as individual buildings within a site, function type, and the number of occupants.

Top Water Users

Typically, the top water consuming facilities include DWR visitor centers. However, in recent years, the top user has been Pearblossom O&M Subcenter (new) which in 2024 used 30,934,500 gallons. DWR's purchased water only accumulated to 41,519,300 gallons in that year and this single facility accounted for 74.5 percent of DWR's total water use. This is a large increase from prior years and is more than double our 2010 baseline of

19,719,000 gallons. The cause(s) behind this measured higher-than-normal water use are under investigation.

Landscaping

DWR has distributed tools to the public to support the creation of individual water budgets. Having a water budget is a key step when making irrigation systems water efficient so that potable water is preserved for higher beneficial uses. Unfortunately, DWR does not have all the necessary data for each of its owned facilities to make a final water budget. However, through some recent aerial photographs and calculations, DWR has been able to estimate a water budget for most of its facilities and is in the process of calculating future water budgets based on recent legislation around turf grass that is decorative only (non-functional).

In addition, water-efficient landscaping is something DWR staff support as part of a regulatory process along with the California Water Commission. The Department's Water Use Efficiency Branch completed a rulemaking to streamline the Model Water Efficient Landscape Ordinance (MWELO) with the revisions going into effect January 1, 2025.

Drought Response

During a declared drought, DWR is typically assigned tasks within a Governor's proclamation relating to statewide water supply planning, outreach and education, or funding of critical projects through grants. Since 2021, DWR has been running the "Small Community Drought Relief program" and the "Urban Community Drought Relief program." These programs provide urgent financial and technical support to cities, counties, and communities in urgent need of drinking water supply assistance due to drought. In 2023, DWR announced its tenth round of funding under the small community program, announced nine awards under the urban program, and published detailed tables and maps of the projects funded within this program (see https://water.ca.gov/Water-Basics/Drought/Drought-Funding.)

In 2024, DWR finalized its first comprehensive, public-facing Long-term Drought Plan for the State Water Project as part of an expanded effort to prepare for future droughts and extreme dry conditions. The Long-term Drought Plan compiles information and actions taken by the SWP during previous droughts, outlining how those actions have informed current operations and highlighting actions taken by the SWP to prepare for future

droughts. The plan will be reviewed and updated every five years and after major drought events to ensure the SWP continues to adapt to dry conditions exacerbated by climate change.

With regard to its own facilities, DWR has an inventory of its water suppliers' Water Shortage Contingency Plans. The DWR Drought Coordinator hosted the first Drought Resilience Interagency & Partners (DRIP) Collaborative meeting in April 2023 and then hosted quarterly meetings throughout 2023 and 2024. The DRIP Collaborative members engaged in a visioning discussion to identify the critical topics that the Collaborative would like to address during the first two-year term (2023 through 2024).

Facilities' Construction and Operations

Owing to the age of our buildings, most field divisions have staff designing the replacement of roofs and HVAC systems (see Chapter 9). DWR does not have any new buildings or current renovation projects underway larger than 5,000 square feet with EUIs exceeding thresholds as described in Management Memo 15-04. The last building constructed by DWR was at its SWP Pearblossom O&M Center, which earned a LEED Platinum rating (2012).

In 2016, O&M launched its asset management effort to develop and implement asset management policies, strategies, and objectives for operations, maintenance, repair, and replacement of SWP equipment and infrastructure. Prioritization of capital and extraordinary O&M projects is a key component of the asset management system. O&M identifies, prioritizes, initiates, and manages over 200 studies and projects in a year. O&M has modeled its asset management approach around the International Standard Organization 55001 standard to create a risk-informed process for prioritizing capital projects to repair, refurbish, and replace SWP infrastructure.

Since early 2024, the SWP O&M Divisions have been creating and/or updating Maintenance Plans using standardized procedures and templates. This series of Project Operations & Maintenance Directives covers the steps and the workflow for approval of any new Maintenance Plan. The Maintenance Plans for HVAC systems remained in the priority queue but were incomplete in 2024.

Waste Management and Recycling

Waste management at DWR continues to change as several legislated bills around organic waste were passed in 2022. DWR began to see the effect of new bills on its operations during 2023 and 2024. Alongside CalRecycle, DWR updated its containers and sent out messages about the diversion of organic waste from landfills. At our construction sites, DWR requires the diversion of any vegetation from landfills as part of its contract terms.

Procurement

DWR's buyers, contract managers, budget analysts, and engineers know the importance of "Buying Green." The Buy Clean California Act has been incorporated into construction contracts and buyers are aware of the DGS limits. Overall, the combined efforts of all Californians can help reduce the average Global Warming Potential of its steel-related products and insulation when used in construction.

The new procurement classes by CalRecycle were advertised to our buyers and contract managers. In 2023, some of DWR's staff participated in beta-testing of their classes and found them engaging.

Investing in Sustainability Projects

The SWP will be required to make large investments to ensure its continued reliable operations in order to address impacts from subsidence, aging infrastructure, climate change, and increased usage due to population growth. SWP has structured an approach to design and plan for the next 50 years of operations under SWP's O&M Division. SWP must balance a wide variety of dimensions of affordability in order to maintain a sustainable water supply to the 29 public agencies that have entered long-term water supply contracts with DWR.

The concept of affordability within the context of the SWP is multifaceted and depends on various factors such as cost to customer agencies, infrastructure costs, environmental considerations, and the human right to water. While sustainability projects are added to SWP budgets each year, they are prioritized against other priorities and with an eye toward keeping wholesale water deliveries affordable.

Public Education and Outreach

DWR leads educational programs for students and the public about water storage, water use, and landscaping practices. DWR has built or sponsored informative exhibits at our visitor centers and museums. DWR continues to develop and share information covering a broad range of topics that California's local planners can use to develop sustainable communities. Our data portals are hosted at a world-class data center and are accessible to the public.

DWR continues to host events to encourage awareness about water issues. In September 2024, DWR marked 10 years of the Sustainable Groundwater Management Act and the progress made to protect water supplies. In both 2023 and 2024, DWR hosted speakers during Groundwater Awareness week (celebrated in March).

We appreciate this opportunity to highlight the sustainability-related accomplishments of DWR.

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Karla Nemeth

Director

CHAPTER 1 — CLIMATE CHANGE ADAPTATION

Department Mission and Climate Change Adaptation

The Department's mission is "To sustainably manage the water resources of California, in cooperation with other agencies, to benefit the state's people and protect, restore, and enhance the natural and human environments." Sustainability is a priority in the department's Strategic Plan and the California Water Plan. We strive to meet the water needs of today and tomorrow while protecting and enhancing the environment. The pressure to meet this balancing act is expected to intensify with climate change because the conditions in which our water system is built upon will become more extreme.

DWR performs a wide range of activities to support climate change analysis and adaptation planning by local and regional water managers, fund climate monitoring and research, and develop water sector policies and management practices to support California's comprehensive approach to addressing the challenges posed by climate change. The Department is also leading by example in development of its own comprehensive Climate Action Plan (CAP) to guide how DWR is and will continue to address climate change for its programs, projects, and activities.

DWR republished its Strategic Plan in 2023. Goal 3 of this plan is title "Pursue Innovative Infrastructure Solutions." Much of California's water infrastructure is reaching the end of its life cycle in an era that demands innovative infrastructure solutions. DWR must act boldly to adapt and modernize our infrastructure, including use of nature-based solutions and by recognizing our watersheds as vital infrastructure.

The SWP released a Strategic Plan known as "Elevate to '28" in 2023. An Active Initiative associated with this plan is related to the implementation of the CAP. The initiative hopes to achieve 100 percent compliance with internal guidance to improve long-term water resources planning in the middle of a changing climate. Staff are asked to keep in mind the risk posed from climate change in their planning and investment efforts.

Climate Change Risks to Facilities

Climate Change Risk Process

For all infrastructure, it is important to assess the risk that a changing climate poses to an asset or project (e.g., sea-level rise or increasing daily temperatures). It is also important to recognize the impact that an infrastructure project has on the surrounding community, on individuals in that community, and their ability to build community resilience (e.g., heat island impacts).

In 2019, DWR completed the CAP Phase III: Climate Change Vulnerability Assessment which analyzed the vulnerability of DWR's owned and operated facilities, managed lands, operations, critical natural systems, and staff activities. The analysis drew from the extensive body of knowledge about climate change and through a standardized approach of examining exposure, sensitivity, and adaptive capacity to determine the overall vulnerability DWR facilities face from climate-driven hazards. The hazards considered in the analysis were wildfire, extreme heat, sea level rise, long-term and persistent hydrologic changes, and habitat and ecosystem services degradation.

In 2020, DWR released its CAP Phase III: Adaptation Plan, which identified priority actions to reduce the climate change vulnerabilities of four key vulnerable assets critical to DWR's core function. The four assets are: staff safety, specifically from extreme heat conditions when staff are working outside; the SWP with expected reduction of water delivery reliability; Upper Feather River Watershed degradation from more frequent and intense wildfires; and Landscapes, specifically ecosystem and habitat degradation within restoration projects. DWR has been working to develop and implement adaptation strategies to address the vulnerabilities of these four key assets, and releases updates to the CAP Phase III: Adaptation Plan every 2–3 years.

This report focuses on the risks to DWR-owned and privately leased facilities, while the CAP Phase III: Vulnerability Assessment and CAP Phase III: Adaptation Plan can be referred to for more in-depth analysis of DWR's vulnerabilities and climate change adaptation activities. As the owner and operator of the SWP, most facilities analyzed in this document serve functions associated with the SWP. The SWP is more than 700 miles of water storage and delivery infrastructure that serves more than 27 million people and thousands of acres of farmland. Therefore, most DWR-owned facilities

are associated with the SWP, but other DWR facilities that are non-SWP, such as mitigation and flood control facilities, are included in this document.

Assessing Risk from Changing Extreme Temperatures

As climate continues to change, temperatures are expected to continue to increase. Facilities will experience higher maximum temperatures and increased minimum temperatures. In addition to changing average temperatures, climate change will increase the number of extreme heat events across the State. Extreme events are already being experienced, with California experiencing record breaking heat in the summer of 2024.

Both minimum and maximum annual temperatures have already begun to increase across California with minimum temperature increases of 1.6 to 2.5 °F and maximum temperature increases of 0.4 to 1.4 °F (California Department of Water Resources 2014). A study by Scripps Institution of Oceanography projected future temperatures across California. The results indicate that by 2060–2069 mean temperatures may be 3.4 to 4.9 °F higher across the state compared to the period 1985–1994 (Pierce et al. 2012; California Department of Water Resources 2014). Seasonal trends indicate a greater increase in the summer months (4.1 to 6.5 °F) than in the winter months (2.7 to 3.6 °F) by 2060–2069. While these changes in mean temperatures may well result in having to plan changes in water management, it is the projected increase in maximum summertime temperatures and extreme heat events that poses the highest risk to the health and safety of DWR staff working outdoors.

In addition to extreme temperatures, climate change will increase the annual mean maximum and minimum temperatures across the state. Changes in the average temperatures will lead to a different distribution of temperature norms. The facilities that will experience the most change in average maximum temperatures are shown in Table 1.2a, with an expected increase of 5.5–5.7 °F degrees by mid-century, and facilities with the most change in average minimum temperatures are shown in Table 1.2b, with a projected increase of 4.0–7 °F degrees by mid-century.

Table 1.1. Top 5–10 Facilities that Will Experience the Largest Increase in Extreme Heat Events

Facility Name	Extreme heat threshold (EHT)°F	Average # of days above EHT (1961–1990)	Average # of days above EHT (2031–2060)	Change from Historical to projected average # of days above EHT (2031–2060)	Avg. # days above EHT (2070–2099)	Change from historical to projected average # of days above EHT (2070–2099)
Pearblossom Coating Facility (No Water)	105.0	4.0	34.5	30.5	61.5	57.5
Pearblossom O&M Subcenter — NEW (No Electricity)	105.0	4.0	34.5	30.5	61.5	57.5
Pearblossom O&M Subcenter — OLD (No Electricity)	105.0	4.0	34.5	30.5	61.5	57.5
Water Operations — Pearblossom	105.0	4.0	34.5	30.5	61.5	57.5
Tehachapi East Afterbay Maintenance Center	94.3	4.4	34.8	30.4	58.6	54.2
Oso Civil Maintenance and Mobile Equipment (No Electricity)	94.3	4.4	34.8	30.4	58.6	54.2
Water Quality Test Building	95.9	4.4	34.7	30.3	58.8	54.4
Vista Del Lago Visitors Center	97.5	4.4	33.4	29.0	56.5	52.0
Vaquero Water Treatment Plant (No Water)	97.5	4.4	33.4	29.0	56.5	52.0
Coalinga Operations and Maintenance Subcenter	103.7	4.4	32.4	27.9	65.3	60.8

Table 1.2a: Top 5–10 Facilities Most Affected by Changing Temperature — Annual Mean Max. Temp

Facility Name	Historical Annual Mean Max. Temp. (1961–1990)	Annual Mean Max. Temp. (2031–2060)	Change from Historical to Annual Mean Max. Temp (2031–2060)	Annual Mean Max Temp. (2070–2099)	Change from Historical to Annual Mean Max. Temp (2070–2099)
Vista Del Lago Visitors Center	69.5	75.3	5.7	78.9	9.4
Vaquero Water Treatment Plant (No Water)	69.5	75.3	5.7	78.9	9.4
Coating Facility (No Water)	76.9	82.5	5.7	86.5	9.7
Pearblossom O&M Subcenter — NEW (No Electricity)	76.9	82.5	5.7	86.5	9.7
Pearblossom O&M Subcenter — OLD (No Electricity)	76.9	82.5	5.7	86.5	9.7
Water Operations — Pearblossom	76.9	82.5	5.7	86.5	9.7
Tehachapi East Afterbay Maintenance Center	66.4	72.0	5.6	75.7	9.3
Oso Civil Maintenance and Mobile Equipment (No Electricity)	66.4	72.0	5.6	75.7	9.3
Cedar Springs Dam Maintenance Station	68.0	73.5	5.6	77.2	9.2
Romero Overlook	72.8	78.3	5.5	82.2	9.4

Table 1.2b. Top 5–10 Facilities Most Affected by Changing Temperature — Annual Mean Min Temp

Facility Name	Historical Annual Mean Min. Temp. (1961–1990)	Annual Mean Min. Temp. (2031–2060) °F	Change from Annual Mean Min. Temp (2031–2060)	Annual Mean Min. Temp. (2070–2099) °F	Change from Annual Mean Min. Temp (2070–2099)
Southern California Operations and Maintenance Center	47.3	54.3	7.0	58.3	10.9
Vista Del Lago Visitors Center	48.8	54.0	5.2	57.7	9.0
Vaquero Water Treatment Plant (No Water)	48.8	54.0	5.2	57.7	9.0
Cedar Springs Dam Maintenance Station	43.3	48.4	5.1	52.3	9.1
Coating Facility (No Water)	44.5	49.5	5.0	53.8	9.4
Pearblossom O&M Subcenter — NEW (No Electricity)	44.5	49.5	5.0	53.8	9.4
Pearblossom O&M Subcenter — OLD (No Electricity)	44.5	49.5	5.0	53.8	9.4
Water Operations — Pearblossom	44.5	49.5	5.0	53.8	9.4
North Bay Maintenance Center	46.8	51.7	4.9	55.5	8.7
Tehachapi East Afterbay Maintenance Center	45.5	50.3	4.9	54.1	8.7

Assessing Risk from Heating Degree Days (HDD) and Cooling Degree Days (CDD)

A Heating Degree Day (HDD) is defined as the number of degrees by which a daily average temperature is below a reference temperature for when heat would be needed. The reference temperature is typically 65 degrees Fahrenheit and loosely represents an average daily temperature above which space heating is not needed. Table 1.3a represents the ten facilities that are most impacted by the projected changes in HDD by mid-century.

Table 1.3a. Top 5–10 Facilities that will be Most Impacted by Projected Changes in Heating Degree Days (HDD)

Facility Name	Heating Degrees 1961–1990	Average Modeled Heating Degrees (year), 2031–2060	Change in Heating Degree Days Historical to Mid-Century	Average Modeled Heating Degrees (year), 2070–2099	Change in Heating Degree Days Historical to End-Century
Pearblossom Coating Facility (No Water)	3099.9	1996.9	-1103.1	1412.0	-1687.9
Pearblossom O&M Subcenter — NEW (No Electricity)	3099.9	1996.9	-1103.1	1412.0	-1687.9
Pearblossom O&M Subcenter — OLD (No Electricity)	3099.9	1996.9	-1103.1	1412.0	-1687.9
Water Operations — Pearblossom	3099.9	1996.9	-1103.1	1412.0	-1687.9
Beckwourth Subcenter	7502.2	5775.0	-1727.2	4807.7	-2694.5
Romero Overlook	2793.2	1840.9	-952.4	1327.7	-1465.6
San Luis Operations and Maintenance Subcenter (No Electricity)	2793.2	1840.9	-952.4	1327.7	-1465.6
Vista Del Lago Visitors Center	3399.0	2185.0	-1214.0	1660.4	-1738.6
Vaquero Water Treatment Plant (No Water)	3399.0	2185.0	-1214.0	1660.4	-1738.6
Tehachapi East Afterbay Maintenance Center	4199.8	2911.8	-1288.0	2293.1	-1906.7

Cooling Degree Day (CDD) is defined as the number of degrees by which a daily average temperature exceeds a reference temperature. The reference temperature is still typically 65 degrees Fahrenheit and loosely represents an average daily temperature below which space cooling, such as air conditioning, is not needed. Table 1.3b depicts the ten facilities that will be most impacted by projected changes in CDD.

Table 1.3b. Top 5–10 Facilities that will be Most Impacted by Projected Changes in Cooling Degree Days (CDD)

Facility Name	Cooling Degrees 1961–1990	Average Modeled Cooling Degrees (year), 2031–2060	Change in Cooling Degree Days Historical to Mid-Century	Average Modeled Cooling Degrees (year), 2070–2099	Change in Cooling Degree Days Historical to End-Century
Southern California Operations and Maintenance Center	1258.5	2554.8	1296.3	3267.2	2008.6
Vista Del Lago Visitors Center	1260.0	2262.8	1002.8	2870.8	1610.8
Vaquero Water Treatment Plant (No Water)	1260.0	2262.8	1002.8	2870.8	1610.8
Cedar Springs Dam Maintenance Station	631.1	1462.7	831.5	1993.4	1362.2
Coating Facility (No Water)	1510.7	2582.2	1071.5	3305.8	1795.1
Pearblossom O&M Subcenter — NEW (No Electricity)	1510.7	2582.2	1071.5	3305.8	1795.1
Pearblossom O&M Subcenter — OLD (No Electricity)	1510.7	2582.2	1071.5	3305.8	1795.1
Water Operations — Pearblossom	1510.7	2582.2	1071.5	3305.8	1795.1
North Bay Maintenance Center	1067.9	2132.4	1064.4	2868.2	1800.2
Tehachapi East Afterbay Maintenance Center	888.0	1734.8	846.8	2262.4	1374.3

Reporting Narrative on Tables 1.3b and 1.3c: HDD and CCD

Increasing temperatures pose operational challenges and potential health impacts to DWR staff. DWR performs numerous activities that require staff to work outside for extended periods, such as repairing or maintaining equipment, landscaping, conducting surveys, and monitoring construction work. During extreme heat events, staff are at risk of overheating, heat stroke, heat exhaustion and other dangerous conditions — especially if proper precautionary protocols are not taken. As determined in 2021 during a DWR Regional Office Staff survey, most outdoor work occurs in the Central

Valley, Southern Interior, and Mojave Desert where the most extreme heat days are expected.

The focus of temperature impacts is placed on operations and human exposure, rather than on the facilities themselves, because the facilities and equipment were built to withstand a broad range of temperature fluctuations that are encompassed within the expected increases due to climate change. The facilities are equipped with heating, cooling, and ventilation equipment to adjust to temperatures. Staff safety as a result of temperature increases is one of the priorities of the CAP Phase III: Adaptation Plan.

Plan to Mitigate HDD and CDD

As temperatures increase, outdoor staff activities may need to shift (i.e., either to a different time of day or to another work window), implement the buddy system more frequently, and project delays associated with the need for more on-site cool down rest periods, schedule shifts, and longer acclimation periods for new staff may occur. The procedures for when changes need to be made due to high temperatures are outlined in the DWR Heat Illness Prevention Plan (HIPP; updated in 2022). The HIPP specifically details procedures for when outside temperatures are above 80 degrees F and 95 degrees F, which can become dangerous for staff working outside. Additionally, the HIPP explains the procedures during a possible heat illness event to ensure staff receive the proper care during an emergency. The HIPP will be updated as needed to help staff adapt to increased temperatures due to climate change.

Planning Outline: PO1:a. Plan for Top 5-10 Facilities HDD and CDD Mitigation

Facility Name	Abbreviated Mitigation Plan 2030
Southern California Operations and Maintenance Center	DWR Heat Illness Prevention Plan (HIPP)
Vista Del Lago Visitors Center	DWR Heat Illness Prevention Plan (HIPP)
Vaquero Water Treatment Plant (No Water)	DWR Heat Illness Prevention Plan (HIPP)
Cedar Springs Dam Maintenance Station	DWR Heat Illness Prevention Plan (HIPP)
Coating Facility (No Water)	DWR Heat Illness Prevention Plan (HIPP)

Facility Name	Abbreviated Mitigation Plan 2030
Pearblossom O&M Subcenter — NEW (No Electricity)	DWR Heat Illness Prevention Plan (HIPP)
Pearblossom O&M Subcenter — OLD (No Electricity)	DWR Heat Illness Prevention Plan (HIPP)
Water Operations — Pearblossom	DWR Heat Illness Prevention Plan (HIPP)
North Bay Maintenance Center	DWR Heat Illness Prevention Plan (HIPP)
Tehachapi East Afterbay Maintenance Center	DWR Heat Illness Prevention Plan (HIPP)

Assessing Risk from Urban Heat Islands

Large, urbanized areas can experience higher temperatures, greater pollution and more negative health impacts during hot summer months when compared to more rural communities. This phenomenon is known as the urban heat island effect. Heat islands are created by a combination of heat-absorptive surfaces (such as dark pavement and roofing), heat-generating activities (such as engines and generators), and the absence of vegetation (which provides evaporative cooling). DWR has three facilities which would be considered as being located in an Urban Heat Island (see Table 1.4) which is only 10 percent of the facilities operated by DWR.

Table 1.43. Facilities in Urban Heat Islands

Facility Name	Located in an Urban Heat Island (Yes or No)	sq. ft. of Surrounding Hardscape or Pavement if greater than 5000 sq. ft.
Southern Region Office	Yes	NO DATA
Vista Del lago Visitors Center	Yes	NO DATA
Water Quality Test Building	Yes	NO DATA

Reporting Narrative on Table 1.4: Urban Heat islands

The facilities identified as being located within urban heat islands in Table 1.4 were based on Cal EPA's Urban Heat Island Index. The facilities that were within a region in which the index depicted as red, regardless of the hue, were added to Table 1.4. The deeper the coloration of red indicates the urban heat island effect is more serious. Since the urban heat island effect is strongest in areas of heavy urbanization, it is instinctive that all facilities

listed in Table 1.4 are located within the metropolitan areas of the Los Angeles Basin and Riverside-San Bernardino, with the most at-risk facility being the Southern Region Office.

Planning Outline for Urban Heat Islands Mitigation:

Most of the operations and activities at Table 1.4 facilities will be conducted by staff indoors, where they will have access to shade, air conditioning, and water. Should any operations or activities be conducted outside, staff will follow guidelines set forth in DWR's HIPP. The plan specifically details procedures for when outside temperatures are above 80 degrees F and 95 degrees F, which can become dangerous for staff working outside. Additionally, the plan explains the procedures during a possible heat illness event to ensure staff receive proper care during an emergency. The plan will be updated as needed to help staff adapt to increased temperatures as a result of climate change. No current plans are in development to mitigate the urban heat island effect for these facilities as they are located in heavily urban areas of which DWR holds none to limited operational control over the surrounding land use.

Planning Outline: PO1:b: Plan for Urban Heat Islands Mitigation

Facility Name	Mitigation or Plan	Est. Implementation Date
Southern Region Office	DWR Heat Illness Prevention Plan (HIPP)	2022
Vista Del Lago Visitors Center	DWR Heat Illness Prevention Plan (HIPP)	2022
Water Quality Test Building	DWR Heat Illness Prevention Plan (HIPP)	2022

Planning Narrative for PO1.b: Urban Heat Islands Mitigation

The area occupied by these buildings is relatively small, but does include the buildings and associated parking lots, which are paved. Landscaping is generally a part of all facilities but varies with region and climate. The facility most at risk is the Southern Region Office located in Glendale, an exclusively urban area. This facility contains landscaping around the building which reduces the absorption of heat and plays a vital role in mitigating the heat island effect. The building also contains underground parking that reduces surface pavement by accommodating vehicles underground. Additionally, the building contains solar panels on the roof that significantly subsidize the energy needed to run air conditioning. Staff at these facilities will follow

DWR's HIPP should there be a need to conduct any activities or operations outside.

Assessing Risk from Changes in Precipitation

The impacts of climate change on the amount of precipitation that California will receive in the future are less certain than the impacts on temperature (see Table 1.5). However, it is expected that California will maintain its Mediterranean climate pattern (dry summers and wet winters), but more precipitation will fall as rain than as snow. Extremes are also projected to intensify, with both droughts and heavy precipitation events becoming more severe. Larger storms may increase flood risks while also shifting runoff to earlier in the season producing high runoff volumes. In combination with the above temperature changes, these impacts contribute to reduced snowpack and timing of the of runoff, which impact water supply.

Table 1.5. Top 5–10 Facilities that will be Most Impacted by Projected Changes in Precipitation

Facility Name	Annual Mean Max. Precip. (1961–1990) (in/yrs.)	Annual Mean Precip. (2031–2060) (in/yrs.)	Percent Change by mid-century	Annual Mean Precip. (2070–2099) (in/yrs)	Percent change by end of century	Extreme Precip (1961–1990) (in/day)	Extreme Precip (2031–2060) (in/day)	Extreme Precip (2070–2090) (in/day)
North Bay Maintenance Center	14.7	18.0	22.8%	19.9	35.5%	3.4	4.0	4.7
Sacramento Maintenance Yard	17.8	20.6	15.7%	22.3	25.4%	4.1	4.7	5.5
West Sacramento Storage Yard	17.8	20.6	15.7%	22.3	25.4%	4.1	4.7	5.5
Beckwourth Subcenter	22.7	25.9	14.3%	28.7	26.3%	4.7	4.8	5.6
Romero Overlook	10.3	11.8	13.6%	12.9	24.8%	2.5	2.8	3.3
San Luis O&M Subcenter (No Electricity)	10.3	11.8	13.6%	12.9	24.8%	2.5	2.8	3.3
Delta O&M Center (No Electricity)	12.1	13.7	13.1%	14.7	21.4%	2.9	2.8	3.3

Facility Name	Annual Mean Max. Precip. (1961–1990) (in/yrs.)	Annual Mean Precip. (2031–2060) (in/yrs.)	Percent Change by mid-century	Annual Mean Precip. (2070–2099) (in/yrs)	Percent change by end of century	Extreme Precip (1961–1990) (in/day)	Extreme Precip (2031–2060) (in/day)	Extreme Precip (2070–2090) (in/day)
Sutter Maintenance Yard	19.5	22.0	12.4%	23.5	20.1%	4.8	3.6	4.6
Lost Hills O&M Subcenter	9.9	11.1	12.2%	12.1	22.2%	3.0	3.0	3.7
Lake Oroville Visitors Center (No Water)	35.2	38.9	10.4%	41.1	16.7%	6.9	6.1	6.8

Reporting Narrative on Table 1.5: Precipitation Impacts

The facilities listed in Table 1.5 will experience the most relative projected change in precipitation in 2031–2060 based on data acquired from Cal-Adapt. All of these facilities are located in the central valley or Sierra Nevada regions. It has been projected that extreme precipitation, the driver of most flood events, will intensify. Data acquired from Cal-Adapt confirms these projections. Their data shows an increase in annual precipitation levels from 10.4%–22.8%.

Many of the facilities most at risk are four of SWP's O&M Centers (North Bay O&M Center, Beckwourth Subcenter, San Luis O&M Center, and Lost Hills O&M Subcenter) and Division of Flood Operations' subcenter at Sutter Maintenance Yard. These facilities provide critical maintenance work for the distribution of water. Staff also have duties for the maintenance of flood control infrastructure. If flood control infrastructure should become overwhelmed in these areas, DWR could lose operational access to these facilities, potentially disrupting any critical emergency operations.

Planning Outline to Mitigate Precipitation Changes

For DWR, the projected changes in precipitation are most pertinent to the challenge of operating the SWP. The SWP was designed to provide water supply, flood protection, electricity generation, and recreation benefits. More recently, the SWP has been operated to also provide ecosystem and Delta water quality benefits to the people of California. As shown in the DWR Climate Change Vulnerability Assessment, climate changes pose several risks to DWR. Higher temperatures act to increase evapotranspiration,

sublimation, and snowmelt rates, and decrease soil moisture and snow accumulation. These effects combine to reduce snowpack, water storage, and change runoff patterns. Changes in precipitation may affect average annual precipitation rates or the frequency, magnitude, and duration of extreme events.

The loss of snowpack because of higher temperatures and reduced precipitation is of concern in California. Snowmelt provides an annual average of 15 million acre-feet of water, slowly released by melting from about April to July each year. The SWP infrastructure was originally designed to capture and store winter and spring runoff to reduce high flows that cause flooding and then deliver the water during the drier summer and fall months when it is needed for water supply. However, due to climate-related challenges, the SWP must now adapt increased drought frequency and duration, more extreme precipitation and earlier snowmelt.

DWR prepared the 2022 Update to the Central Valley Flood Protection Plan (CVFPP) that serves as California's strategic blueprint to improve flood risk for approximately 1.3 million Californians and approximately $223 billion worth of structures and their contents in the valley's floodplains. Adopted by the Central Valley Flood Protection Board (CVFPB), the CVFPP guides the State's participation in managing flood risk in areas protected by the State Plan of Flood Control (SPFC) within the Central Valley for California's current climate and future projections of precipitation. The CVFPB will update the CVFPP in 2027.

Projections indicate the Sierra snowpack will severely decrease resulting in larger volumes of runoff entering reservoirs during the winter and early spring and less runoff arriving in late spring and early summer, which could overwhelm the flood storage capacity of reservoirs during winter. This could lead to higher downstream flow during flood events and reduced summer water supplies.

In 2024, the SWP released its risk-informed strategic plan (Elevate to '28). A top goal is to "Accelerate adaptation and strengthen resiliency for a changing climate." Their process identified and prioritized external risk trends and the top risks facing SWP through extensive document reviews, industry research, benchmarking, and additional workshops and information gathering sessions. If any facility remains at risk from projected weather changes, SWP will be managing that risk in a consistent and systematic manner

Planning Outline PO1:c. Plan for Top 5-10 Facilities Most Impacted by Projected Changes in Precipitation

Facility Name	Extreme Precipitation (2030) Plan or strategy
North Bay Maintenance Center	Elevate to ’28 (Goal 3)
Sacramento Maintenance Yard	Central Valley Flood Protection Plan (CVFPP)
West Sacramento Storage Yard	Central Valley Flood Protection Plan (CVFPP)
Beckwourth Subcenter	Elevate to ’28 (Goal 3)
Romero Overlook	Elevate to ’28 (Goal 3)
San Luis O&M Subcenter (No Electricity)	Elevate to ’28 (Goal 3)
Delta O&M Center (No Electricity)	Elevate to ’28 (Goal 3)
Sutter Maintenance Yard	Central Valley Flood Protection Plan (CVFPP)
Lost Hills O&M Subcenter	Elevate to ’28 (Goal 3)
Lake Oroville Visitors Center (No Water)	Elevate to ’28 (Goal 3)

Planning Narrative on PO1.c: Precipitation Changes Mitigation Plan

The CVFPP was updated in 2022 to include the Conservation Strategy which provides the requisite guidance for adapting to a changing climate in relation to flood and ecosystem management in the Central Valley. The CVFPP conducts a region-wide climate modeling analysis to describe how intense these physical climatic changes are expected to be and identify the areas within the valley that are most at risk for flooding. The Conservation Strategy (located in the CVFPP’s Appendix H) describes the expected ecological impacts of these climatic changes on ecological processes, habitats, and stressors to target species. Preliminary adaptation and management strategies are proposed based on identified risks and vulnerabilities.

Next steps for Elevate to ’28 include developing an Implementation Roadmap (Roadmap) outlining the actions we will take to achieve our goals and objectives. Actions will be prioritized according to multiple factors, including the extent to which they mitigate the top risks facing the SWP.

For mitigating climate impacts on the SWP, DWR has a multi-pronged strategy that includes:

- Developing of the State Water Project Adaptation Strategy, which examines how a combination of strategies can help the SWP maintain reliable water deliveries to 27 million California's despite hotter temperatures, more extreme storms, more severe droughts and higher sea levels. This SWP Adaptation Strategy was released in 2025. (New Report Highlights the Delta Conveyance Project as the Single Most Effective Action for a Sustainable Water Future for California)

- Improving communication and transparency about the vulnerabilities of the SWP from climate changes within the bi-annual Delivery Capability Report for the SWP (https://water.ca.gov/Library/Modeling-and-Analysis/Central-Valley-models-and-tools/CalSim-3/DCR2021).

- Water resources memorandum (WRM) 75, CAP II Climate Change Analysis guidance establishes the department wide framework requiring project managers to complete climate screening and vulnerabilities analysis. Ensuring that all DWR projects are evaluated to identify climate change vulnerability and if necessary, are analyzed and adapted to ensure projects and plans have a high level of resiliency and robustness.

- Implementation of key climate adaptation projects that improve water storage and conveyance, increase operational flexibility and efficiency, and deploy proven technology and cutting-edge science to improve management decision making. These projects include: Delta Conveyance (https://water.ca.gov/deltaconveyance), California Aqueduct Subsidence Project (https://water.ca.gov/Programs/Engineering-And-Construction/Subsidence), Forecast Informed Reservoir Operations at Oroville Reservoir (https://water.ca.gov/News/Blog/2023/Jan-23/Californias-Forecast-Informed-Reservoir-Operations-Are-Key-to-Managing-Floods-and-Water-Supplies), and Enhanced SWP Asset Management.

Assessing Risk from Sea Level Rise

NO FACILITIES AT RISK

No DWR facility was found to be at risk from sea level rise. However, DWR's Delta and Suisun Marsh properties are either planned to be inundated (to allow for tidal habitat restoration) or the crest elevation of levees will be increased to accommodate the rising water levels. Based on the Sea Level Projection Tool from the IPP 6th Assessment Report, the Port Chicago gauge in the Western Delta could experience sea-level rise of about 0.21 meters (8.2 inches) in 2050 and 0.64 meters (25.2 inches) in 2100.

Table 1.64. All Facilities at Risk from Rising Sea Levels

Facility Name	Tide Chart Region	2050 Water Level (ft)	Exposed in 2050? (y/n)	2100 Water Level (ft)	Exposed at 2100? (y/n)
NO FACILITIES AT RISK					

Reporting Narrative on Table 1.6: Sea Level Rise Impacts

NO FACILITIES AT RISK

While we found no facilities directly impacted by rising sea level, DWR does have properties and lands that it manages in the Sacramento-San Joaquin Delta that will be affected by climate change, including the Delta and Suisun Marsh habitats. Climate change is projected to result in sea-level rise and changes in hydrologic patterns that will increase flood elevations within the Delta and Suisun Marsh. These changes will reduce levee freeboard in the near- to mid-term and may result in levee overtopping or seepage and stability failures in the mid- to long-term (Delta Stewardship Council 2021). Meeting freeboard requirements in the future may be challenging, and this could place some of DWR's water conveyance features at risk of inundation or saltwater intrusion.

Of the ecosystems currently protected by levees, 73 percent are at risk of flooding due to levee overtopping resulting from a combination of sea-level rise and storm events. This risk is especially high in the Central Delta and Suisun Marsh (Delta Stewardship Council 2021). DWR has embarked on habitat restoration in several locations where intentional breaches to the levees will be made to allow for tidal habitat restoration. The final surface elevations on the restoration sites account for sea level rise.

Planning Outline to Mitigate Sea Level Rise Impacts

Planning Outline PO1:d. Planning for Sea Level Rise impacts Mitigation

Facility Name	Tide Chart Region	Plan 2030?
NO FACILITIES AT RISK		

Planning Narrative on PO1.d: Sea Level Rise Impact

DWR's proposed Delta Conveyance Project is an essential climate adaptation strategy that is designed to help protect against future water supply losses caused by climate change, sea-level rise, and earthquakes. The project involves constructing a tunnel underneath the Delta instead of utilizing the current system of channels and canals, which will protect water quality from saltwater intrusion caused by sea-level rise. The project serves as a climate adaptation strategy that will help ensure that the SWP can capture and move water during high-flow events, including during short-duration flows during otherwise dry conditions. The Final EIR for this project was released in December 2023.

Assessing Risks from Wildfire

Wildfire Threats by Fire Hazard Severity Zone

In 2024 CAL FIRE updated their Fire Hazard Severity Zone Designations maps, these maps were used to gather data on DWR's facilities and their locations with respect to these updated Fire Hazard Zones (See Table 1.7). Additionally, DWR's 2023 Roadmap detailed the results of a comprehensive analysis of the wildlife risks to SWP facilities and operations. A brief analysis of the sensitivity of SWP facilities, lands, and operations to the increased incidence of wildfire caused by climate change is discussed in the section below. Furthermore, a table of known wildfire impacts to DWR facilities in the last 20 years was developed and will be updated as needed (See Table 1.8).

SWP Facilities and Lands

With input from California Department of Forestry and Fire Protection (CAL FIRE) experts, an "Integrated Fire Analysis/Structure Risk Assessment" form was developed to assess various aspects of sensitivity of DWR facilities to current and future wildfire risk. Net wildfire risk was determined based on the integration of risk levels for three factors: roof type, hazard class, and

property defense/ignition zone. A numerical scoring system was used to minimize subjective assessments. Site visits were conducted by DWR Climate Change Program staff and onsite facility managers to complete the "Integrated Fire Analysis/Structure Risk Assessment" form and evaluate the sensitivity of each of these facilities. Out of all DWR facilities examined in their field visits, only four sites near Oroville, two sites in the Upper Feather River, and three structures in the Southern Region scored risk values of "Moderate" to "High" based on the forms.

Other DWR Facilities and Lands

Restoration is a priority for DWR in the Sacramento-Bay Delta for fish and wildlife habitat, water supply, water quality, and subsidence. Wildfire is a threat to these restored lands, which can have serious impacts on water delivery throughout the state. Furthermore, often there is no funding immediately allocated to replanting and restoring vegetation after a devastating fire. In response, DWR has developed a Land Stewardship Program where recovery from catastrophic events will be considered and hopefully lessen the devastating effects of these events.

In 2021, a needs assessment produced by DWR staff identified gaps and underlying needs that should be addressed to manage O&M obligations on DWR's growing portfolio of habitat restoration sites. The Land Stewardship Program was established to coordinate and guide land stewardship on DWR project sites and owned properties. Through the Land Stewardship Program, workshops are held for DWR staff to learn about all aspects of monitoring, maintaining and adaptively managing habitat or pre-project lands both terrestrial and aquatic. They are taught by local Resource Conservation Districts, land stewardship experts, and DWR project leads/managers. Land stewardship workshops were held in December 2023 and April and November 2024. Staff in this program consider recovery from catastrophic events which will hopefully lessen the devastating effects of these events.

Operations and Maintenance of State Office and Warehouse Buildings

The DWR Safety System conducts regular Safety Moments that are designed to inform staff on how to handle a potentially life-threatening circumstance. Wildfire Safety is a regular Safety Moment to inform staff on how to remain fire-aware, how to create an emergency plan, what to do if a wildfire is approaching, and how to react after a wildfire. These messages are intended to keep staff prepared and ready for wildfire season.

Table 1.75. Top 5–10 Facilities Most at Risk to Wildfire Threats by Fire Hazard Severity Zone

Facility Name	Fire Hazard Severity Zone Designation (low, medium, high, very high)
Southern California Operations and Maintenance Center	Very High
Vista Del Lago Visitors Center	Very High
Vaquero Water Treatment Plant (No Water)	Very High
Cedar Springs Dam Maintenance Station	Very High
Oso Civil Maintenance and Mobile Equipment (No Electricity)	Very High
Water Quality Test Building	Very High
Lake Oroville Visitors Center (No Water)	Very High
Pearblossom O&M Subcenter — NEW (No Electricity)	High
Pearblossom O&M Subcenter — OLD (No Electricity)	High
Water Operations — Pearblossom	High
Tehachapi East Afterbay Maintenance Center	High
Beckwourth Subcenter	High
Oroville Operations and Maintenance Center	High

Reporting Narrative on Table 1.7: Assessing Facilities most at Risk to Wildfire Threats by Fire Hazard Severity Zones

The facilities listed in Table 1.7 are located in Fire Hazard Severity Zones with designation of Very High or High. The facilities are centered in the northern region of the state, near or in the Upper Feather River watershed, and in southern California. These areas have seen some of the most devastating fires in the last 10 years. Access to these facilities during a wildfire would be an issue because the facilities are located in heavily vegetated areas, generally forested. The facilities vary in their functions from a maintenance building or station to recreational visitors centers. Therefore, impacts to these facilities from a wildfire differs. Maintenance staff reporting to Table 1.7 facilities would also be impacted. Visitors centers would also be closed to protect the public and staff.

Planning Narrative on Table 1.7: Assessing Facilities most at Risk to Wildfire Threats by Fire Hazard Severity Zones

WILDFIRE THREATS MITIGATED

DWR proactively prepares for the threat of wildfire on its facilities that may impact State infrastructure, staff, resources, and operations. For instance, the SWP Emergency Preparedness Program developed the Standing Operating Order (SOO) to guide decision-making for operating the SWP assets in proximity to active wildfires. The SOO will outline a process to determine whether operations can continue uninterrupted, should be transferred to remote operations, or be halted due to immediate life safety concerns or an inability to operate remotely. The process details actions to make the safest determinations during an active wildfire and develops metrics for evaluating the situation. The document works to navigate through an emergency to ensure SWP operations remain as uninterrupted as possible.

DWR is responsible for protecting life and property from a catastrophic event, and the Incident Command System (ICS) utilizes a standardized command and response planning structure to manage a response to an emergency event. The Incident Command Team (ICT) Guidebook provides directions for field personnel in using the ICS to ensure proper protocol is followed. For example, the ICT Liaison Officer may be deployed to serve as the Field Division Agency Representative for a CAL FIRE ICT responding to a wildfire in the vicinity of the Field Division.

Wildfire Threats as Measured by Impacts from Previous Wildfire Events

The facilities listed in Table 1.8 have experienced impacts from wildfire in the last 20 years.

Table 1.86. Facilities Impacted by Previous Wildfire Events (Last 20 Years)

Facility Name	Impact Category	Year of Impact	Fire Name
Southern California O&M Center	Staff Evacuation	2025	Hughes Fire
Monument Hill Boat Launch (No Water)	Operations Disruption	2020	North Complex Fire
Lake Oroville Visitors Center (No Water)	Operations Disruption	2020	North Complex Fire
Monument Hill Boat Launch (No Water)	Operations Disruption	2018	Camp Fire
Lake Oroville Visitors Center (No Water)	Operations Disruption	2018	Camp Fire

Reporting Narrative on Table 1.8 Wildfire Threats as Measured by Impacts from Previous Wildfire Events.

The facilities are located near the Oroville-Thermalito Complex and in southern California. These areas have seen some of the most devastating fires in the last 10 years. The facilities vary in their functions from an O&M facility to visitors centers and to boat launches. Therefore, impacts to these facilities from wildfire vary. Maintenance and operations staff reporting to these facilities would be impacted, possibly affecting their ability to complete their operational duties. Visitors centers and boat launches could need to be closed to protect the public and staff.

Planning Outline PO1:e: Plan for Mitigating Wildfire Risk for Top 5-10 Facilities Most at Risk.

The facilities listed in Tables 1.7 and 1.8 are the facilities that have both already been impacted and are at most risk of being impacted by catastrophic wildfire. These facilities are located in areas that have seen some of the most devastating fires in the last 10 years. The facilities vary in their functions from a maintenance building or station to recreational facilities and visitors centers. Therefore, wildfire impacts to these facilities differ. The Cedar Springs Station will likely be destroyed in a devastating fire and DWR will be forced to reconstruct. Maintenance staff reporting to this location would also be impacted. Visitors centers could need to be closed to protect the public and staff.

Planning Outline PO1:e. Plan for Mitigating Wildfire Risk for Top 5-10 Facilities Most at Risk

Facility Name	Plan 2026–2030
Southern California O&M Center	Standing Operation Order (SOO)
Lake Oroville Visitors Center (No Water)	Standing Operation Order (SOO)
Vaquero Water Treatment Plant (No Water)	Standing Operation Order (SOO)
Cedar Springs Dam Maintenance Station	Standing Operation Order (SOO)
Oso Civil Maintenance and Mobile Equipment (No Electricity)	Standing Operation Order (SOO)
Water Quality Test Building	Standing Operation Order (SOO)
Pearblossom O&M Subcenter — NEW (No Electricity)	Standing Operation Order (SOO)
Pearblossom O&M Subcenter — OLD (No Electricity)	Standing Operation Order (SOO)
Water Operations — Pearblossom	Standing Operation Order (SOO)
Tehachapi East Afterbay Maintenance Center	Standing Operation Order (SOO)
Beckwourth Subcenter	Standing Operation Order (SOO)
Oroville O&M Center	Standing Operation Order (SOO)

Planning Narrative on PO1.e: Mitigating Wildfire Risk for Top 5-10 Facilities Most at Risk

DWR proactively prepares for the threat of wildfires that may impact state infrastructure, staff, resources, and operations. As part of this effort, the State Water Project (SWP) Emergency Preparedness Program developed the Standing Operating Order (SOO) to guide decision-making when operating SWP assets near active wildfires. The SOO outlines a clear process to determine whether operations can continue as normal, transition to remote control, or be halted due to immediate safety risks or an inability to operate remotely. It provides specific actions and metrics to ensure the safest possible decisions during an active wildfire while striving to keep SWP operations as uninterrupted as possible.

DWR is responsible for protecting life and property during catastrophic events. To manage emergency responses, the Incident Command System (ICS) provides a standardized command and planning structure. The Incident Command Team (ICT) Guidebook gives field personnel step-by-step direction on using ICS protocols. For example, an ICT Liaison Officer may be

deployed to serve as the Field Division's representative to CAL FIRE when a wildfire occurs near a division facility.

Furthermore, DWR is heavily involved with restoration work across the state and specifically in meadow restoration in the northern region of the state. Meadow restoration not only results in increased and more stable water supply, but also as a nature-based solution to lessen the intensity and devastation of wildfire. Meadows are known to serve as natural fire breaks because the soil content is wetter and there is less density of trees. Meadow restoration is a way to slow the speed and intensity of wildfires. Meadow restoration is particularly important in the Upper Feather River Watershed because 57% of the watershed, which supplies water to Lake Oroville (a primary reservoir of the SWP), has been burned by wildfire in the past seven years.

Additionally, DWR works with local and state agencies to prepare for wildfire around the Oroville-Thermalito Complex by implementing fuel reduction projects and creating defensible space around infrastructure and adjacent to residential communities. Through grazing, brush removal, chipping, and controlled burns, DWR with area partners including CAL FIRE, California Department of Parks and Recreation (CA Parks), and Butte County Fire Safe Council (BCFSC) aim to reduce wildfire risk, increase public safety, and promote forest health. For example, BCFSC and goats from Hanski Family Farms are grazing 35 acres along Oro Dam Blvd. East with the goal of reducing ladder fuels to help lessen the spread of potential wildfire, protecting infrastructure and nearby communities.

Understanding Climate Risk to Planned Facilities

There are several interrelated climate risks to DWR's newest facilities (Table 1.9). Since DWR's last report, only leased facilities have been planned. DWR's CAP Phase III: Vulnerability Assessment and CAP Phase III: Adaptation Plan can be referred to for more in-depth analysis of DWR's vulnerabilities and climate change adaptation activities.

Tables 1.97: a-g: Climate Risks to New Facilities

a.1Annual Mean Max. Temperature

Facility Name	Historical Annual Mean Max. Temp. (1961–1990)	Annual Mean Max. Temp. (2031–2060)	Change from Historical to Annual Mean Max. Temp (2031–2060)	Annual Mean Max Temp. (2070–2099)	Change from Historical to Annual Mean Max. Temp (2070–2099)
10995 Gold Center Drive (Office)	74.4	78.8	4.4	80.2	4.8
State Highway 160 Storage	73.6	77.8	4.2	79.1	5.5

a.2 Annual Mean Min. Temperature

Historical Annual Mean Min. Temp. (1961–1990)	Annual Mean Min. Temp. (2031–2060) °F	Change from Annual Mean Min. Temp (2031–2060)	Annual Mean Min. Temp. (2070–2099 °F	Change from Annual Mean Min. Temp (2070–2099)	Historical Annual Mean Min. Temp. (1961–1990)
10995 Gold Center Drive (Office)	49.5	53.3	3.8	54.5	5
State Highway 160 Storage	47.3	51	3.7	52.2	4.9

b. Annual Mean Max. Precipitation

Facility Name	Annual Mean Maximum Precipitation (1961–1990) (in/yr.)	Annual Mean Precipitation (2031–2060) (in/yr.)	Extreme Precip (1961–1990) (in/day)	Extreme Precip (2031–2060) (in/day)
10995 Gold Center Drive (Office)	20.9	22.4	3	3
State Highway 160 Storage	16.7	17.8	2	2

c. Largest Increase in Extreme Heat Events

Facility Name	Extreme heat threshold (EHT) °F	Average number of days above EHT (1961–1990)	Average number of days above EHT (2031–2060)	Increase in number of days above EHT
10995 Gold Center Drive (Office)	103.9	4	18	14
State Highway 160 Storage	101.3	4	18	14

d. Sea Level Rise

Facility Name	Area (California Coast, San Francisco Bay, Delta)	Sea Level Rise 0.0 m	Sea Level Rise 0.5 m	Sea Level Rise 1.0 m	Sea Level Rise 1.41 m
NO FACILITY IMPACTED					

e. Wildfire Risks by Fire Hazard Severity Zone

Facility Name	Current Fire Hazard Severity Zone (low, medium, high, very high)
10995 Gold Center Drive (Office)	Low
State Highway 160 Storage	Low

f. Facilities Impacted by Previous Wildfire Events (Last 20 Years)

Facility Name	Impact Category ChooseActual Fire Damage	Year of Impact	Fire Name
NO FACILITY IMPACTED			

g. Risk from Heating Degree Days/Cooling Degree Days

Facility Name	Heating/Cooling Degree Days (1961–1990) (HDD/CDD)	Heating/Cooling Degree Days (2031–2060) (HDD/CDD)
10995 Gold Center Drive (Office)	2511/1403	1821/2193
State Highway 160 Storage	2739/1035	2013/1779

Reporting Narrative for Tables 1.9a-g: Understanding Climate Risks to Planned Facilities

In the past two years DWR has signed new leases on two facilities, 10995 Gold Center Drive in Rancho Cordova and State Highway 160 Storage in Walnut Grove, which will be used as office space and storage facilities, respectively. These facilities are both in Fire Severity Zone designated Low and have no risk associated with sea level rise. However, average temperatures are expected to increase from 3.7–3.8 degrees by the midcentury, and extreme heat events are expected to increase from historical average of 4 per year to 14 per year for each facility. Additionally, average precipitation is also expected to increase 17.8 percent to 22.4 percent for these facilities. Due to the nature of the work completed at these

facilities, they will likely hold limited staff but flooding from extreme precipitation events could potentially limit accessibility to these facilities.

DGS Real Estate handled the siting and negotiations on these two buildings. Their planning should be consulted.

Planning Narrative for Tables 1.9a-g: Understanding Climate Risks to Planned Facilities

PLAN FOR UNDERSTANDING CLIMATE RISKS ACHIEVED

Any new DWR proposed project must comply with the Water Resources Memorandum (WRM) No. 75: Climate Action Plan Phase II that formalizes a process for incorporating climate change analysis into DWR activities. Activities covered by WRM No. 75 include investment decisions, risk assessments, and infrastructure planning and design. Successful implementation of WRM 75 and CAP II allows for better aligned and consistent climate analysis across the agency. This process will be completed for any project that has a project lifespan of 20 years or more.

Additionally, in 2019 and 2020 DWR conducted a vulnerability assessment which includes a detailed analysis of DWR assets vulnerable to the threats of climate change. The Adaptation Plan identified steps to advance adaptation for supporting assets, staff, and vulnerable ecosystems and habitats under DWR's auspices.

Understanding the Potential Impacts of Facilities on Communities

Reporting on Facilities located in Disadvantaged Communities

DWR has facilities located inside or near Disadvantage Communities (Table 1.10).

Table 1.108. Facilities Located in Disadvantaged Communities

Facility Name	CalEnviroScreen Score	Located in a disadvantaged community? Yes/No
West Sacramento Storage Yard	90%–100%	Yes
Lost Hills O&M Subcenter	90%–100%	Yes
Coalinga O&M Subcenter	70%–80%	Yes
Sacramento Maintenance Yard	90%–100%	Yes

Facility Name	CalEnviroScreen Score	Located in a disadvantaged community? Yes/No
Pearblossom O&M Subcenter - NEW (No Electricity)	70%–80%	Yes
Pearblossom O&M Subcenter - OLD (No Electricity)	70%–80%	Yes
Water Operations - Pearblossom	70%–80%	Yes
Pearblossom Coating Facility (No Water)	70%–80%	Yes
San Luis O&M Subcenter (No Electricity)	80%–90%	Yes

Reporting Narrative for Table 1.10: Facilities in Disadvantaged Communities

Climate change disproportionately impacts vulnerable communities, with certain populations experiencing heightened risk and increased sensitivity to climate change and having less capacity to recover from changing average conditions and more frequent and severe extreme events. A number of factors contribute to vulnerability, often in overlapping and synergistic ways. These can include a variety of social and economic factors, and be determined by existing environmental, cultural, and institutional arrangements. Vulnerable populations can include, but are not limited to, people living in poverty, people with underlying health conditions, older/younger people, incarcerated populations, linguistically or socially isolated individuals, communities with less access to healthcare or other resources, or communities that have suffered historic exclusion or neglect.

While there is no single tool to identify vulnerable populations in an adaptation context, there are a number of statewide, publicly available tools that when overlaid with climate projection data can help identify communities most at risk to a changing climate. Some of these tools, including a definition for vulnerable communities, are available in a resource guide developed by the Integrated Climate Adaptation and Resiliency Program in the Office of Land Use and Climate Innovation

DWR facilities serve local populations in several ways. Directly, they provide local employment opportunities, in the form of working for DWR and working for independent employers that provide support for maintenance and operation of those facilities.

Indirectly, DWR facilities such as reservoirs and the California aqueduct provide recreational and fishing opportunities. Also, many service industries depend upon DWR employees in local communities. Most significantly, DWR facilities and operations provide water as a resource to vulnerable populations throughout the state, and disruptions to water deliveries because of climate change have the potential to greatly affect vulnerable populations. Table 1.10 depicts which DWR facilities are in a disadvantaged community as shown on CalEnviroScreen 4.0. While CalEnviroScreen does not capture all aspects of climate vulnerability, it is one tool that is available and does include several relevant characteristics.

Planning Narrative for table 1.10: Facilities in Disadvantaged Communities

The facilities described in Table 1.10 support the critical operation of the SWP which delivers water throughout two-thirds of California, including disadvantaged communities. DWR is working to reduce the emissions associated with these facilities and is expected to reach carbon neutrality across the department by 2035. This ambitious goal will allow for water conveyance through the SWP to be done completely through renewable energy. The avoidance of fossil fuels as energy to convey water will reduce the fossil-fuel emissions impacting these disadvantaged communities. Additionally, DWR is involved in the distribution of funds through various grants, and at times the guidelines of these grants allow for special consideration to disadvantaged communities. See Table 1.14 below for more details on the DWR's funding planning.

New Facilities and Disadvantaged Communities and Urban Heat Islands

During 2023 and 2024, when DWR was seeking new temporary office space and a location for storage of equipment, they used DGS to find the locations. These new facilities are not located in disadvantaged communities or urban heat islands (Table 1.11). DWR has just begun a search for a new location for its Flood Operations Staff and those in the planning a response to extreme climate events (also known as the Joint Operations Center). When more resolution has been obtained, it will be reported here.

Table 1.119. New Facilities and Disadvantaged Communities and Urban Heat Islands

Facility Name	Located in a Disadvantaged Community (yes/no)	Located in an urban heat island (yes/no)
10995 Gold Center Drive (Office) — Leased	No	No
State Highway 160 Storage — Lease	No	No

Reporting Narrative on Table 1.11: New Facilities and Disadvantaged communities and Urban Heat islands

NO NEW FACILITIES IN DISADVANTAGED COMMUNITIES AND URBAN HEAT ISLANDS

Planning Narrative on Table 1.11: New Facilities and Disadvantaged communities and Urban Heat islands

NO NEW FACILITIES IN DISADVANTAGED COMMUNITIES AND URBAN HEAT ISLANDS

Integrating Climate Change into Department Funding Programs

Table 1.1210. Integration of Climate Change into Department Planning

Name of Plan	Have you integrated climate?	Is a plan in progress?	If no, or in process, when will it be integrated?
Asset Management Program framework modeled on ISO 55000 standard (ongoing)	Yes	Yes	N/A
State Water Project Risk Management Program	Yes	Yes	N/A
State Water Project Climate Action Coordination (ongoing)	Yes	Yes	N/A
California Water Plan "Update 2023" released April 2024	Yes	No	N/A

Reporting Narrative for Table 1.12: Integrating Climate Change into Department Planning Process

Executive Order B-30-15 directs State agencies to factor climate change into their planning and investment decisions. New tools and guides for DWR

employees continue to be released as we improve our understanding of the risk of climate change (see Table 1.12 for our ongoing and recent efforts).

State Water Project

The SWP will be required to make large investments to ensure its continued reliable operations in order to address impacts from subsidence, aging infrastructure, climate change, and increased usage due to population growth. SWP has structured an approach to design and plan for the next 50 years of operations under SWP's O&M Division, DWR's Asset Management (AM). AM staff are responsible for developing and implementing AM policies, strategies, and objectives for operations, maintenance, repair, and replacement of SWP equipment and infrastructure. AM leverages data and asset knowledge from across O&M programs to unify O&M's AM practices under a comprehensive, data-driven, and risk-informed decision-making framework. The two approaches of our AM approach that most closely tie to climate change, are the Risk Management Plan and the Business Case Evaluation. The O&M Asset team continues to work with internal and external partners to further develop our capabilities and to ensure the sustained growth and continual improvement of the program. Their work is currently coordinated with climate change staff and modelers.

Risk Management Program: Since the release of the O&M Risk Management Policy (in 2018), the Risk Management Program has developed a framework which includes training and guides for DWR staff. Staff are asked to document current and residual risk from SWP investments and to assign risk scores. Actions may be necessary to manage the identified risks. At that point, DWR must decide if any remaining risk is acceptable or if further actions are necessary. Providing a forward-looking SWP-wide framework for identifying risks to the successful implementation of the SWP strategic plan, including risks to ensuring climate change adaptation, resilience, and environmental regulatory compliance, this program will improve the SWP ability to reliably meet its environmental stewardship goals.

SWP Climate Action Coordination: The AM Program is coordinated with climate scientists and the Modeling Support Office. This coordination will ensure SWP actions related to climate change mitigation and adaptation are integrated with DWR-wide and State-wide actions. AM program activities include analyzing climate data to create models for the SWP. We use these models to forecast hydrologic conditions, plan for future water delivery, and

develop strategies to address the evolving challenges of climate change, such as wildfires and increased aridity.

California Water Plan: The California Water Plan Update 2023 (released in April 2024) addresses climate urgency through adaptation and mitigation strategies, such as modernizing infrastructure, strengthening watershed resilience, and preparing for extreme events like drought, floods, and sea level rise. The CWP advances a watershed-scale approach, supporting vulnerability assessment and adaptation plans tailored to each watershed's unique conditions and supports multisector collaboration. Additionally, the CWP ties directly to equity, recognizing that frontline communities face the earliest and most severe impacts.

Planning Narrative for Table 1.12: Integrating Climate Change into Department Planning Process

As described above, DWR has incorporated climate change integration into their SWP planning process. Climate change staff and modelers are working in various capacities to ensure resiliency is being built into the SWP to deliver water to Californians in a changed climate. For example, in 2025 DWR published the State Water Project Adaptation Plan which outlined and evaluated different adaptation strategies to ensure water supply reliability and ensure the long-term sustainability and reliability of the SWP.

In 2024, the California Water Plan was updated with increased focus on addressing climate urgency and equity. It advances building watershed scale climate resilience by requiring vulnerability assessments and adaptation plans for each of the state watersheds. Currently DWR's watershed resilience program, where local agencies develop watershed networks and vulnerability assessments, is being piloted by five watersheds in the state, with the possibility of the program moving statewide in the coming years.

Community Engagement and Planning Processes

DWR is entrusted to support safe and sustainable management of water for all Californians. Now and in the past, some communities have enjoyed fewer benefits and/or carried a larger burden of the impacts of past water management planning. For example, these communities might be at a relatively greater risk of flooding and water shortages because their needs were not planned for during the early stages of planning and design. Now with the accelerating pressures of climate change, it is even more critical to develop water strategies and plans with meaningful community engagement.

DWR is the lead on several planning efforts (see Table 1.13) where we seek to improve outreach and engagement prior to finalizing water plans.

Much of California's water infrastructure is reaching the end of its life cycle in an era that demands innovative solutions. DWR is acting boldly to adapt and modernize the State's infrastructure, including the use of natural infrastructure (nature-based solutions). DWR will work with local, federal, and other partners to advance more integrated, flexible, and reliable water management systems that will protect our communities under climate change conditions.

EO B-30-15, declared climate change to be a "threat to the well-being, public health, natural resources, economy and environment of California." State agencies are directed to prioritize investments that prioritize natural infrastructure and protect the state's most vulnerable populations. Table 1.13 contains a sample of the planning documents that DWR has produced in 2023, 2024, and early 2025. These plans were selected as examples of the types of internal and external work DWR performs to prioritize natural infrastructure and protect the state's most vulnerable populations.

Table 1.1311. Community Engagement and Planning Processes

Name of Plan	Does this plan consider impacts on vulnerable populations? Yes/No	Does this plan include coordination with local and regional agencies? Yes/No	Does this plan prioritize natural and green infrastructure? Yes/No
California Water Plan "Update 2023" Final Version Released April 2024	YES	YES	YES
2022 Central Valley Flood Protection Plan (Released January 2023)	YES	YES	YES
Department of Water Resources Strategic Plan (Released September 2023)	YES	YES	YES
Elevate to '28 (SWP Strategic Plan; January 2024)	YES	YES	YES

Reporting Narrative for Table 1.13: Community Engagement and Planning Processes

Local and regional agencies are often a financial partner with DWR and as such are deeply engaged in several of our planning processes. DWR's large planning documents are initiated with a Project Charter, and staff include their communication plan as an attachment to outline the parties that should be contacted during the plan's development. These project-specific communication plans are written by either the Project Manager or a consultant. Deputy Directors are responsible for approving most Project Charters, but they may delegate them to a Division Manager.

DWR has a Division of Multibenefit Initiatives which is tasked with integrating nature-based solutions into flood risk-reduction projects within California's watersheds. Because nature-based solutions to reduce flood risk can cost more than traditional single-purpose or fix-in-place methods, finding funding for their implementation is an obstacle to their implementation. The federal partner for flood control, the U.S. Army Corps of Engineers, has historically struggled with assigning monetary value to ecological components (and other societal benefits) of projects when considering a cost-share agreement using its traditional benefit-cost analysis calculations, but has started a program known as "Engineering with Nature" to study alternative multi-benefit solutions to conventional flood risk reduction measures.

Planning Narrative for Table 1.13: Community Engagement and Planning Processes

COMMUNITY ENGAGEMENT AND PLANNING PROCESSES ACHIEVED

In 2024, the California Water Plan was updated with increased focus on addressing climate urgency and equity. It advances building watershed scale climate resilience by requiring vulnerability assessments and adaptation plans for each of the state watersheds. Currently this watershed resilience program is being piloted by five watersheds in the state, with the program moving statewide in the coming years.

In 2022, the SWP's Strategic Plan embarked on an inclusive, iterative strategic planning process to develop Elevate to '28. This process consisted of a core set of activities that engaged a diverse range of division and office personnel, as well as SWP and DWR leadership. Interested party interviews

helped us assess the “current state” of SWP, while workshops with SWP leadership solidified SWP’s vision, purpose, and core values.

Climate Change Implementation Planning in Funding Programs

DWR is integrating climate change into the grant funding programs we administer (Table 1.14)

Table 1.1412. Climate Change Implementation Planning in Department Funding Programs

Name of Grant or Funding Program	Have you integrated climate change into program guidelines? (Yes/No)	If no, Date it will be integrated?	Does this Funding Program consider impacts on vulnerable populations? (Yes/No)	Does this Funding Program include coordination with local and regional agencies? (Yes/No)
Water Desalination Grant Program Continuous Application Process group 6	Yes	N/A	Yes	Yes
Dam Safety and Climate Resilience Local Assistance Program	Yes	N/A	Yes	No
Urban Streams Restoration Program	Yes	N/A	Yes	Yes
Stream Gage Improvement Program	Yes	N/A	Yes	No
Turf Replacement (Budget Act of 2021)	No	N/A	Yes	Yes

Reporting Narrative for Table 1.14: Climate Change Implementation Planning in Funding Programs

CLIMATE CHANGE INTEGRATION ACHIEVED

DWR has invested billions of dollars into local organizations through its various grant funding programs. DWR’s grant management is intended to distribute funds to communities to address their water-related needs

including supply, water quality, groundwater, and stormwater recharge. The Go Golden Initiative highlights the partnership between the State and local organizations and water agencies to fund bold and innovative projects that strengthen California's water infrastructure and community resilience. However, between 2024–2025, the State saw budget deficits that limited DWR grant programs. In 2024, Prop 4 was approved by voters to allocate additional monies for water and climate resilience grants that will be released in the coming years. Table 1.14 lists the funding programs within DWR and their climate change implementation planning.

Planning Narrative for Table 1.14: Climate Change Implementation Planning in Funding Programs

CLIMATE CHANGE INTEGRATION ACHIEVED

Climate change integration has been achieved in multiple grants and funding programs. Expanding climate change consideration in all future grants and funding programs requires consistent rollout of language to ensure transparency and is currently in development within the DWR Climate Change Program.

Measuring and Tracking Progress

Reporting Narrative on Measuring and Tracking Progress

MEASURING AND TRACKING PROGRESS ACHIEVED

Changing climate conditions necessitates an adaptive management approach. An adaptive management approach is informed by tracking changing climate conditions and the performance of a plan or project. Building check points into a project or plan timeline can help to create a system for regular review and, if needed, adjustments.

Tracking tools are important for climate adaptation to support effective and regular evaluation of progress, communicate adaptation activities to the public and internally, and to justify funding needs (Ford et al. 2013). Outcome-based measures of adaptation are typically specific to the adaptation strategy (such as reduction in vulnerability for a given asset). More broadly, DWR can track and report on adaptation progress for its adaptation activities using generalizable indicators and principles.

DWR's CAP (2020) presents a set of three tools to track, evaluate, and reflect upon DWR's adaptation activities and goals. These tools include:

- Typology or types of adaptation-supporting activities (e.g., construct or modify infrastructure).
- Principles to serve as a foundation from which climate adaptation can be monitored and evaluated as it progresses (e.g., use of best available science).
- Process stages (i.e., understanding, planning, and managing) to guide adaptive management.

Planning Narrative on Measuring and Tracking Progress

MEASURING AND TRACKING PROGRESS ACHIEVED

DWR uses the CAP tools to frame and reflect on our plans of action to reduce vulnerabilities to its key assets, guide adaptation activity process improvements, and document lessons learned (e.g., barriers encountered, identifying potential strengths or weaknesses). These tools will help determine the resources allocated to and implemented among adaptation activities, whether some principles are applied more rigorously than others, the progression DWR is making toward its goals, and how DWR's adaptation activities are contributing to California's climate change adaptation efforts.

Using these progress tracking tools, DWR updates the full suite of its adaptation activities every two years. Progress will be reported as part of progress reporting for the State's Climate Adaptation Strategy, Water Resilience Portfolio, DWR Strategic Plan, and future Climate Change Adaptation chapters in the Department's Sustainability Roadmap. In addition, the DWR Climate Change Program releases an Annual Report that measures progress using metrics that tie to strategic planning on resilience goals.

DWR plans to begin tracking and reporting carbon sequestration benefits that may occur through its habitat restoration projects and climate-smart management of DWR-owned natural and working lands based on timing and guidance provided by CARB (see Appendix I).

References

Delta Stewardship Council. 2021. *Delta Adapts: Creating a Climate Resilient Future Sacramento San Joaquin Climate Change Vulnerability*. Sacramento, California. [Government Report.] Retrieved from https://www.deltacouncil.ca.gov/delta-plan/climate-change.

DWR. 2024. *California Water Plan Update 2023*. [Government Report.] Retrieved from https://water.ca.gov/Programs/California-Water-Plan/Previous-Updates.

DWR. 2020. *Climate Change Adaptation Plan: Climate Action Plan, Phase 3*. [Government Report.] Sacramento, California. DWR.

Ford JD, Berrang-Ford L, Lesnikowski A, Barrera M, Heymann SJ. 2013. "How to track adaptation to climate change: a typology of approaches for national-level application." [Website.] Ecology and Society 18, 40.

Pierce DW, DR Cayan, L Dehann. June 2016. *Creating Climate projections to support the 4th California Climate Assessment*. [Government Report.] Retrieved from https://loca.ucsd.edu/~pierce/IEPR_Clim_proj_using_LOCA_and_VIC_2016-06-13b.pdf.

CHAPTER 2 — ZERO-EMISSION VEHICLES

Department Mission and Fleet

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

DWR's mission includes a twin focus on flood protection and water delivery. The flood protection function includes work on flood plains, dams, and levees; and these structures are usually in remote and hard-to-reach areas. The structures making up the State Water Project (SWP) include a 400-mile aqueduct, with dams, pumping stations, hydroelectric structures, and water delivery turnouts (large structures that deliver water to contracted municipalities). Together, these two functions direct DWR's choice of vehicle. Other DWR activities influencing vehicle choice include biological restoration projects, biological monitoring, snowpack monitoring, facility inspections, construction inspections, and maintenance operations.

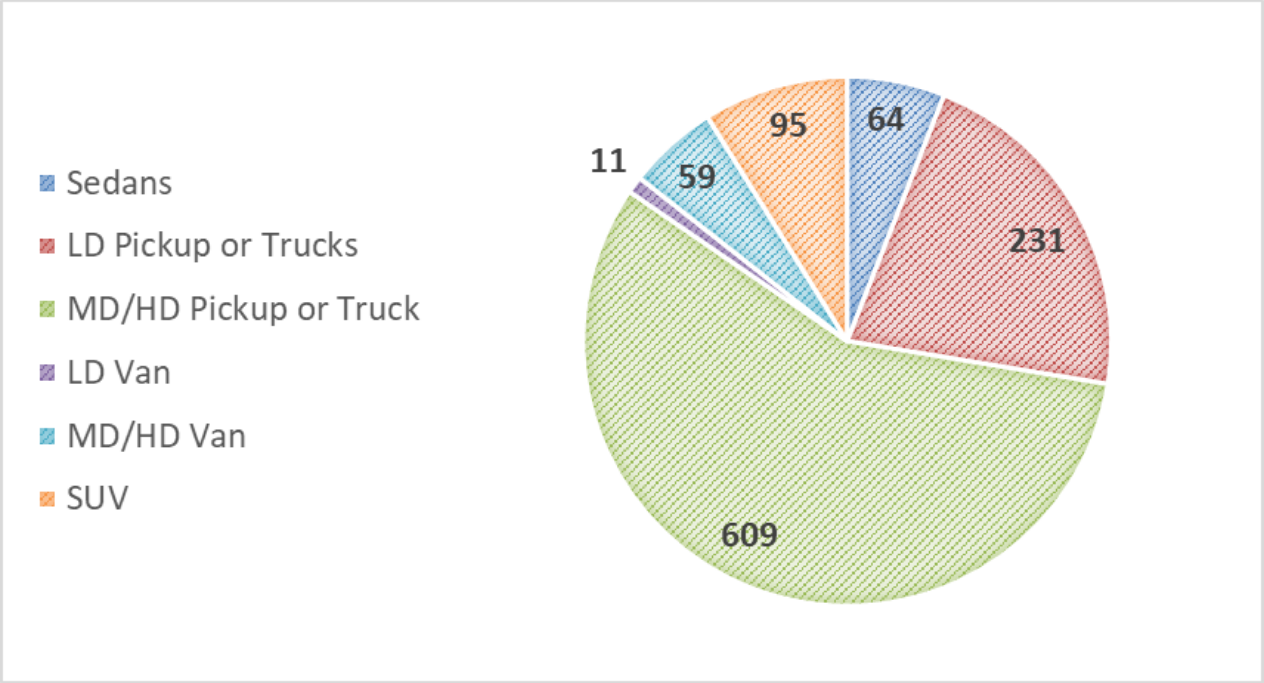
Vehicle trips vary in length depending upon the job function, but DWR employees drive long distances on the job, including travel to remote work sites far from employee duty offices. DWR has a wide range of driving needs, since construction monitors may be at a remote location for up to 12 hours, while a regional manager may be speaking at a public meeting at City Hall for only 1 hour.

OFAM data for DWR's fleet show a marked decrease in diesel fuel use because of the replacement of fossil fuel diesel with plant and food-based renewable diesel. Renewable diesel is made of nonpetroleum renewable resources such as natural fats, vegetable oils, and greases and has all of the properties of a fossil fuel diesel molecule but does not have sulfur or nitrogen emissions. Renewable diesel functions in conventional combustion engines without the need for reengineering of the combustion engine. Renewable diesel meets all the low carbon, low emissions requirements in California.

Composition of Vehicle Fleet

DWR's fleet consists of a variety of vehicles ranging from sedans to tanker trucks, cranes, and pickup trucks (Graph 2.1). Our fleet continues to age, but the types of vehicles needed has remained steady.

Graph 2.1. 2024 Composition of Vehicle Fleet



Fuel Types

OFAM data for DWR's fleet show a marked decrease in diesel fuel use because of the replacement of fossil fuel diesel with plant and food-based renewable diesel. Renewable diesel is made of nonpetroleum renewable resources such as natural fats, vegetable oils, and greases, and has all of the properties of a fossil fuel diesel molecule but without sulfur or nitrogen emissions. Renewable diesel functions in conventional combustion engines without the need for reengineering of the combustion engine. Renewable diesel meets all the low carbon, low emissions requirements in California.

Reporting on Total Fuel Use by Fuel Type.

New bulk fuel contracting in 2023 has allowed renewable diesel to be available at DWR's fuel stations (see Table 2.1).

Table 2.1. Total Fuel Purchased in 2023/2024

Year	Fuel Type (Gallons) Diesel	Fuel Type (Gallons) Gasoline	Fuel Type (Gallons) Renewable Diesel
2023/2024	0	409,335	360,471

Note: Amount is based on a fuel station's storage tank being re-filled in the given year.

Reporting Narrative on Table 2.1: Fuel Type Selections

POLICY IN PROGRESS

DWR's Procurement Manual (June 2023 Update) specifies that DWR vehicles and equipment are to be refueled at DWR fueling stations located within the SWP field divisions and at Division of Flood Operations' subcenters. DWR purchases fuel in bulk to supply State vehicles and/or other State-owned mobile equipment. Bulk fuel is purchased utilizing a DGS-issued mandatory bulk fuel contract and written authorization from DGS. There is a DWR-specific Enterprise Process Guide with procedures for staff to follow to ensure delivery types and quantities are accurate. At this time, no hydrogen fuel is purchased, only gasoline, diesel (clear and red dye), and renewable diesel. DWR's Procurement Manual specifies that offsite fuel should be procured using the State Fuel Credit Card.

Planning Narrative on Table 2.1: Fuel Type Selections

The Department is pursuing Hybrid and Battery-Electric Vehicles to replace its fossil-fuel vehicles and has no plans for hydrogen fuel use at this time. Department staff work with OFAM during their annual planning cycle to identify if fleet vehicles are available as a ZEV.

Rightsizing the Vehicle Fleet

A major majority of the Department staff operate and maintain critical infrastructure (water distribution canals, levees, and dams) which must operate with very high reliability. These mission-critical staff are not eligible for telework assignments and as a result they continue to use their vehicles at the same rate. The DWR-Specific Enterprise Process Guide "Procurement of Mobile Equipment" (July 2010) does not specify the weight-class of vehicles nor prescribes the number at any location. Planning for new purchases is based on receipt of a "Scheduled Mobile Equipment Replacement List" in April of every year, and completion of DGS-required forms.

Teleworking, Mission Changes, and Technology Changes

A major majority of the Department staff operate and maintain critical infrastructure (water distribution canals, levees, and dams) which must operate with very high reliability. These mission-critical staff are not eligible for telework assignments and as a result they continue to use their vehicles at the same rate as pre-COVID times.

Reporting Narratives on Teleworking, Mission Changes, and Technology Changes

The DWR-Specific Enterprise Process Guide “Procurement of Mobile Equipment” (July 2010) does not specify the weight-class of vehicles nor prescribes the number at any location.

Each Region/Division/Office at DWR re-published their “Future of Work” playbooks in 2023. These Playbooks did not describe any changes to fleet sizes.

NO MISSION CHANGES

NO TECHNOLOGY CHANGES

Telematics

Telematics Implementation Status

Telematics is a method for monitoring vehicle use. Using GPS and onboard 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 battery electricity rather than gasoline.

Telematics can be used to proactively measure idling and speeding and to provide drivers an in-cab coaching alert. Most of the fuel savings documented by pilot studies were derived from this feedback loop. The second area where telematics helps is with underutilization of vehicles. Monitoring this information helps fleet managers decide whether certain vehicles are replaceable by other mobility solutions. This aspect of monitoring is important, as one of DWR’s transportation challenges is vehicle underutilization.

Reporting Narrative on Telematics Implementation Status

PLAN IN PROGRESS

In May of 2019, DGS signed a contract with Geotab, a provider of Internet of Things (IoT) and connected transportation. This is a single-source blanket purchase agreement (BPA) to supply the State of California and participating local government agency fleets with a telematics solution. State, municipal, and county fleets may purchase the technology through the State contract. Over 90 percent of the DWR fleet has telematics, and data streams have started. However, the individual cards with RFI chips (used to track individual drivers) have not been issued to staff so the data stream is not divided by location or individual.

Planning Narrative for Telematics Data

The Department will be using the Telematic data to identify driving patterns and evaluate which vehicles will be sent to certain areas to maximize utilization in light of new charging infrastructure installation (see sections below).

Existing Fleet Description

When utility vehicles and vans are included in DWR's totals, 92 percent of the fleet consists of vehicles that are suited to rough terrain. DWR has several light-duty pool vehicles, the majority of which are stored at the four regional offices or in Sacramento-area garages. All the pool vehicles are in locations with EV charging stations. There is no charging stations installed at DWR locations which are adequate to meet the needs of BEV pickups (like the Chevy Silverado EV which is now on a State contract).

Light Duty Fleet Vehicles

The Department owns light passenger-type vehicles that were budgeted and originally purchased for special assignments. These vehicles are reassigned when the work for which they were purchased has been completed or the necessity for full-time use of a vehicle no longer exists. The light passenger-type vehicles purchased by the Department through normal budget procedures make up the Department's vehicle pool. Vehicles in the pool are made available through MS Outlook for employees to self-book for work-related trips and keys are picked up from a centralized location.

Frequently, DWR employees use their own light duty vehicles for State-related travel. This may be for several reasons. One reason is that a sedan may be more practical and comfortable for certain trips, but in 2024 DWR only has 64 sedans for over 4,000 employees. As there may not be enough sedans at a location at the time the employee wants to travel, the employee uses their own vehicle. Additionally, in past years, DWR's fleet had a significant number of vehicles more than a decade old and employees chose to drive their own vehicles, rather than drive a vehicle that may have been 15 years old or older. And finally, when an employee is on telework assignment and working at home, this also increases the chances they will use their own vehicle to travel to a work appointment.

Reporting On Total Miles Traveled

While hybrid meetings have meant fewer work trips to gather with co-workers and interested parties, DWR-owned vehicles still traveled over 7 million miles per year in both 2023 and 2024 (see Table 2.2).

Table 2.2. Total Miles Traveled

Year	2019	2020	2021	2022	2023	2024
Miles Traveled	No Data	No Data	8,071,042	7,699,411	7,190,359	7,187,646

Reporting Narrative on Table 2.2: Total Miles Traveled

In 2020, we found just 25 of DWR’s 589 heavy and light-duty pickups make up 13 percent of all miles traveled, and 87 vehicles traveled 35 percent of all miles traveled. Using telematics will help balance mileage across all vehicles, but we have been unable to implement this technology to date.

Reporting On Miles Per Gallon

There has been a steady decline in DWR’s mile per gallon use since 2019 (Table 2.3).

Table 2.3. Light-Duty Miles per Gallon

Year	2019	2020	2021	2022	2023	2024
MPG	24.3	22.9	23.0	23.5	22	21.5

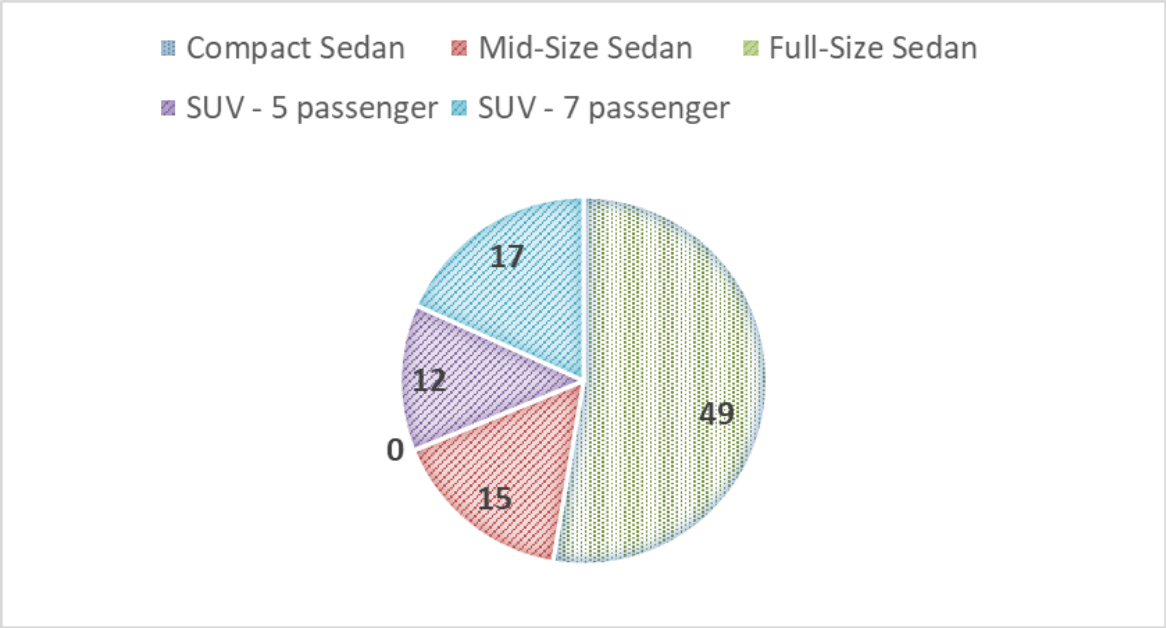
Reporting Narrative on Table 2:3: Miles Per Gallon

DWR's emphasis on rugged vehicles and the nature of its travel in remote locations shows in the average miles per gallon (MPG) figure which steadily grown larger since 2012, when the MPG was 17. In 2023, DWR's average MPG was 22 MPG, an increase of 5 MPG (27 percent higher; Table 2.3). Most of this MPG increase is due to the use of ZEV vehicles, discussed in the following section.

Composition of Light Duty Vehicle Fleet

DWR depends heavily on sedans in its light-duty fleet (see Graph 2.2).

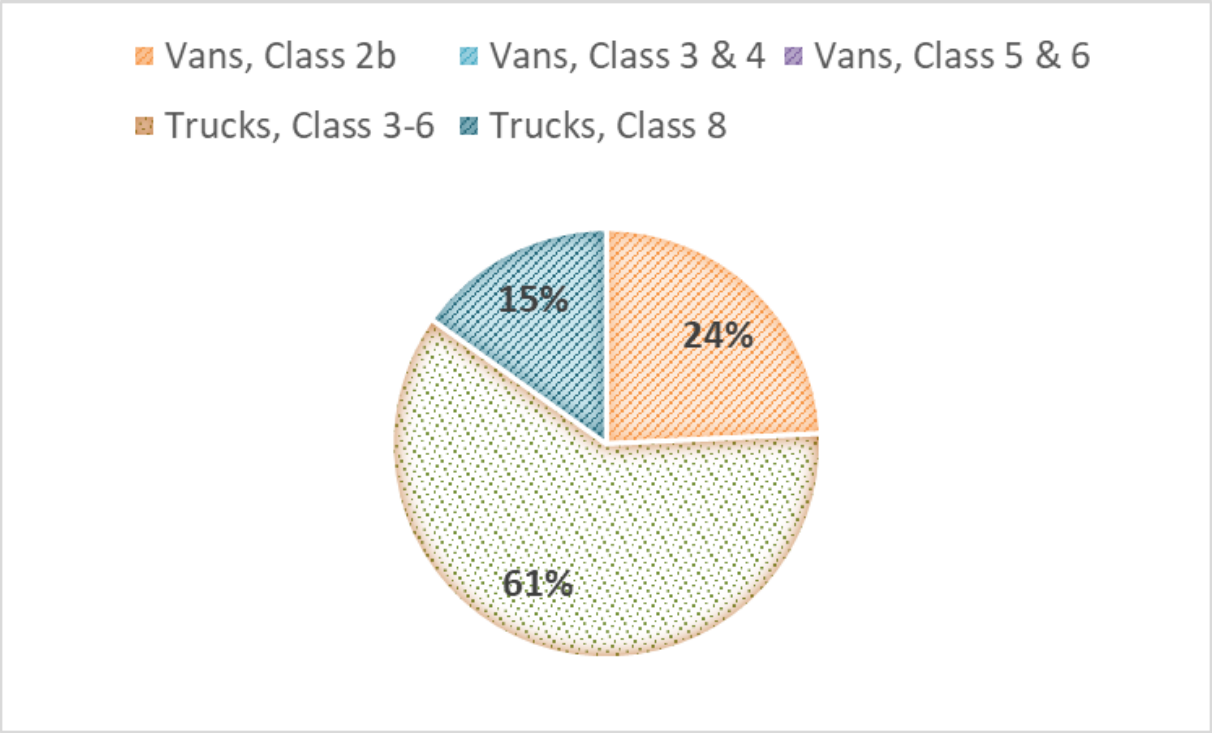
Graph 2.2. Composition of Light Duty Vehicle Fleet



Medium and Heavy-Duty Fleet Vehicles

Many of DWR's heavy-duty pickups are utility or service trucks equipped with special tools and devices specific to DWR's fieldwork. The majority of our Medium and Heavy-Duty Fleet is in Trucks from Weight Class of 3 to 6 (40 out of 66 vehicles) and a few in Class 8 (10 of them; see Graph 2.3). The Department does not have any Vans from Weight Classes 3 to 6 and only has 10 Vans from Weight Class 2b.

Graph 2.3. Composition of Medium and Heavy-Duty Vehicle Fleet Subject to the ZEV and Hybrid First Purchasing Mandate



Incorporating ZEVs into the State Fleet

Fleet management will undergo a fundamental change as more ZEVs enter the State fleet. These managers will not only be responsible for the purchase of vehicles, but also the infrastructure to refill them. There is an ever-expanding list of safety rules, new building regulations, and State policy around ZEVs which make keeping staff up to date even more difficult.

Light-Duty ZEV Adoption

Table 2.4 shows the estimated number of light-duty vehicles that must be considered as part of DWR annual fleet planning. ZEVs are about 75% of our current sedan fleet, but BEV and Plug-in Hybrid light-duty trucks and vans have not been available on DGS-controlled contracts for purchase. In FY 22/23, DWR purchased 45 traditional light duty trucks (gasoline). Because of recent contract agreements, DWR is expected to replace all remaining light-duty vehicles with ZEV based on ZEV purchasing policies found in SAM (see Table 2.5).

Table 2.4. Light Duty Vehicles in Department Fleet Currently Eligible for Replacement

Vehicle Type	Sedans	LD vans	LD Pickups	SUVs, 5 passengers	SUVs, 7 passengers	SUVs, 8 passengers	Total
# of Vehicles eligible for replacement	9	1	44	3	0	25	82

Table 2.5 Plan for Light Duty ZEV Additions to the Department Fleet

ZEV Category	21/22	22/23	23/24	24/25	25/26
Battery Electric Vehicle (BEV)	3	20	20	14	41
Plug-in Hybrid Vehicle (PHEV)	0	5	25	0	2
Fuel Cell Vehicle	0	0	0	0	0
Percent of total purchases	35%	40%	45%	50%	50%
Total number of ZEVs in Fleet*	59	62	62	62	62

Reporting Narrative for Table 2.5: Light Duty ZEV Additions to the Department Fleet.

For several years, DWR has kept only 62 light duty ZEVS. In the coming years, we expect an increase in the number of DWR-owned parking spaces which could accommodate charging stations (see section below) and that more staff will have positive experiences with electric vehicles through private-party purchases. Foundational changes like these will streamline the acceptance of EV purchases.

Planning Narrative for Light Duty ZEV Additions to the Department Fleet.

Planning for new vehicle purchases is based on receipt of an internal "Scheduled Mobile Equipment Replacement List" in April of every year. Top-line managers are reluctant to add their vehicles to DWR's "surplus" list because of staff's anxiety around ZEV range limits, the vehicle's documented range limitations when towing, the lack of charging stations on-site, and lack of sufficient capital funding. As a result, most of DWR's fossil-fuel vehicles are left in the fleet well past their eligibility limit.

Medium- Heavy-Duty ZEV Adoption

Many of DWR's heavy-duty pickups are utility or service trucks equipped with special tools and devices specific to DWR's fieldwork. The majority of our Medium and Heavy-Duty Fleet is in Trucks from Weight Class of 3 to 6 (40 out of 66 vehicles) and a few in Class 8 (10 of them; see Graph 2.3). The Department does not have any Vans from Weight Classes 3 to 6, and only has10 Vans from Weight Class 2b.

SWP Field Divisions continue to purchase "mission critical" construction vehicles for use in the maintenance and construction of large infrastructure. In 2024, Southern Field Division and Division of Flood Operations both purchased a 10–12 Cubic Yard Dump Truck (diesel). Also in 2024, San Joaquin Field Division purchased a diesel Freightliner with a crane PTO attachment. The Salton Sea Management Program purchased a partially amphibious vehicle (gasoline) in 2024. In 2023, a loader (gasoline) was purchased for use at the Southern Field Division. Finally, in 2024, loaders (diesel) were purchased for use at Sutter Maintenance Yard and Sacramento Maintenance Yard. At SWP in 2024, there were loaders (diesel and gasoline) purchased for Delta Field Division, San Joaquin Field Division, Southern Field Division and a tractor (diesel) for San Joaquin Field Division.

In 2024, DWR began the purchasing process for five Ford F150 Hybrids to replace similar trucks that used gasoline. These vehicles will be used in inspections by our staff from Division of Engineering (in Sacramento) and for staff travel in and around Pearblossom in the Southern Field Division.

Medium and Heavy-Duty Vehicles in Department Fleet currently Eligible for Replacement

There are over 100 trucks and vans eligible for replacement (see Table 2.6). In 2021, there were 87 eligible. In the reporting period, a variety of ZEV trucks (the Ford Lightening and Chevy Silverado) were available on a State contract.

In 2024, there were two utility-body trucks (3-ton) purchased and both of them were fossil-fuel (300-gallon diesel tank) vehicles using DGS's administered Contract 1-22-23-20. There are few staff requests to replace their medium and heavy trucks or vans with ZEV, and there are minimal number that are expected to be replaced in 2027 (Table 2.7). These will be used at the Southern Field Division.

Table 2.6. MD/HD Vehicles in Department Fleet Currently Eligible for Replacement

Vehicle Type	Vans, Class 2b	Vans, Class 3 & 4	Vans, Class 5 & 6	Trucks, Class 3-6	Truck, Class 8	Total
# of Vehicles Eligible for Replacement	Unk	Unk	Unk	Unk	Unk	123

Table 2.7. Planned Medium/Heavy Duty ZEV Additions to the Department Fleet

Type/Years	21/22	22/23	23/24	24/25	25/26
Battery Electric Vehicle (BEV)	0	0	0	0	0
Plug-in Hybrid Vehicle (PHEV)	0	0	0	0	5
Fuel Cell Vehicle	0	0	0	0	0
Percent of total purchases	0%	0%	0%	0%	0%
Total number of ZEVs in Fleet	0	0	0	0	Unk

Reporting Narrative for Table 2.7: Medium-Heavy Duty ZEV Adoption

Locations that utilize a “hub and spoke” operation, where vehicles return to a home base at the end of the shift will be ideal for Medium-Heavy Duty ZEV adoption. To support this new fleet, DWR will need to plan more robust EV charging infrastructure (Level 3 chargers). However, staff need to complete construction of current light-duty chargers before fully dedicating additional resources. DWR monitored CARB’s Advance Clean Fleets regulations during this reporting period, and understands that State fleets will be required to make 100 percent ZEV purchases as of 2027, which aligns with the EV priorities in SAM.

Planning Narrative for Table 2.7: Medium-Heavy Duty ZEV Adoption

Locations that utilize a “hub and spoke” operation, where vehicles return to a home base at the end of the shift will be ideal for Medium-Heavy Duty ZEV adoption. To support this new fleet, DWR will need to plan more robust EV charging infrastructure (Level 3 chargers). However, staff need to complete construction of current light-duty chargers before fully dedicating additional resources. DWR monitored CARB’s Advance Clean Fleets regulations during

this reporting period and understands that State fleets will be required to make 100 percent ZEV purchases as of 2027, which aligns with the EV priorities published inside the Statewide Administrative Manual (SAM).

Take-Home Vehicle Fleet Status

DWR supported 17 take-home vanpool vehicles in the period of 2023 and 2024 (see Table 2.8).

Table 2.8. Take-Home Vehicle Fleet Status

Vehicle Type	Sedans	LD Pickup or Trucks	MD/HD Pickup or Truck	LD Van	MD/HD Van	SUV
Totals	0	0	0	0	17	0

Reporting Narrative on Table 2.8: Take-Home Vehicle Fleet

The Take-Home vehicles within the Department are assigned to location-specific vanpools and telework is not influencing any fleet planning. There will be nearly the same number of take-home vehicles moving forward.

Planning Narrative on Table 2.8: Take-Home Vehicle Fleet

NO PLANS

Planning Narrative for Integrating ZEVs into Take-Home Vehicle Fleet

Vehicles authorized for home storage, per SAM Section 4109, are subject to all applicable ZEV purchasing policies.

The electric vehicle range capacity is the criteria by which DWR aligns ZEVs to the home storage permittee. Two companies, EV Connect and Tesla, which currently charge the battery-electric vehicles (BEV) will be mapped against take-home locations to determine if a BEV is a viable option for home-storage. DWR does not provide in-home charging equipment to staff.

Planning Narrative on Integrating the Take-Home Vehicle Program with Telework

The Take-Home vehicles within the Department are assigned to location-specific vanpools and telework is not influencing any fleet planning. There will be nearly the same number of take-home vehicles moving forward.

Planning Narrative on Integrating the Take-Home Vehicle Program with Emissions Reduction Strategies

NO PLANS

Planning Narrative for Integrating ZEVs into Take-Home Vehicles

NO PLANS

ZEV Public Safety Exemption

Reporting Narrative for ZEV Public Safety Exemption

NO SWORN OFFICERS

Planning Narrative for ZEV Public Safety Exemption

NO SWORN OFFICERS

Department's Parking Facilities

DWR's most common facilities are those of the State Water Project and those of its Division of Flood Operations' subcenters. These facilities offer mostly employee parking, usually behind secure entrances. Some parking exists for visitors, usually in a separate area.

DWR has 35 facilities (see Graph 2.4) with a total parking capacity of 1,828 stalls. Of these, 885 are for fleet parking, 668 stalls are mixed parking for all user groups, 75 stalls are dual use for both fleet and public, 165 are for public use only, and 10 are designed for employee use only. DWR owns and operates three visitors centers at major reservoirs throughout the state with 275 parking stalls, 70 of which are for public parking only.

As DWR begins to support Delta Conveyance Design and Construction Authority with the 15-year construction of their Delta Conveyance Project there will be several new Park & Ride facilities built. These areas will consolidate worker vehicles and allow workers to move to work sites dotted along the eight miles of the tunnel project using clean fuel buses or via a carpool. At the work sites with tunnel shafts, where workers will enter the tunnel, there will likely be 20 parking spaces included for the crew cab trucks and larger pieces of equipment. The use of several Material Depots along the route of the tunnel will also allow the Authority to consolidate

smaller loads onto one larger clean fuel truck. Their Concept Engineering Report, Appendix E1 (2024), explains their concepts.

Graph 2.4. Parking Facilities

Reporting Narrative on Graph 2.4: Parking Facilities

Given the nature of the Department’s fleet operations and the length of stay for visitors and employees, it is appropriate that the installed chargers be a Level 2 charging station, with 7200 watt, 240-volt capacity (Level 2). DGS recommends at least 25 percent of chargers for employees be Level 2 and that 75 percent of fleet chargers be Level 2.

Reporting on Status of EVSE Projects

The purpose of DWR’s EVSE program is to add sufficient capacity to existing infrastructure to support the increasing State fleet's zero-emission vehicles (ZEV) as mandated by EO B-16-12. The EO sets statewide policy that 50 percent of all new fleet vehicles purchased for the State of California in FY 24/25 be ZEV, and DWR’s latest projects aim to provide the infrastructure required to support these new ZEVs. Supporting the transition to a ZEV fleet

at SWP facilities has been executed in three phases and this work started in 2015. Phases I and II were described in the 2022-2023 Roadmap.

The SWP has installed 57 EV Chargers at select locations as part of Phase I and Phase II efforts. Phase III is still being planned, and this Phase III will provide up to 105 charging stations at 39 SWP field sites. Phase III is being performed with Design-Build contracting that will optimize the charger locations and type based on the needs of the growing ZEV fleet. By the time Phase III is complete, every SWP O&M Subcenter will have at least one EV charging station. Division of Flood Operations' two subcenters have projects underway to add Level 2 chargers to their facilities. For a list of where these EV chargers are planned see Table 2.10.

Table 2.9. High Priority EVSE Projects

Facility Name	Total Parking Spaces	Existing L1 Charging Ports (2024)	Existing L2 Charging Ports (2024)	Existing L3 Charging Ports (2024)	Total Charging Ports (2024)	EV Charging Ports Needed by 2026
Delta O&M Center (No Electricity)	225	0	10	0	10	23
Pearblossom O&M Subcenter - OLD (No Electricity)	0	0	0	0	0	19
Sacramento Maintenance Yard	75	0	0	0	0	18
North Bay Maintenance Center	15	0	0	0	0	14
Other Locations	1,183	0	47	0	47	31
Total	1,498	0	57	0	57	105

EV Charging Site Assessments

Reporting on 2024 Facility Site and Infrastructure Assessments

As part of the EV charging stations Phase III project DGS performed an EV Charging assessment to best determine what locations best needed EV charging stations. The findings of such assessment are captured in Table 2.10.

Table 2.10. EV Charging Infrastructure Site Assessments Conducted

Facility Name	L1 EVSE Project Assessments	L2 EVSE Project Assessments	L3 EVSE Project Assessments	Entity that Conducted the Site Assessment
Southern California O&M Center	0	16	2	DGS
San Joaquin O&M Center (No Electricity)	0	0	0	DGS
Pearblossom O&M Subcenter — NEW (No Electricity)	0	19	0	DGS
Pearblossom O&M Subcenter — OLD (No Electricity)	0	4	0	DGS
Water Operations — Pearblossom	0	4	0	DGS
Totals	0	43	2	All by DGS

Planning Narrative on Table 2.10: EVSE Construction Plan

As funds become available, DWR will continue to add chargers. When DWR starts to consider Level 3 chargers, 3-phase power will be necessary, and this is likely to result in many more electrical upgrades.

On-going EVSE Charging Operations and Maintenance

Since early 2024, the SWP Division of O&M has been creating and/or updating maintenance plans using standardized procedures and templates. This series of Project Operations & Maintenance Directives covers the steps and the workflow for approval of any new Maintenance Plan. The plan related to EVSE includes when and how inspections, maintenance, or testing are to be performed on electrical vehicle charging stations (EVCS). The plan sets forth prescribed intervals of monthly visual inspections, annual cleaning and infrared testing, and every 3 years electrical testing.

Public EV Charging Policies

Reporting Narrative on Public EV Charging Policies

PUBLIC CHARGING POLICY NOT REQUIRED

Planning Narrative on Public EV Charging Policies

PUBLIC CHARGING POLICY NOT REQUIRED

Employee EV Charging Policies

Reporting Narrative on Employee EV Charging Policies

EMPLOYEE EV CHARGING POLICY ACHIEVED

Through coordination with the Assistant Division Manager 3, Division of Operations and Maintenance (O&M), an employee EV charging policy was written in late 2024 and signed in January 2025; it is now part of the SWP's Management Instructions (see Appendix H). The policy covers how staff who would like to charge their personal car can do so safely. Charging times for employees' personal EVs are limited to a maximum of five hours per day (work schedule dependent). Charging is provided at no cost to employees; the DWR-owned EVSE are not separately metered, so there is no way to track energy use for personal vehicles at the meters.

Planning Narrative on Employee EV Charging Policies

EMPLOYEE EV CHARGING POLICY ACHIEVED

Fleet EV Charging Policies

Reporting Narrative for Fleet EV Charging

FLEET EV CHARGING POLICY ACHIEVED

Through coordination with the Assistant Division Manager 3, Division of O&M, a fleet EV charging policy was written in late 2024 and signed in January 2025. It is now part of the SWP's Management Instructions (see Appendix H). The policy covers how staff should charge the fleet vehicles and ensure safety. The EVSE are not separately metered, so there is no way to track energy use at the meters. No telematics data was available in 2023

nor 2024. In accordance with DWR's Energy Emergency Alert Action Plan, all EV-charging on DWR-owned equipment will cease when an alert is received (unless the battery of such EV is critically low).

Planning Narrative for Fleet EV Charging

FLEET EV CHARGING POLICY ACHIEVED

Hydrogen Fueling Infrastructure

Planning Narrative for Hydrogen Fueling Infrastructure

NO HYDROGEN FUEL PLANS

Currently, DWR does not intend to install hydrogen-fueling infrastructure. Based on an analysis of DWR's facilities and vehicles, it makes more sense for DWR to convert to battery-electric vehicles, especially as electric vehicles are becoming available in the light and heavy-duty pickup trucks that are the majority of DWR's fleet. Further, by sizing DWR's electricity needs to include electric vehicles, DWR can maximize its investment in microgrids for its facilities.

CHAPTER 3 — ENERGY

This chapter demonstrates the progress the California Department of Water Resources (DWR) has made toward meeting the Governor's sustainability goals related to retail energy consumed at DWR-owned buildings and facilities. This chapter identifies DWR's successful accomplishments, ongoing efforts, and outstanding challenges.

Department Mission and Building Infrastructure

DWR's 2023 revised mission is to sustainably manage the water resources of California, in cooperation with other agencies, to benefit the state's people and to protect, restore, and enhance the natural and human environments.

To accomplish part of its mission, DWR owns, operates, and maintains the California State Water Project (SWP), a utility-scale water conveyance system that provides raw water to 29 water contractors (municipalities and irrigation districts) throughout the state. The SWP infrastructure includes 20 hydroelectric pumping plants; four hydroelectric pumping-generating plants; and five hydroelectric power generating plants

The SWP has five Field Divisions covering the state, with its headquarters located in Sacramento. Each SWP Field Division includes an administrative center, an operations area control center, and several operations and maintenance (O&M) offices, shops, and facilities collectively used to manage, operate, and maintain the field division and the hydroelectric equipment and infrastructure within each of their boundaries.

Currently, the energy to operate the SWP's ancillary facilities (26 facilities totaling 96 structures and 555,094 square feet) comes from retail sources, such as Pacific Gas & Electric (PG&E) for example, whereas the energy used to operate the SWP's hydroelectric pumping plants comes from the state's wholesale energy market and DWR's own and contracted resources.

The SWP has their own strategic plan which they released in 2023. Their "Elevate to '28" plan is now guiding strategy, programs, projects, and processes to achieve SWP's ideal future. One of the Active Initiatives associated with the SWP Strategic Plan is to achieve a clean energy portfolio by 2035.

Department Energy Use

Table 3.1 shows the total retail energy consumption at the 26 SWP facilities and two Division of Flood Operations' subcenters for the years 2023 and 2024. The retail energy is consumed at the buildings for their operation and the O&M activities conducted in them. When compared with the baseline year (2003), the electricity usage in 2024 has gone down moderately, while the natural gas usage has gone down significantly. The overall retail energy consumption has reduced by 22 percent from the baseline year, primarily due to various energy efficiency measures implemented at the SWP and Division of Flood Operations' subcenters and replacement of end-of-life equipment with higher efficiency equipment. This is a positive indicator toward reducing overall retail energy use and achieving carbon neutrality. DWR also consumes a significant amount of energy at its pumping plants for pumping water across the state; however, the pumping energy is not included in this report.

Table 3.1. Total Purchased Energy

Purchased Energy	2003 Baseline Quantity		2023 Quantity	2024 Quantity	% Qty. Change 2003-24
Electricity	3,284,131	kWh	2,139,310	2,840,959	-13%
Less EV Charging	N/A	kWh	N/A	N/A	N/A
Natural Gas	103,413	Therms	86,051	70,793	-32%
TOTALS	21,540,187	kBtu Site	15,900,138.12	16,766,949	-22%

Table 3.2 shows the top ten retail energy consuming facilities in 2024. These ten facilities consumed 82 percent of the total site energy while accounting for 68 percent of the total building square footage. The energy consumption depends upon the types of activities taking place at the facilities and thus can vary significantly from facility to facility and from year to year. Oroville O&M Center, being close to Lake Oroville Dam, typically consumes more energy than other O&M facilities due to the increased activities related to the dam.

Table 3.2. Facilities with Largest 2024 Energy Consumption

Facility Name	Floor Area (ft²)	Site Energy (kBtu)	Source Energy (kBtu)	Source EUI (kBTU/ft²-yr)
Oroville O&M Center	58,100	4,291,585	8,651,958	149
Delta O&M Center	59,948	3,986,058	7,393,606	123
San Joaquin O&M Center	82,371	3,770,024	8,366,785	102
Sacramento Flood Maintenance Center	46,240	2,959,878	6,573,919	142
Lost Hills O&M Subcenter	33,800	1,706,367	3,706,067	110
Coalinga O&M Subcenter	13,781	1,125,932	3,152,608	229
Southern California O&M Center	31,580	870,051	2,351,930	74
Vista Del Lago Visitors Center	17,147	687,913	1,728,267	101
Sutter Maintenance Yard	30,660	495,335	1,386,939	45
Romero Overlook Visitors Center	7,475	247,689	693,530	93
Total for Buildings in this Table	381,102	20,140,832	44,005,608	115
Total for all Department Buildings	555,094	24,334,478	58,481,861	105
Percent of Totals	68%	82%	75%	N/A

Proposed Solutions

DWR has implemented energy efficiency upgrades at some of its SWP Field Division O&M centers, including upgrading lighting systems and controls and installing occupancy sensors and programmable thermostats. These projects reduced DWR's grid-based electricity purchases by 20 percent as measured against a 2003 baseline in 2018. Currently, DWR is planning on implementing additional energy efficiency upgrade projects at all its facilities. In 2024, DWR conducted energy audits of all of its facilities and identified energy efficiency upgrade measures which will be implemented in the next few years. These projects will further reduce energy consumption and improve the energy use intensity (EUI) of the facilities.

Challenges for DWR

A large number of DWR's buildings are very old. They were constructed in the 1950s and 1960s when the current-time energy efficiency standards and features were non-existent. Many of the building structures are highly inefficient and difficult to retrofit. They have metal walls with no insulation, large windows, and rolling doors that need to be kept open while energy intensive work is performed inside the various maintenance shops. This causes significant energy loss and makes it difficult to maintain energy

efficiency in these buildings. The energy consumption in these buildings also depends upon the type of O&M work that takes place inside the buildings. These O&M activities are often highly energy intensive and require energy intensive infrastructure, machines, industrial lighting, and industrial power tools. Consequently, these aging buildings create significant challenges in meeting the EUI targets and Governor's Zero Net Energy (ZNE) goals.

The other challenge is the time, human resources, and funding required to retrofit the aging infrastructure to be compatible with new technology. Another important factor in the building energy consumption is the type and amount of work that is performed inside the buildings to keep the SWP water conveyance system running safely and reliably which provides water to millions of Californians. Some activities at SWP facilities are highly energy intensive, such as welding and machining. DWR will try to achieve the EUI targets but wants to acknowledge there are tough targets to meet given the vast range of DWR-owned facilities throughout the state.

Although the EO B-18-12 requires monitoring both owned and leased buildings, to date, DWR has not been successful in collecting data related to its leased buildings. DWR continues to work toward collecting water and energy usage data.

Zero Net Energy (ZNE)

State policies set forth the following milestones for State ZNE buildings:

- 2017 — 100 percent of new construction, major renovations and build-to-suit leases beginning design after 10/23/2017 to be ZNE.
- 2025 — 50 percent of total existing building area will be ZNE.

In 2024 DWR undertook a major initiative to improve the energy efficiencies of its buildings, which is a prerequisite for achieving ZNE. As part of that initiative DWR conducted energy audits of all of its 97 buildings at the 26 SWP and Division of Flood Operations' subcenters. The objective of the energy audits were to identify and document all energy-consuming equipment and systems, reduce the Department-wide overall retail energy consumption at its facilities, improve the EUI of the facilities to meet the ZNE target EUIs, which is the requirement for buildings to qualify for ZNE, and develop an inventory of all GHG-emitting equipment to be decarbonized for achieving the goal of zero GHG emission by 2035. This initiative is an example of the Department's commitment to meet the ZNE target found

within EO B-18-12 and the State's carbon neutrality goal set by SB 1203. Various energy efficiency (EE) upgrade measures were identified and a project plan for implementing those measures to improve the EUI of DWR-owned buildings and facilities is currently under development.

As shown in Table 3.3 DWR achieved the ZNE milestone of 50 percent existing building area to be net ZNE based on the 2024 energy consumptions. Sixteen buildings, consisting of 62 percent of the total building stock, met the ZNE target EUIs. This represents 54 percent of DWR's total building square footage. DWR has and continues to take measures toward increasing the ZNE compliant building square footage.

Table 3.3. Zero Net Energy Buildings

Status of ZNE Buildings	Number of Buildings	Floor Area (ft^2)	% of Building Area
Buildings Completed and Verified	16	300,024	54%
Building in Design or Under Construction	0	0	0%
Building Proposed for Before 2025 (but not yet in design)	0	0	0%
Totals for ZNE Buildings by 2025	16	300,024	54%
Totals for All Department Buildings by 2025	26	555,094	100%
% ZNE by 2025	62%	54%	54%

DWR has installed a 9.5 megawatt (MW) solar generation plant at its Pearblossom O&M Subcenter. This solar plant will serve as the source of renewable generation for the identified facilities. The capacity of this solar plant is sufficient to meet the renewable generation requirement for all the ZNE buildings.

The SWP aims to ensure water supply reliability and affordable energy rates, respond to market evolution, and make prudent investments to achieve California's clean energy goals.

New Construction Exceeds Title 24 by 15%

All new State buildings and major renovations beginning or designed after July 1, 2012, must be better than the current California Code of Regulations (CCR) Title 24, part 6, energy standard requirements, by 15 percent or more. In 2015, DWR built a 24,000 square feet Leadership in Energy and Environmental Design (LEED) Platinum-certified building at the SWP

Pearblossom O&M Subcenter-New. This building serves as the O&M headquarters for SWP's Southern Field Division. In addition to the LEED certification, DWR also installed a 30-kilowatt (KW) solar photovoltaic (PV) system to provide clean renewable power for the building.

Table 3.4. New Building Construction Exceeding Title 24 by 15%

New Buildings Exceeding Title 24 by 15%	Number of Buildings	Floor Area (ft^2)
Completed Since July 2012	1	24,000
Under Design or Construction	0	0
Proposed Before 2025	0	0

For future new construction and major renovations, DWR's strategy is to ensure that all buildings and facilities are ZNE and will exceed Title 24 by at least 15 percent. For example, DWR became a major occupant of the newly constructed Natural Resources Headquarters building in downtown Sacramento, operated by DGS, and that building is classified as ZNE and LEED Platinum-certified. Beginning in early 2025, DWR became the primary tenant at DGS's Gregory Bateson Building in Sacramento which is ZNE after SMUD SolarShare renewable allocation is applied.

Reduce Grid-Based Energy Purchased by 20 Percent by 2018

Executive Order B-18-12 requires State agencies to reduce grid-based energy purchased by 20 percent by 2018, compared with a 2003 baseline.

Between 2015 and 2018, DWR conducted energy audits at some selected SWP facilities and Division of Flood Operations' subcenters and implemented several EE upgrade projects. Projects included lighting and control upgrades. These projects helped DWR reduce its grid-based energy purchases by 20 percent before the EO B-18-12's 2018 target date as measured against a 2003 baseline. However, those reductions were offset by reconstruction and emergency work at SWP's Oroville that occurred from 2017 to 2019.

Reconstruction work at both the Thermalito facility and emergency construction work related to the Oroville Dam Spillway increased levels of activities at SWP's Oroville O&M Center. This work significantly increased the retail electricity consumption at that facility. However, with the completion of the Thermalito reconstruction in early 2020, DWR's energy is expected to

remain at the reduced level and maintain the EO B-18-12's requirement of reducing grid-based electricity purchase.

With 26 facilities to monitor, DWR can classify them into three general building categories to compare their energy efficiency against other State buildings of similar function. DWR's four laboratories have an average EUI score of 151 kBtu per square foot compared with the State's average target of 261. These facilities are used to treat and test water quality along the SWP and are among the top performers because of their small building area and minimal staff needed. DWR visitors centers have an average EUI score of 63 kBtu per square foot compared with the State's average target of 62 for public entertainment building types. DWR's visitors centers are learning centers for the public and utilize interactive exhibits and theater rooms for explaining how the SWP works. DWR's remaining buildings are of hybrid types which are a combination of small offices, storages, maintenance shops, welding/carpentry/coating shops, laboratories, etc. These types of buildings have EUIs ranging from 45 to 261. The average EUI score of these O&M facilities is 85, which is comparable with similar building types of the state.

Table 3.5 shows the Department-wide source energy trend over the past twelve years and compares it against the 2003 baseline year.

Table 3.5. Department-Wide Energy Trend

Year	Floor Area (ft2)	Total Source kBTU Consumption	Department Ave. Source EUI (kBtu/sq. ft.)
Baseline Year 2003	563,244	46,569,200	83
2013	577,730	42,372,075	73
2014	577,730	44,007,584	76
2015	577,730	43,461,429	75
2016	577,730	50,686,968	88
2017	577,730	50,914,640	88
2018	577,730	49,509,634	86
2019	577,730	37,842,134	66
2020	577,730	39,147,754	68
2021	577,730	35,789,231	62
2022	577,730	37,658,717	65
2023	577,730	32,612,049	56
2024	555,094	47,196,301	85
% Change 2003-2024	-1%	1%	3%

In general, the total source energy consumption decreased from the base year over the last ten years except for the years 2016 to 2018, due to the increased activities related to Thermalito power plant reconstruction and Oroville Spillway emergency/reconstruction period. As seen from the table, the increased energy consumption also resulted in an increase in the EUI numbers. During 2019 to 2022, the energy consumption significantly decreased, which is due to completion of the reconstruction work at Thermalito power plant and Oroville Spillway, and teleworking initiated by the COVID-19 pandemic.

Note: Out of the 26 DWR-owned facilities, six SWP facilities operate on station power that is purchased through the California Independent System Operator (CalISO) wholesale market. The SWP facilities purchasing station power are: Delta Field Division O&M Center, San Joaquin Field Division O&M Center, San Luis Field Division O&M Center, Pearblossom O&M Subcenter (new), Pearblossom O&M Subcenter (old), and Oso Civil Maintenance and Mobile Equipment Center. These facilities do not have submeters to keep track of the power used. As a result, the energy consumed by these facilities is not reported in Energy Star Portfolio Manager (ESPM). Since 2021, DWR started estimating the power consumption of these buildings based on the power consumption of similar facilities. Including the estimated power consumptions of those facilities, the total source kBtu consumption in 2024 is 58,481,861 kBtu.

Energy Savings Projects

From 2015 to 2018, DWR implemented energy savings projects at some of its SWP and Division of Flood Operations' subcenters that enabled DWR to meet the EO mandate for energy efficiency. Over the last few years DWR has been focused on meeting the ZNE mandate of the EO, which requires 50 percent of the existing building area to be ZNE by 2025. This includes conducting energy audits of all facilities and identifying energy efficiency projects to reduce overall energy consumption.

DWR's recent efforts also include documenting the various functions conducted within each building and the corresponding area of the building involving in that function. Based on the functions and the corresponding building areas DWR calculated a hybrid target EUI for each facility, which is more representative of the true EUI target for the facility.

DWR continues to focus on reducing the overall energy usage at all of its facilities. This will require upgrading the existing energy-consuming

equipment to higher-efficiency equipment. In particular, the energy audits identified and recommended energy conservation measures (ECM) to be implemented across all DWR facilities. DWR will next develop a comprehensive upgrade or replacement plan and budget that will allow it to implement those ECMs. However, in 2023 and 2024 there were no energy saving projects.

DWR did not implement any energy conservation measures (ECM) during 2023 and 2024 (Table 3.6). Instead, DWR focused on conducting a comprehensive assessment of the facilities through an investment-grade energy audit of all its buildings to identify opportunities to reduce energy consumption and improve energy efficiency of the facilities. These audits lead to identification of many ECMs that will be implemented in the coming years.

Table 3.6. Summary of Energy Savings Projects 2023-2024

Year Funded	Estimated Energy Savings (kBTU/yr)	Floor Area Retrofit (sq.ft.)	Percent of Department Floor Area
2023	0	0	0%
2024	0	0	0%
Total	0	0	0%

Demand Response (DR)

Participating in DR Utility Programs and Participating in DR Events

Executive Order B-18-12 requires that all State departments participate in available demand response programs for reducing peak electrical loads when called upon, to the maximum extent, as cost effectively as possible. DWR verified the DR program eligibility requirements for many of its buildings served by retail energy and participated in three programs. The first verified program was SCE's "Summer Discount Plan" (SDP), which offers up to 3 kW of potential peak load reduction among three DWR facilities. The second is PG&E's "Peak Day Pricing," which offers up to 13 kW of potential peak load reduction among six DWR facilities. The third is PG&E's "Manage Your Own Power" programs, which offers up to 5 kW of potential peak load reduction for one DWR facility. Table 3.7 summarizes DWR's participation in DR programs.

In addition, PG&E annually monitors customer savings for their participation in its DR programs and automatically delists customers who are not realizing

savings. To date, no DWR facilities have been delisted. PG&E found other DR programs eligible for participation, such as the Capacity Bidding Program and FlexAlert, but further analysis determined that DWR would not benefit financially from these programs without disturbing SWP water conveyance functions.

DWR has also investigated programs available from other small power utilities such as the Power Partners Program, California Independent System Operator CAISO FlexAlert, Summer Shift, Time of Use Plus, and more, but elected not to participate because of a negative impact on energy and cost savings. Additional participation is challenging because of DWR's lack of compatible equipment and data communication devices at its facilities, which are necessary to provide fast response to an electric utility's request to adjust loads.

Table 3.7. Demand Response (DR) Program Participation

Demand Response	Total Number of Buildings	Total Nominated Reduction (kW)	Total Curtailment in 2023 (kW)	Total Curtailment in 2024 (kW)
Enrolled with Enersponse	18	40	0	21
Participate in DR	18	0	0	21
Participate in ADR	0	0	0	0
Total Participating (DR/ADR)	18	21	21	21
Enrolled in DR/ADR in 2025	18			
Under Construction or Renovation during 2025	0			
Ineligible to Participate	16			
Entire Agency's Building Portfolio	26			

Renewable Energy

SWP currently has approximately 179 MW of renewable capacity in its portfolio with an annual generation of approximately 493,000 MWh of energy. The majority of these projects are solar with a small hydroelectric generation plant.

A 9.5 MW solar plant was installed in 2015 at the Pearblossom O&M Subcenter in SWP's Southern Field Division (Table 3.8). This project was installed through a 20-year power purchase agreement (PPA) with SunPower, with a provision to extend for another 10 years for the purchase of 27,400 MWh per year of solar energy and associated capacity bundled

with REC. This generation of this project provides the renewable energy required for DWR's ZNE buildings.

Table 3.8. 2024 On-Site and Off-Site Renewable Energy

Status	Number of Sites	Capacity (kW)	2024 Power Generation (kWh)	Percent of Total Annual Power Use
On-Site Renewables in Operation or Construction	1	9,500	17,852,000	263%
On-Site Renewables Planned	0	0	0	0%
On-Site Renewables Totals	1	9,500	17,852,000	263%
Department-Wide Total Energy Use (kWh equivalent)	—	—	—	—
Off-Site Renewable Totals	0	0	0	0%
Off-Site Renewables Planned	0	0	0	-
Off-Site Renewables Combined Current & Planned	1	0	0	0%
Current Combined On-Site and Off-Site Renewable Energy	1	9,500	17,852,000	263%
Additional Planned On-Site and Off-Site Renewables	0	0	0	0%

Monitoring-Based Commissioning (MBCx)

New and existing State buildings must incorporate MBCx to support cost effective and energy efficient building operations, using an Energy Management Control System (EMCS). State agencies managing State-owned buildings must pursue MBCx for all facilities over 5,000 square feet with EUIs exceeding thresholds described in Management Memo 15-04.

DWR does not have any new buildings or current renovation projects underway larger than 5,000 square feet with EUIs exceeding thresholds as described in Management Memo 15-04. DWR does not have any Monitoring Based Commissioning controls installed in its existing buildings because the existing buildings and equipment are very old and not compatible with modern energy management controls and building commissioning systems like EMCS or MBCx. In addition, except for the administrative buildings, most

SWP buildings are unique and used for industrial purposes that are not consistent with typical building energy management and control systems.

Building Controls

Most of DWR's buildings are too old to have an automated building control system. DWR constructed a new building in 2015 at Pearblossom O&M Subcenter that is LEED Platinum certified and has a building controls system. Table 3.9 shows the information related to DWR's Building controls.

Table 3.9. Building Controls

Equipment Controls	% of Buildings Controlled Remotely Offsite	% of Buildings with Controls Onsite	% of Total Buildings
Lighting	0	4	4
HVAC: EMS/BMS	0	4	4
HVAC: Smart Thermostats	0	4	4
Other	N/A	N/A	N/A

Energy Reduction Strategies — Best Management Practices (BMPs)

State agencies are required to pursue all available financing and project delivery mechanisms to achieve the energy efficiency goals including, but not limited to, State revolving loan funds, utility On-Bill Financing (OBF), Power Purchase Agreements (PPAs), GS $Mart, Energy Service Contractors (ESCOs), or other available programs.

DWR is pursuing all available financing and project delivery mechanisms to achieve the Governor's sustainability goals including, but not limited to, State revolving loan funds, utility On-Bill Financing (OBF), Power Purchase Agreements (PPAs), GS $Mart, Energy Service Contractors (ESCOs), or other available programs.

Per Management Memo 14-09, DWR has enlisted the DWR/California Natural Resources Agency Data Center, which services DWR and 30 other Natural Resources Agency organizations via the Government Technology Agency. The Natural Resources Data Center is located in Rancho Cordova inside of a privately leased building. This building is approximately 6,000 square feet with temperature control maintained between 73 to 81 degrees and operates within ASHRAE-TC 9.9 under the Class A1–A4 guidelines. All installed

network switches meet current energy efficiency standards. The DWR/CNRA Data Center is 97 percent virtualized and 3 percent physical.

DWR has taken the following measures to reduce its power use effectiveness (PUE) at its data centers to below the current PUE threshold of 1.46 or lower:

- Decommissioned outdated equipment.
- Consolidated storage racks and devices.
- Decommissioned an older supervisory control and data acquisition system backup environment that ran on energy inefficient hardware.
- The current facility contains eight upgraded computer room air conditioners with energy-efficient fans and variable frequency drives to optimize cooling capacity and energy usage.
- Free air-cooling functionality has been installed to capitalize on cool outdoor temperatures and reduce power consumption during those periods.
- Implemented various airflow improvement actions, which allow the Computer Room Air Conditioners (CRAC) to slow down and use less electricity to operate. Installed CRAC condenser fan motors to reduce the load on electrical circuits.
- Decommissioned and removed unused cabling under floors to improve cold airflow.
- Cold Aisle containment and blanking panels have been installed to optimize air flow and contain cold air with the IT equipment.
- Temperature and humidity sensors have been installed to monitor, manage, and regulate the Data Center at appropriate levels.
- LED sensor lights have been installed throughout the facility to optimize lighting energy usage.

DWR continues to evaluate and take necessary measures to reduce energy usage at its data centers.

Management Memo 14-07, “Standard Operating Procedures for Energy Management in State Buildings,” requires energy saving features on

computers, copiers, and printers; and requires State agencies to purchase ENERGY STAR-rated equipment, implement some form of daylight controls near windows and skylights under specified conditions, include Demand Response guidelines, and include policies and procedures on plug load. All these requirements affect the EUI of a building. DWR has incorporated many of the operating procedures detailed throughout this report. Some of these operating procedures are not practical in DWR facilities because of the nature of activities and/or age of the facility; however, where possible and practical, DWR continues to implement these operating procedures.

CHAPTER 4 — DECARBONIZATION

Department Mission and Decarbonization Efforts

Through a collaborative and intentional approach, DWR updated its Strategic Plan in 2023. This Strategic Plan was an opportunity to reset the goals and objectives for the department. Actions were identified to support each objective. One of its Strategic Goals is "Pursue Innovative Infrastructure Solutions." with an objective under that Goal titled "Align Financial Strategies with Infrastructure Needs." Through this Objective, DWR staff is reviewing how to develop five-year investment plans for State Water Project and State Plan of Flood Control facilities.

Known as "Elevate to '28," the latest version of the SWP Strategic goals was released in late-2023. One of its Strategic Goals is "Compliance: Maintain successful regulatory compliance within an increasingly complex regulatory environment, demonstrated by the SWP's commitment to ensure employee and public safety or where it is a best business practice." One of the Active Initiatives tied back to the SWP Strategic Plan is to achieve carbon neutrality by 2035.

In support of the State's goals around decarbonization, DWR has been working on three fronts:

- Taking proactive actions to reduce its greenhouse gas emissions as part of its adopted Greenhouse Gas Emissions and Reporting Program.
- Coming into compliance with SB 1020 (and achieve a clean energy portfolio by the end of 2035).
- Coming into compliance with SB 1203 by the beginning of 2035.

Greenhouse Gas Emissions

Executive Order B-18-12 directs State agencies to take actions to reduce entity-wide greenhouse gas (GHG) emissions by at least 10 percent by 2015 and 20 percent by 2020, as measured against a 2010 baseline. For many State agencies, this goal is achievable by maximizing building energy efficiency and reducing mobile sources such as fleet vehicles.

The SWP aims to ensure water supply reliability and affordable energy rates, respond to market evolution, and make prudent investments to achieve

California's clean energy goals. The SWP Energy Roadmap (2023) covers the Department's commitment to reach zero emissions power portfolio by 2035, as mandated by SB 1020. DWR is currently planning on how to divest the Lodi Energy Center as part of its long-term planning.

For DWR, the challenge is greater, as DWR owns and operates the SWP. The SWP delivers water to 29 water contractors in the state. These water contractors, in turn, sell water to their customers. The SWP supplies water to almost 27 million Californians and about a million acres of farmland. As described in this chapter, DWR uses the following strategies to meet the State's 20 percent reduction goal and the more aggressive goals of DWR's Climate Action Plan:

- Energy Efficiency.
- On-Site Renewable Energy.
- Purchased Renewable Energy.
- Fuel Efficient Vehicles.
- Zero Emission Vehicles.
- Biofuels.

Table 4.1 and Graph 4.1 detail DWR's GHG emissions beginning in 2010, the mandated baseline year to the latest verified reporting in 2023. In addition to emissions associated with retail energy use described in Chapter 3, Table 4.1 includes GHG emissions associated with wholesale energy that DWR purchased to operate the SWP, including energy from the Reid Gardner Unit 4 Power Plant (RG4). Consequently, DWR's emissions related to purchased electricity and miscellaneous decreased after the RG4 contract expired in 2013. Note that DWR's emissions also fluctuate for various reasons, such as water demand and hydrology. To address this fluctuation, DWR's Climate Action Plan monitors DWR's emissions based on a five-year average.

The following are additional descriptions of Table 4.1:

- Natural Gas includes Scope 1 natural gas for DWR.
- Vehicles include Scope 1 mobile diesel, mobile gasoline, mobile bulk gasoline, mobile combustion-CNG, and renewable diesel.

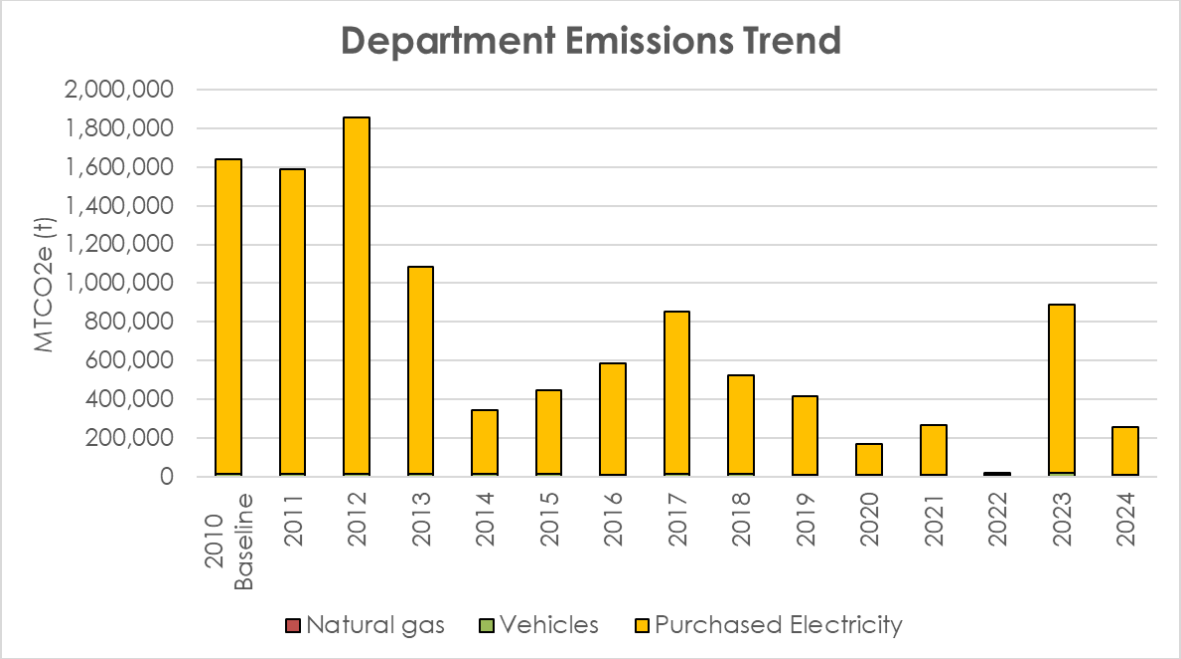
- Purchased Electricity includes Scope 1 and 2 from retail and pump load including RG4.

Table 4.1. GHG Emissions since 2010 (Metric Tons)

Emissions Source	Natural gas	Vehicles	Purchased Electricity	Total
2010 Baseline	604	11,701	1,626,730	1,639,035
2011	625	15,401	1,573,357	1,589,383
2012	466	12,445	1,843,674	1,856,585
2013	485	14,933	1,070,930	1,086,348
2014	323	13,134	329,160	342,617
2015	348	11,804	435,915	448,067
2016	397	8,517	575,060	583,974
2017	412	13,183	838,669	852,264
2018	309	11,485	510,597	522,391
2019	511	8,903	405,859	415,273
2020	417	10,488	156,998	167,903
2021	402	7,575	260,102	268,079
2022	379	8,490	11,269	20,138
2023	606	19,572	870,776	890,954
2024*	419	8,513	249,198	258,130
Percent Change since Baseline	-31%	-27%	-85%	-84%

*Note: 2024 numbers are currently undergoing verification.

Graph 4.1. GHG Emissions since 2010



Planning Narrative for Current GHG Reduction Goals and 2035 Reduction Goals Strategies

Strategy 1. Energy Efficiencies

SWP Energy Efficiency

DWR continues to implement a comprehensive plan to increase the energy efficiency of pumping and generating units throughout the SWP system, which can reduce energy use per unit of water delivered and increase clean energy generation per unit of water flow through turbines. This includes evaluating the performance of SWP pumps and electricity generating turbines to identify opportunities for increasing the efficiency of each individual unit.

Through state-of-the-art design, construction, and refurbishment methods, DWR strives to maintain and improve the first-in-class energy efficiency of each hydroelectric and pumping unit in the SWP system. As the rotating and stationary components of both pumps and generators wear during operation, clearances increase and result in a reduction in efficiency. Both annual maintenance and systematic refurbishment efforts help maintain energy efficiency at maximum levels throughout the lifetime of the equipment.

DWR completed energy efficiency improvements on six generating units at the Edward Hyatt Powerplant and four pump units at the A.D. Edmonston Pumping Plant in 2011. This effort increased the efficiency in each unit by as much as 6.5 percent, with several units reaching the 95 percent efficiency level. The combined energy savings of these improvements resulted in a reduction of 29,095 Metric tons of carbon dioxide equivalent (mtCO2e) per year (California Department of Water Resources 2010).

Edward Hyatt Powerplant Unit #1 has been refurbished, for the second time, adding a new turbine runner and thrust bearing that will maintain high efficiency, reliability, and operational availability, thus providing increased levels of energy generation. This unit previously experienced significant turbine blade cracking and downthrust issues that led to operational restrictions. This refurbishment allowed the removal of operational restrictions and fully took advantage of the increased efficiencies. The combined energy savings of these improvements have resulted in a reduction of 1,325 mtCO2e per year since January 2021. Hyatt Units 3 and 5 still maintain 2,719 mtCO2e per year; although, they may still need to be refurbished in the future to provide greater reliability and operational availability.

Restoration of the Thermalito Pumping-Generating Plant following fire damage has been underway since 2013, with the first unit coming online in August 2019. The project included a runner replacement for one Kaplan turbine unit and the refurbishment of three Francis turbine units. The new Kaplan runner has a guaranteed efficiency of 93 percent, an increase of 6.12 percent over the original unit, which has resulted in energy savings and a corresponding reduction of 971 mtCO2e per year since September 2020. The three refurbished units will have their efficiency return to original equipment manufacturer levels; however, the GHG reduction associated with this refurbishment is not included in Table 4.1 based on the assumption that the cycle of performance degradation and return to original condition will continue in the future.

DWR also expects to implement several additional energy efficiency projects prior to 2030, including replacement of up to seven additional pumps at the A.D. Edmonston Pumping Plant has proposed new pumps that would reduce energy use of pumping operations by 71,414 MWh per year, resulting in an emissions reduction of around 11,349 mtCO2e per year by 2030.

The GHG emissions reduction includes only energy efficiency improvements to which DWR has already committed. Thus, this is a conservative estimate of the efficiency improvements planned between now and 2035.

Retail Energy Efficiency

As described in Chapter 3, DWR has completed 12 major energy efficiency projects at 10 facilities since 2010. These projects helped DWR reduce approximately 93 mtCO2e of GHG emissions annually. Note that this does not account for ongoing, extraordinary reconstruction work at Thermalito Pumping-Generating Plant, which added approximately 43 mtCO2e annually, but is now completed.

Division of Flood Operations' Energy Efficiency

Sutter Maintenance Yard has replaced their indoor and outdoor lighting with LED bulbs and motion-activated switches to ensure only in use when needed. The facility replaced its water heaters with energy efficient on-demand heaters fueled with propane. All HVAC units were replaced with SEER 16 types, along with developing a regular maintenance plan to keep units running at optimal performance. All buildings are using a smart thermostat to regulate use to operational hours. The facility made efforts to make the buildings more thermally efficient by adding insulation in the attic areas, installing window blinds, and applying a thermal coating to walls to reduce heat transfer.

At Sacramento Maintenance Yard, staff upgraded their lighting and replaced an HVAC unit as a result of an energy audit. In 2023 and 2024, the yard upgraded its electrical system.

Strategy 2. On-Site Renewable Energy

Wholesale On-Site Renewable Energy

Over the past several years, DWR has conducted several surveys of its property, including land and waterways, to determine a given property's suitability to support the development of renewable energy generation. In 2015, DWR executed a contract to annually purchase approximately 28,000 MWh of solar energy from SunPower to construct, operate, and maintain a 9.5 MW solar facility for the SWP Pearblossom O&M Subcenter. This facility provides DWR with 28,000 MWh per year of solar energy through a 20-year power purchase agreement.

Retail On-Site Renewable Energy

DWR has been investigating on-site solar projects that interconnect with DWR's energy loads at facilities such as administration buildings, flood maintenance yards, O&M shops, and visitors centers. For example, DWR incorporated solar carports into SWP's Pearblossom Subcenter-NEW using Leadership in Energy and Environmental Design (LEED) standards. DWR has also identified several other locations described in Chapter 3.

Strategy 3. Purchased Renewable Energy

Most of DWR's GHG emissions are associated with energy purchased to operate the SWP. Consequently, DWR has created a Renewable Energy Procurement Plan (REPP) now known as the Clean Energy Procurement Plan (CEPP) to replace energy needed to meet its load demand from thermal and unspecified sources with zero-carbon and renewable energy resources. The CEPP is being updated in 2025 to incorporate GHG emissions reduction targets set forth by legislation, as well as SWP's long term water delivery capability in accordance with the SWP Delivery Capability Report 2023 (DCR23). The timing of procurements will be based on market availability, risk tolerance, and impacts to costs of power operations.

Since implementation of its CEPP, DWR has executed contracts to procure renewable energy from multiple sources, including solar, hydroelectric, geothermal, and landfill gas. Graph 4.2 shows SWP's current CEPP progress.

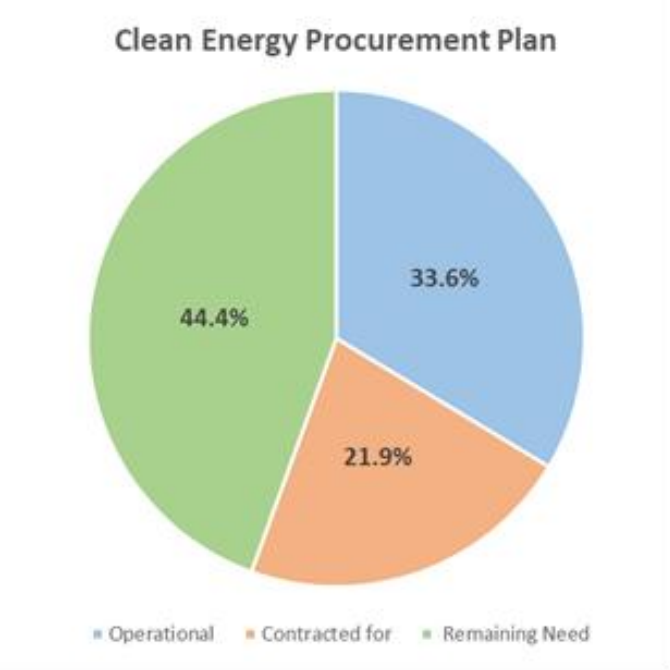
Strategy 4 Fuel Efficient Vehicles and Zero Emission Vehicles

The tables in Chapter 2 detail the number of miles traveled and the GHG emissions saved over time. ZEV additions to the Department fleet have increased the average fuel efficiency significantly.

Strategy 5. Biofuels

Chapter 2 details biofuel use since 2020. Since 2022, DWR's diesel fuel has been sourced from 100% renewable diesel. Having renewable diesel or biodiesel on the bulk fuel contracts negotiated by DGS aids DWR in achieving this strategy. There are also private gas stations selling biodiesel and these purchases are shown on the WEX cards issued to nearly 350 staff.

Graph 4.2. Clean Energy Procurement Plan Progress through 2024



DWR's Decarbonization Approach

DWR operates and manages the California State Water Project (SWP), one of the largest water and power systems in the nation that supplies water to almost 27 million Californians and 750,000 acres of farmland. It spans more than 705 miles from Northern California to Southern California and includes 36 storage facilities, 21 pumping plants, five hydroelectric power plants, four pumping-generating plants, and approximately 700 miles of canals, tunnels, and pipelines.

To effectively operate and maintain this large system DWR has twenty O&M centers spread across the State from northern California to southern California. Additionally, DWR operates and manages two flood operation centers and three visitors centers across the State. Between these 26 facilities there are nearly 100 buildings that provide office, laboratory, storage, machining, and maintenance spaces to conduct the essential functions. These buildings utilize various energy consuming systems such as lighting, air conditioning, space heating, water heating, and they have a large plug load from numerous pieces of heavy equipment.

DWR's goal is to achieve zero GHG emissions from its operations by 2035 through improving energy efficiency, electrification of fossil fuel burning equipment, installing renewable generation, and purchasing renewable energy. To achieve DWR's decarbonization goal existing lighting systems will

be replaced with LED lighting, natural gas burning HVAC systems, space heaters, and water heaters will be replaced with higher efficiency electric equipment, and if cost-effective and feasible, on-site renewable energy generation projects will be implemented.

Existing Conditions Assessment

In 2024 DWR undertook a major initiative to conduct energy audits of all its 97 buildings at the 26 SWP and two Division of Flood Operations' subcenters and the visitors centers. The objective of the energy audits was to establish the existing baseline of all the facilities area, building functions, and inventory of all equipment including lighting, HVAC, space heating and cooling, water heaters, building envelop. All the energy-consuming equipment and systems were identified, and a detailed inventory of all the equipment was developed. The goal was to reduce the Department-wide overall retail energy consumption at its facilities, improve the energy use intensity (EUI) of the facilities, and develop an inventory of all GHG-emitting equipment that will need to be decarbonized to achieve the zero GHG emission goal by 2035. Various energy efficiency and electrification measures were identified and a project plan for implementing those measures is currently under development.

Carbon Inventory Worksheet

From the complete inventory of all equipment DWR identified and documented all the equipment that burns fossil fuel and emits GHG. This inventory is the master list of equipment that will need to be decarbonized to achieve the State's 2035 carbon neutrality goal. The goal is to replace the carbon-burning equipment with electric systems of highest available efficiency. This equipment includes HVAC, furnaces, water heaters, and space heaters. The next step is to prioritize the replacements and secure budgets for the projects.

Owned Building Inventory

Table 4.2 shows the top ten GHG emitting facilities within the five SWP Field Divisions and two Division of Flood Operations' subcenters. These facilities provide the vital functions of O&M for the delivery of water and flood management. Many of the facilities consist of multiple buildings and provide office space and various repair and maintenance functions. Each building has different equipment including HVAC, water and space heaters, and lighting. The energy consumption at these multi-purpose facilities depends upon the

number of occupants and types of functions carried out in the building, and it can vary from year to year.

Table 4.2. Baseline Property Inventory — Owned Facilities

Property Name	Building Count	Total Square Footage	Typical Fossil Fuel Consuming Equipment*	Total Property Emissions (MTCO2e)
OROVILLE O&M CENTER	10	55,540	NG Furnace NG Unit Heater NG RTU NG Instant WH	240
DELTA O&M CENTER	8	59,948	NG HHW Boiler NG RTU NG Unitized WH	182
SAN JOAQUIN O&M CENTER	8	82,371	NG Duct Furnace NG RTU NG Furnace NG Unitized WH Process	172
SACRAMENTO MAINTENANCE YARD	14	46,240	NG Furnace NG Unit Heater NG RTU NG Unitized WH NG Instant WH	167
LOST HILLS O&M SUBCENTER	7	33,800	NG Furnace NG Unit Heater	96
PEARBLOSSOM (OLD) O&M SUBCENTER	5	36,180	NG Furnace NG RTU	82
SUTTER MAINTENANCE YARD	11	30,500	NG Furnace NG Unit Heater Kitchen	77
COALINGA O&M SUBCENTER	4	13,781	N/A	64
SAN LUIS O&M SUBCENTER	8	42,137	N/A	56
CASTAIC O&M CENTER	6	111,980	NG RTU NG Unitized WH	50

Note: NG = Natural Gas, RTU = Rooftop Unit, WH = Water Heater.

Table 4.3 shows a list of DWR's leased facilities. Due to the nature of lease agreement, DWR does not have detailed information about the equipment in the buildings and their energy consumption.

Table 4.3. Baseline Property Inventory — Leased Facilities

Building Name	Lessor Agency	Leased Square Footage
JOC	N/A - 3rd Party Lease	113,202
INDUSTRIAL BOULEVARD	N/A - 3rd Party Lease	78,681
COUNTRY CLUB CENTRE	N/A - 3rd Party Lease	42,372
N MARKET BOULEVARD	N/A - 3rd Party Lease	39,500
HWY 70 INDUSTRIAL PARK - BLDG 30A-30B	N/A - 3rd Party Lease	33,000
E AVENUE K8	N/A - 3rd Party Lease	28,345
N LAVERNE AVENUE	N/A - 3rd Party Lease	24,569
HOWE CORPORATE CENTER II	N/A - 3rd Party Lease	17,543
METRO CENTER	N/A - 3rd Party Lease	16,615
FAIRMONT AVENUE	N/A - 3rd Party Lease	15,854
POINT WEST CORPORATE PLAZA	N/A - 3rd Party Lease	12,220
NEW BRIDGE MARINA	N/A - 3rd Party Lease	440

DWR does not have any Central Utility Plant (Table 4.4).

Table 4.4. Central Utility Plant Summary

Building Name	Type	Year Built
NONE		

Decarbonization Measures

Table 4.5 shows a summary of the building electrification measures as part of DWR's decarbonization efforts. It involves 56 projects to replace all fossil fuel-based equipment with electric equipment. For example, the natural gas furnaces in the HVAC systems will be replaced with split systems, consisting

of an outdoor condensing unit and indoor fan coil unit or electric heaters. DWR's preference is to replace the whole system with high efficiency electric heat pumps. Similarly, all natural gas Unit space heaters will be replaced with infrared or electric resistance heaters. Water heaters that run on natural gas will be replaced with electric or hybrid heat pumps. As seen in the table, these projects will result in significant fossil fuel savings and corresponding emission savings. However, the electricity cost and utility cost savings will not go down due to the increased electricity consumption by the installed electric equipment.

Table 4.5. Building Electrification Measure Summary

Project Type	Project Count	Fossil Fuel Savings (kBtu)	Electricity Savings (kWh)	Emissions Savings (MTCO2e)	Utility Cost Savings ($)
HVAC_AWHP	2	1,474,100	-173,690	43.86	-$29,174
HVAC_SPLIT SYSTEM	20	4,616,448	-468,435	156.17	-$56,638
HVAC_HP RTU	11	2,626,400	-266,502	86.66	-$35,407
HVAC_INFRARED HEATER	7	1,110,100	-132,755	32.64	-$22,612
HVAC_HP WALL UNIT	1	10,100	-1,023	0.33	-$145
DHW Hybrid HP WH	12	369,500	-27,747	14.12	-$1,856
DHW_Instant ER WH	2	58,100	-14,260	0.26	-$3,585
Process Kitchen Electrification	1	14,000	-1,821	0.38	-$333
Total	56	10,278,748	-1,086,233	334.44	-$149,750

Note: RTU = Rooftop Unit, WH = Water Heater.

DWR does not have any measures for CUP as we have no facilities (Table 4.6).

Table 4.6. Central Utility Plant (CUP) Measure Summary

Measure	Type	Savings
NONE		

Table 4.7 shows a summary of the building energy efficiency measures as part of DWR's decarbonization efforts. A total of 22 projects has been identified. They include replacing all lighting fixtures with LED fixtures, installing energy efficiency envelope upgrades, and replacing electric

resistance water heaters and natural gas-based water heaters with electric or hybrid heat pumps. As seen in Table 4.7, these projects will result in significant fossil fuel savings and corresponding emission savings. However, the electricity cost and utility cost savings will increase due to the increased electricity consumption by the installed electric equipment.

Table 4.7. Energy Efficiency Measure Summary

Project Type	Project Count	Fossil Fuel Savings (kBtu)	Electricity Savings (kWh)	Emissions Savings (MTCO2e)	Utility Cost Savings ($)
DHW_Hybrid HP WH (EFF)	2	1474100	-173690	44	(29,174)
Lighting_LED	20	4616448	-468435	156	(56,638)
Total	22	6090548	-642125	200	(85,812)

Decarbonization Action Plan

DWR is working to achieve an overall net-zero carbon operations for the buildings associated with the SWP by 2035. Several factors have delayed the creation of a facility-specific Decarbonization Action Plan since the passage of SB 1203. These include:

- SWP was publishing their 2023 Strategic Plan and during 2024 and was socializing it with over 2,000 employees and many interested parties.
- To compliment the Strategic Plan, SWP's Division of O&M was developing a Strategic Asset Management Plan during 2023 and engaging in change management with its employees.

Decarbonization Action Plan Implementation

The "O&M Strategic Asset Management Plan" was released in July 2023. The purpose of this Strategic Asset Management Plan (SAMP) is to describe O&M's approach to managing SWP assets, the improvements that will enhance the reliability of the SWP infrastructure, and the staged approach to develop O&M's asset management capabilities with specific emphasis on delivering value to the SWP's interested parties. In support of regulatory requirements and state decarbonization goals, significant planning efforts are currently underway that will continue into the foreseeable future.

Asset Management Plans (AMPs) are a key component of an integrated Asset Management System and provide the basis for a life cycle approach to AM. The purpose of the AMPs is to provide specific details on how to optimally manage assets over their entire life cycle to meet the required asset levels of service while maintaining risk at an acceptable level and minimizing costs. AMPs are a foundation for informed decision-making that is comprehensive, data-driven, and risk-informed incorporating existing O&M and industry best practices.

AMPs also provide justification for the proposed capital and O&M budgets. The first completed AMP was “Transformer Asset Management Plan” (2022) which cataloged the SWP power, station service, and switchyard instruction transformers. In the future, a “Support Facilities AMP” at each Field Division will be DWR’s actionable document to describe decision-making around the replacement or refurbishment of assets inside our offices, visitors centers, warehouses, or laboratories. The Implementation of any action items from an AMP is a collaborative effort between Asset Engineers, operations, relevant engineering groups, and the five Field Divisions. Properly planning work via AMPs will also improve DWR’s ability to project annual budget and resource needs.

In April 2023, the staff supporting the SAMP hosted scoping workshops and began their resource availability estimates. While decarbonization has been identified as part of the SAMP’s Implementation Plan, new documents for these activities are still being formed in our budgetary system and were incomplete in 2024. Future financial planning will align AM strategies with the current budget and allow DWR to fiscally sustain SWP in the long term. The Division of O&M Directive ordering use of the SAMP was issued in 2024.

At this time, DWR is unable to describe a decarbonization strategy (Table 4.8). Work within the SAMP’s “Operations” initiative will continue in 2025 and 2026 and more details should become available in 2027 on the level of effort and costs associated with compliance with SB 1203.

Table 4.8. Decarbonization Strategy Summary

Project Type	Project Count	Emissions Savings (MTCO2e)	Timeline
NONE			

Pilot and Priority Projects

At this time, DWR is unable to identify pilot projects (Table 4.9).

Table 4.9. Pilot and Priority Projects for Initial Implementation

Project	Description	Timeline
NONE		

Project Funding and Incentives

DWR needs to identify the costs to run its assets during its expected life cycle and allocate costs to operate, maintain, renew, and dispose/retire its assets. These costs include operations, maintenance, and capital projects. DWR is using a Specialized O&M Project Prioritization to help budget for the next 2 years and give a forecast of what expenditures are expected in the next 5 years.

While “compliance” costs are always incorporated into the SWP’s budget, at this time it is not determined action items around decarbonization will be funded by our State Water Contractors or other funds (Table 4.10).

Table 4.10. Funding Opportunity Summary

Project Type	Applicable Funding Mechanisms	Potential Utility Incentives
Replacement of equipment (fueled by fossil fuels) at end of life.	Because SWP is owner-financed, budget estimates must be presented up to 5 years in advance to the CAP Committee before work can begin.	DWR lies within several utility provider’s jurisdictions.
Technology integration (digital controls).	Because SWP is owner-financed, budget estimates must be presented up to 5 years in advance to the CAP Committee before work can begin.	DWR lies within several utility provider’s jurisdictions.

CHAPTER 5 — WATER EFFICIENCY AND CONSERVATION

This chapter demonstrates the progress that DWR is making toward meeting Executive Order (EO) B-18-12, EO B-29-15, and EO N-10-21 goals. DWR is also heavily consulted on legislation related to water efficiency and conservation. This chapter identifies accomplishments, ongoing efforts, and outstanding challenges in water efficiency and conservation at its owned and leased facilities.

Department Mission and Water Use

To accomplish part of its mission, DWR owns, operates, and maintains the California State Water Project (SWP), a utility-scale water conveyance system that provides raw water to 29 water contractors (municipalities and irrigation districts) throughout the state. The SWP infrastructure includes 34 water storage facilities, reservoirs, and lakes and approximately 700 miles of aqueducts, canals, and pipelines. DWR has support buildings for its nearly 3,500 staff along this backbone of water infrastructure. The SWP consists geographically of five Field Divisions throughout the state, with its headquarters located in Sacramento. DWR also operates visitors centers and leases privately owned buildings. Thus, there are a number of water suppliers as a result.

DWR republished its Strategic Plan in 2023. Goal 3 of this plan is title “Pursue Innovative Infrastructure Solutions.” Objective 2 of this Goal asks for all programs to review how to align financial strategies with infrastructure needs. This includes a review of existing procurement and payment practices, polies and statutory authorities to identify new ways to meet the growing demands for DWR-led projects.

The SWP has their own strategic plan which they released simultaneously in 2023. Their “Elevate to ‘28” is guiding its strategy, programs, projects, and processes to achieve SWP’s ideal future. Some of the Active Initiatives include the development of Asset Management Plans. Their planning recognizes the various compliance requirements and the need to thoughtfully prioritize projects for strategic execution.

One of the statutory responsibilities of the California Water Commission is to approve Department of Water Resources (DWR) rules and regulations not pertaining to the management and administration of the Department. The

DWR's Water Use Efficiency Branch completed a rulemaking to streamline the Model Water Efficient Landscape Ordinance (MWELO) with the revisions going into effect January 1, 2025 (see Chapter 9).

Although the EO B-18-12 requires monitoring of both owned and leased buildings, to date, DWR has not been successful in collecting water data related to its leased buildings.

DWR currently monitors and reports water use on 22 of its 26 State-owned facilities in compliance with the water section of EO B-18-12. Of these 22 facilities, seven are located along the SWP's open canals and reservoirs and rely on water from the aqueduct. Additionally, four facilities are in remote locations without municipal water deliveries, and they rely on ground water to operate and maintain daily functions. The water use estimate within these facilities uses factors such as individual buildings within a site, function type, and the number of occupants. EO B-18-12 policies target potable water use, but DWR facilities, as yet, do not have submeters to separate potable, irrigation, and process water use.

Table 5.1 summarizes the total amount of water used by the SWP facilities, but the cost value reflects only 10 facilities that receive utility bills. In 2024, DWR consumed about 41.5 million gallons of potable water and paid approximately $111,778 to municipal water utilities. DWR has reviewed the potential of using recycled water for outdoor use; however, the expense of integrating recycled water systems is currently cost prohibitive. DWR will continue to study this option as the water needs and the cost change.

Table 5.1. Total Purchased Water

Purchased Water	2023 Quantity (Gallons)	2024 Quantity (Gallons)	2023 Cost ($/Year)	2024 Cost ($/Year)
Potable	37,350,900	41,509,700	$96,158	$111,778
Recycle Water	0	0	$0	$0

Note: Over 70 percent of increased water usage is from Pearblossom O&M Subcenter (new).

Table 5.2 summarizes five DWR-owned facilities that consumed the most amount of water during 2024, which are all SWP's O&M Centers. These O&M Centers are large consumers of water because of the amount of work required to properly maintain equipment and grounds, in addition to construction projects that are performed on site at various times. These facilities range from 13,000 to 67,000 square feet of building area with a fixed number of employees on site during a workday and dozens of utility

craftworkers working on and off site (intermittent) maintaining the SWP infrastructure, with outside contractors occasionally working on DWR projects. DWR defines one intermittent staff as one quarter of a full-time staff at the facility for determining occupancy numbers.

Per capita water use is high because the water use includes the process, washing stations, potable, and landscape water. There is no submetering for the potable water.

Table 5.2. Properties with Purchased Largest Water Use Per Capita

Building Name	Area (sq. ft.)	Ave. Daily Building Occupants	Total 2024 Gallons	Gallons per Capita/Day
Lost Hills O&M Subcenter	33,800	37	1,472,400	109
Sacramento Maintenance Yard	46,240	35	834,800	65
Water Quality Test Building	2,893	5	188,600	103
Southern California O&M Center	31,580	30	1,658,600	151
Pearblossom O&M Subcenter — NEW (No Electricity)	20,200	65	30,934,500	1,304
Total for Buildings in This Table	34,713	172	35,088,900	559
Total for All Department Buildings	555,094	827	41,519,400	138
% of Totals	24%	21%	85%	406%

Note: Increased water usage for Pearblossom O&M Subcenter (new) is currently under investigation. Visitors Centers are not included due to unknown number of visitors.

While not measurable, DWR believes that potable water constitutes a fraction of DWR's total water consumption, and that includes process water and landscape irrigation water. Although there are no devices to separate potable, process, and landscape water, DWR has conducted landscape surveys to determine landscape size, type, and efficiency. In total, SWP facilities have nearly 630,000 square feet of landscaping surface area, 84 percent of which is located at its five Field Divisions, and nearly 50 percent of this landscaping surface area is turf grass.

Table 5.3 summarizes the top five facilities with the largest landscape area that also use purchased water. Two SWP facilities (Beckwourth Subcenter

and Oso Civil O&M Yard) and one of the two Division of Flood Operations subcenters (Sutter O&M) have wells. As shown, the San Joaquin Field Division (SJFD) O&M Center has the largest landscaped area, totaling 126,325 square feet.

Table 5.3. Properties with Largest Landscape Area Irrigated with Purchased Water

Facility Name	Landscape Area (ft^2)	Turf Grass (within Landscape Area)
San Joaquin O&M Center	126,325	64,273
Oroville O&M Center	122,068	202,943
San Luis O&M Subcenter + Romero	83,706	27,569
Pearblossom Subcenters (New +Old)	78,028	0
Southern California O&M Center	44,764	437
Total Landscaping area for Facilities in This Table	454,911	295,222
Total Landscaping for All Department Facilities	2,610,464	1,019,872
% of Totals that is large landscape	27%	29%

Note: *DWR owned facilities only.

NO TURF GRASS — DWR-Owned

- Both Pearblossom O&M Subcenters and Water Testing facility with one patch of artificial turf.
- Thermalito Annex.
- Romero Visitors Center.

NO LANDSCAPING — DWR-Owned

- Coalinga O&M Subcenter.
- Sutter Maintenance Yard.
- Delta O&M Center.
- Tehachapi East Afterbay Maintenance Center.
- West Sacramento Storage Yard.
- Oso Civil Maintenance and Mobile Equipment.

- Cedar Springs Dam Maintenance Station.
- North Bay Maintenance Yard.
- Monument Hill Boat Launch (No Water).
- Beckwourth Subcenter.

Table 5.4 compares the 2024 annual water consumed to the 2010 baseline year mandated in each EO. As the table details, in 2013, DWR met the 25 percent reduction goal as mandated by EO B-29-15 but was unable to sustain this level of conservation on an ongoing basis.

Table 5.4. Department-Wide Purchased Water Use Trends

Year	Total Occupancy /year	Total Amount Used (Gallons/year)	Percent Change From 2010 Baseline	Per capita Gallons per person per day
Baseline Year 2010	500	19,719,700	—	108
2013	575	14,579,400	-26%	69
2020	750	15,706,300	-20%	57
2021	775	17,487,200	-11%	62
2022	827	15,720,300	-20%	52
2023	827	37,350,900	+89%	124
2024	827	41,519,400	+111%	138

Note: 2023 and 2024 include water usage from Pearblossom O&M Subcenter (new).

In 2012, Executive Order B-18-12 mandated a statewide reduction of water consumption of at least 20 percent by 2020, compared with a 2010 baseline. In 2013, EO B-29-15 declared a more stringent target, a 25 percent reduction of water use, in response to Governor Brown's Emergency Drought Declaration.

As stated above, DWR achieved a 25 percent reduction in 2013 as well as in 2018 and 2019 as mandated by EO B-29-15. However, DWR was unable to maintain these levels of conservation on a continuous basis. Nevertheless, DWR achieved the 20 percent target of the EO B-18-12 in 2022. DWR will continue to search for ways to reduce water consumption to meet the 15 percent reduction target of EO N-10-21.

Table 5.5 contains the water trend by DWR in 2023 and 2024. We did not reach the 25 percent goal in either year due to the large water use at Pearblossom O&M Subcenter (New), which is currently under investigation.

Table 5.5. Total Purchased Water Reductions Achieved in Gallons (or Missed)

2010 Baseline totals (Gallons)	2023 Totals (Gallons)	2024 Totals (Gallons)
19,719,700	37,350,900	41,519,400
+ or -Gallons Compared to Baseline Year	+17,631,200	+21,799,700
Department-Wide *Change* as a % from 2010 baseline	89%	111%

Department Indoor Water Use

DWR's water plan consists of two major components necessary to define and prioritize water conservation initiatives. The first component consists of a quantitative inventory of indoor water use by fixtures, boilers, and cooling systems. The second component focuses on outdoor water use and includes a measurement of landscape areas, types, and irrigation equipment. Each water plan component includes a mandatory set of Best Management Practices (BMPs) for ongoing water use efficiency for monitoring and reporting for annual compliance. Both components of water use include monitoring, reporting, oversight, and compliance. DWR is currently researching the feasibility of installing meters and submeters at its SWP facilities to accurately measure and monitor indoor and outdoor water use.

Fixtures and Water Using Appliances Needs Inventories

As summarized in Table 5.6 and Table 5.7, DWR has not started nor completed any indoor water efficiency or heating and cooling system projects. However, whenever a water fixture needs repair or replacement, upgrading to water efficient fixtures takes place. For example, recently at its Lost Hills O&M Subcenter, three urinals were replaced with waterless urinals to conserve water use.

In 2010, DWR received federal funding under the American Recovery and Reinvestment Act (ARRA) to implement energy and water efficiency projects in four DWR SWP facilities. These projects primarily focused on energy efficiency upgrades involving lighting and HVAC units. No water-efficiency retrofit projects were undertaken at that time; however, DWR completed building walkthroughs and identified those water-related areas that need upgrades or retrofits.

Table 5.6. Building Indoor Water Fixtures and Water Using Appliances Needs Inventories Summary

Toilets to be replaced	Urinals to be replaced	Faucet aerators to be replaced	Showerheads to be replaced
184	79	259	56

Note: DWR does not have clothes washers, garbage disposals, nor pre-rinse valves, so these are not included in Table 5.6.

SWP's Division of O&M will plan for potential upgrades utilizing existing maintenance funds. DWR is currently working on a plan to conduct water audits at all the SWP Facilities to identify water efficiency and conservation improvement opportunities.

Water Conservation and Water Efficiency Projects for Purchased Water

DWR has not started or completed any indoor water efficiency projects within the last seven years. However, whenever a water fixture needs repair or replacement, upgrading to water efficient fixtures takes place. For example, recently at its Lost Hills O&M Subcenter, three urinals were replaced with waterless urinals to conserve water.

DWR does not have any current water efficiency projects for the reporting period (see Table 5.7).

Table 5.7. Summary of Current Indoor Water Efficiency Projects Completed 2020-Present or In Progress

Year Completed	Water (Gallons/yr.) Saved	Number of Indoor Water Efficiency Projects Completed	Cost Savings per Year
2022	0	0	$0
2023	0	0	$0
2024	0	0	$0

DWR is currently working on condition assessment and water audits at all the SWP Facilities to identify future water use reduction measures, and no projects have been set.

Planning Outline PO0:a. Building Indoor Water Efficiency Priority Projects for the Next 5 Years

Organization Unit	Type of Project	Est Water Savings	Est. Start Date
Oroville Field Division	Audit in progress	N/A	2026
Delta Field Division	Audit in progress	N/A	2026
San Luis Field Division	Audit in progress	N/A	2026
San Joaquin Field Division	Audit in progress	N/A	2026
Southern Field Division	Audit in progress	N/A	2026
Division of Flood Operations	Audit in progress	N/A	2026

SWP Field Divisions have an annual budget for performing repairs or operational improvements which are not itemized. While indoor water efficiency projects could be completed in any year, there would be no tracking of these efforts. Division of Flood Operations also uses its annual budget to perform small repairs at its two maintenance yards, and these projects are not line items in any capital budget.

General Water Management

SWP Field Divisions have an annual budget for performing repairs or operational improvements which are not itemized. While general water management projects could be completed in any year, there would be no tracking of these efforts.

Leak Detection and Repair

SWP Field Division personnel routinely inspect and maintain, as necessary, landscape hardware systems for leaks and proper function. Whenever a repair or replacement is required, it is done on a priority basis using water efficient equipment. At Sutter Maintenance Yard there is no landscaping nor irrigation.

Kitchen Water Conservation

No commercial kitchens

Laundry Facilities Water Conservation

No laundry facilities

Department Total Nonpurchased Water Excluding Water Reuse or Recycling

DWR has pursued restoration at several river locations by using a breach in a levee. These lands are then inundated by river waters and may be subject to tidal influence. The species and ecosystems at these locations are adapted to inundation and are dependent on the continued flow of water.

DWR does own the Feather River Fish Hatchery in Lake Oroville, but it is operated by the California Department of Fish and Wildlife. The water for the fish ladders and tanks at this location is taken directly from the Feather River.

Two SWP facilities (Beckwourth Subcenter and Oso Civil O&M Yard) and one of the two Division of Flood Operations' subcenters (Sutter Maintenance Yard) have wells. These facilities are in remote locations without municipal water deliveries, and they rely on ground water to operate and maintain daily functions. Note, DWR has installed many wells for the monitoring of groundwater levels. The monitoring wells are not production wells, and do not have any significant extraction.

Table 5.8. Department-Wide Nonpurchased Water Use

Year	Groundwater Basin(s) Name	Number of Domestic or Irrigation Wells	Groundwater Use in Gallons	Surface Water Use in Gallons	Total (Gallons/ Year)
Baseline Year 2020	Antelope Valley (06-044), Sacramento Valley-Sutter (5-021.62), and Sierra Valley-Sierra Valley (5-012.01)	3	Approx. 400,000	N/A	Approx. 400,000
2023	Antelope Valley (06-044), Sacramento Valley-Sutter (5-021.62), and Sierra Valley-Sierra Valley (5-012.01)	3	Approx. 400,000	N/A	Approx. 400,000
2024	Antelope Valley (06-044), Sacramento Valley-Sutter (5-021.62), and Sierra Valley-Sierra Valley (5-012.01)	3	Approx. 400,000	N/A	Approx. 400,000

No trends available.

DWR, in coordination with the State Water Resources Control Board, has developed an interactive dashboard that contains information about dry domestic well susceptibility within groundwater basins in California (see California's Groundwater Live). The map displays susceptibility per square mile based on analysis by combining the latest information on domestic well locations, depths, and local groundwater level conditions. The dashboard includes a map and information pane, along with various filtering options. DWR's three wells are generally located in "Very Low" to "Low" dry well susceptibility:

- Beckwourth Subcenter — Plumas County, 78 wells within the adjacent public land survey section (a one-mile by one-mile square) and 2 are susceptible, resulting in a 10–20th percentile risk score (indicating a low density of susceptible wells).

- Oso Civil Maintenance and Mobile Equipment — Los Angeles County, — 0–10th percentile risk score (very low density of susceptible wells).

- Sutter Maintenance Yard — Sutter County — 0–10th percentile risk score (very low density of susceptible wells).

No planning has taken place to replace groundwater as a source, because of the low probability of a dry well in these DWR locations. DWR will review and respond appropriately to any actions proposed within the approved Groundwater Sustainability Plans prepared by the local groundwater sustainability agencies.

Department Water Energy Nexus Reporting

The SWP, owned and operated by DWR, delivers water to about 25 million Californians and 750,000 acres of irrigated farmland. Getting water to these users requires a large amount of electricity. As the largest single consumer of electricity in California, the SWP pump load ranges from 6,000,000 megawatt hours (MWh) to 9,500,000 MWh depending on the type of water year (dry, average, wet). The electricity is used to operate the SWP pumping plants, which are needed to deliver water throughout the state.

We are a founding member of the Water-Energy Nexus (WEN) Registry (a non-profit). The WEN Registry will help water agencies, utilities, and large water users identify operational efficiency and GHG reduction opportunities, make decisions that drive innovation and support more resilient

infrastructure, and make more efficient use of funding. DWR's 2018 emission factor for delivered water, based on acre-feet, was 0.25, and by 2024 we had reduced it to 0.13.

The SWP generates about half of its needed electricity each year at its reservoirs and in-conduit generating stations. The SWP is committed to reducing its carbon footprint by having a power portfolio consisting of 100 percent carbon-free resources by the end of 2035. DWR is finding innovative ways, such as adding solar to the system, to make this happen. So, when we deliver water to a municipality in 2036, it will be zero-carbon water.

Energy Intensity (EI) is a measure of the amount of energy required per unit of production. EI is a measure of the amount of energy required to take a unit of water from its origin (such as a river or aquifer) and extract and convey it. Within California, the EI of water varies greatly depending on geography and water source. EI information is designed to help inform the public and water utility managers about the relative energy requirements of major water supplies used to meet demand. DWR displays on our website the Energy Intensity of Water Supplies from the SWP across 10 regions. Each region differs based on water sources and technology employed. Additional information about the EI's of desalinated and recycled water see California Water Plan Update 2013 Volume 3, under Resource Management Strategies 10 and 12.

No boilers (see Table 5.9 and 5.11).

Table 5.9. Annual Amount of Boiler Makeup Water Used

Boiler Water Use	Year 2023	Year 2024
Totals for all Facilities	NO BOILERS	NO BOILERS

NO COOLING TOWERS (see Tables 5.10 and 5.12).

Table 5.10. Cooling Tower Water Use

Cooling Tower Water Use	Year 2023	Year 2024
Totals for all Facilities	NO COOLING TOWERS	NO COOLING TOWERS

Table 5.11. Summary of 2024 Boiler Needs Inventory

Number of meters to purchase and install	Water Treatment to Install, Repair, or Upgrade	Other
NO BOILERS		

Table 5.12. Summary of 2024 Cooling System Needs Inventory

Equipment Needed	Equipment Totals for all Facilities
Meters	NO COOLING TOWERS
Water Treatment	NO COOLING TOWERS
Other	NO COOLING TOWERS

Department Outdoor Water Use:

Landscaping typically uses 50 percent or more of a site's total water use. If irrigation hardware is not properly installed and maintained, water waste will counteract DWR's landscape water-wise initiatives. To date, the pieces of equipment required for DWR landscapes are unknown (see Table 5.13).

Without additional resources, DWR is unable to conduct updated landscaping surveys. DWR needs to purchase (at a minimum) a portable water meter to analyze and prioritize sub-meter locations at SWP Field Divisions. DWR will implement use of water sub-metering systems by July of 2027 to monitor and assist in the development of water conservation efforts to achieve water savings and landscape usage reductions at its five SWP Field Divisions' operations centers.

Table 5.13. Summary of 2024 Outdoor Irrigation Hardware Needs Inventory

Irrigation Hardware Type	Total Hardware Needed
Separate meters or sub-meters	A minimum of 5
Irrigation controllers required with weather or soil moisture adjustment and flow sensing capabilities	UNKNOWN
Backflow Prevention devices	UNKNOWN
Flow sensors to be purchased and installed	UNKNOWN
Automatic rain shut-off devices	UNKNOWN
New pressure regulators	UNKNOWN
New hydrozone(s)	UNKNOWN
New valves	UNKNOWN
Filter assemblies	UNKNOWN
Drip irrigation emitters	UNKNOWN
Booster pumps	UNKNOWN
Rotary nozzles or other high efficiency nozzles	UNKNOWN

At the five SWP Field Division there are no outdoor irrigation hardware inventories. Field staff review irrigation-related issues ad-hoc and respond to reports of broken components.

At Sutter Maintenance Yard, the facility landscaping has been removed. There are no outdoor irrigation hardware components operational at this location. For the Sacramento Maintenance Yard, the irrigation needs are unknown.

As a result of AB 1575, DWR is preparing a roadmap to understand its landscaping and irrigation. Monitoring and tracking irrigation water separately from domestic and process water use will require dedicated irrigation meters or submeters, which DWR does not have at this time. It is likely there will be a recommendation for installing meters and submeters as necessary for measuring, monitoring, and reporting water use by occupants, irrigation, and process activities at the SWP Field Divisions and Sacramento Maintenance Yard. Installing or adapting irrigation systems to irrigate based on hydro zones (areas of plantings that have similar water needs and irrigation systems) and replacing inefficient systems with efficient ones should also be considered so that landscapes get the amount of water they need but no more. SWP Field Divisions will need to apply for any programs sponsored by the local retail provider, if they qualify.

As landscape maintenance contracts are renewed in each of the forthcoming three-year cycles, contract language will be incorporated requiring the vendor to repair, replace, track, and maintain the irrigation system with new updated high efficiency soil moisture or weather-based controllers, automatic rain shut-off devices, pressure regulators, pumps, valves, emitters, nozzles, and filter assemblies as part of a continuous water conscience maintenance program. These updated irrigations systems will be monitored and maintained as noted directly below in BMPs.

DWR does not have any outdoor hardware water efficiency projects in the reporting periods (see Table 5.14).

Table 5.1413. Summary of Outdoor Hardware Water Efficiency Projects Completed 2022 -Present or In Progress

Year Funded	Water Saved (Gallons/yr.)	Completed Hardware Water Efficiency Projects	Hardware Water Efficiency Projects in Progress
2022	N/A	NONE	NO CURRENT PROJECTS
2023	N/A	NONE	NO CURRENT PROJECTS
2024	N/A	NONE	NO CURRENT PROJECTS

NO PROJECTS

The O&M Division of SWP identifies and implements maintenance at each of the field divisions. Since early 2024, these divisions have been creating and/or updating Maintenance Plans using standardized procedures and templates. This series of Project Operations & Maintenance Directives covers the steps and the workflow for approval of any new Maintenance Plan. The Master Maintenance Plan Priority Lists includes a "Ground/Site" series with a line item on irrigation. This irrigation series was not started in 2023 nor 2024 as other priorities took precedent.

SWP Field Division's maintenance vendors will routinely inspect and maintain, as necessary, landscape hardware systems for leaks and proper function. Whenever a repair or replacement is required, it is done with water efficient equipment and tools.

By 2027, DWR will need to identify a Lead and Subject Matter Expert and update the "Ground/Site" Maintenance Plan series for irrigation, as other priorities allow. Once written by this team, they will provide a copy to the Technical Document writer who will circulate for approval. Once the writer has approved the document, the analysts generate a Mitra Form to convey any resource needs, precautions, and tools to the on-site staff.

Reporting on Living Landscape Inventory

Some of DWR's Field Division locations still contain living landscapes, including turf (see Table 5.15).

Table 5.1514. All Facilities With > 500 sq. ft. of Living Landscape Inventory

Facilities with Landscape >500 Sq.	Total Turf (sq. ft.)	# Of Historic Sites or Memorials	Cumulative MWELO Landscape Area (sq. ft.)	Climate Appropriate Landscape Area (sq. ft.)	Ground water Basin Name	Irrigation Source is Ground water (Yes/ No)	Irrigation source is Surface Water (Yes /No)	Irrigation source is Re-use or Recycled Water
Oroville O&M Center	83,525	0	122,088	38,563	N/A	No	Yes	No
Lake Oroville Visitors Center	0	0	5912	5,912	N/A	No	Yes	No
Thermalito Annex	0	0	21,183	21,183	N/A	No	Yes	No

Facilities with Landscape >500 Sq.	Total Turf (sq. ft.)	# Of Historic Sites or Memorials	Cumulative MWELO Landscape Area (sq. ft.)	Climate Appropriate Landscape Area (sq. ft.)	Ground water Basin Name	Irrigation Source is Ground water (Yes/ No)	Irrigation source is Surface Water (Yes /No)	Irrigation source is Re-use or Recycled Water
Sacramento Maintenance Yard	807	0	11,164	10,357	N/A	No	Yes	No
San Joaquin O&M Center	64,273	0	126,325	62,052	Unk	Unk	Unk	Unk
Vista Del Lago VC	49,826	0	103,177	53,351	Unk	Unk	Unk	Unk
San Luis O&M Center	23,569	0	83,706	56,137	Unk	Unk	Unk	Unk
Lost Hills O&M Subcenter	11,169	0	31,298	20,129	SJ Valley-Kern County	Yes	No	No
Pearblossom Subcenters (both Old and New)	807	0	78,028	78,028	N/A	No	Yes	No
Southern California O&M Center	437	0	44,764	44,327	Yes*	Yes*	Yes*	No

Notes: * Municipal supplier delivers a mix of surface water and groundwater.

Recognizing that the use of potable water to irrigate nonfunctional turfgrass is wasteful, the passage of Assembly Bill 1572 (2023) (California Water Code Section 10608.14) marked a significant step toward promoting water efficiency and sustainability by prohibiting the installation irrigation of non-functional turf in commercial, industrial, and institutional (CII) settings. Under AB 1572, by January 1, 2027, all DGS-owned facilities are prohibited from using potable water to irrigate Non-Functional turfgrass. Self-certification of compliance with AB 1572 is expected to start in 2030 for properties with more than 5,000 square feet of irrigated area. Functional turf means a ground cover surface of turf located in a recreational use area or community space (California Water Code Section 10608.12 (m)). Non-functional turf, is any turf that is not functional (as defined in California Water Code Section 10608.12 (u)).

Landscaping plays a critical role for public buildings and facilities by providing safety and security, reducing local heat islands, suppressing dust, reducing water runoff, maintaining soil health, aiding in water filtration, and recycling nutrients. Landscaping in public areas frequently surrounds historic

places and public memorials as well as providing public gathering spaces. The health and proper maintenance of these landscapes is vital to the physical wellbeing of California's people as well as its social, cultural, political, and historical life.

Urban forests are vital to improving site conditions for occupants and visitors to the community. Large shade trees should be considered valuable infrastructure and given priority over other plants. A voluntary urban forest plan is encouraged to assess individual trees and plan for additional tree plantings.

Reporting on Living Landscape Upgrades for the Next 5 Years

The passage of Assembly Bill 1572 (2023) marked a significant step toward promoting water efficiency and sustainability by prohibiting the irrigation of non-functional turf in commercial, industrial, and institutional landscapes with potable water. Non-functional turf, often defined as ornamental grass areas not used for human activity or recreation, contributes to unnecessary water consumption, particularly in urban landscapes. While AB 1572 provides a legislative framework, effective implementation will require local governments, retail water agencies, and both state and private property managers to adopt clear policies and practices. At this time, DWR has not received any guidance from a local municipality.

Through our Education and Outreach work (see Chapter 10), DWR staff are supporting pilot projects at non-DWR facilities and supporting a website (SaveOurWater) that can help distribute information on rebates for turf conversions. Under budget Act of 2021, DWR distributed funds to support turf replacements in many locations in California.

Self-certification of compliance with AB 1572 is expected to start in 2030 at the local level by water agencies, cities, or counties. Beginning in April 2025, DWR's Division of Regional Assistance, Water Use Efficiency (WUE) Branch began hosting internal meetings every few months to discuss how to cease irrigation of Non-Functional turf with potable water. WUE Staff have completed a preliminary assessment to estimate amount of remaining turf on DWR-owned lands. Location data is paired with the name of the retail water supplier (where applicable). For those locations where DWR also uses groundwater and raw water from canals to water landscapes (which is considered non-potable water), staff do not plan to take any action since this is not prohibited. For privately leased and DGS-owned facilities where DWR is a tenant only, staff do not plan to take any action. DGS-owned property is

required to assure that its landscaped turf areas are not watered with potable water beginning January 1, 2027, and all other State agencies are to comply by January 1, 2028. Starting in 2027, staff will next develop a vision for remaining turf and ask Executive for priorities. As local municipalities send information about turf conversion and possible solutions, additional discussions will be held to determine the appropriate solution. In some cases, simply not watering the turf and allowing it to die is the only financially viable solution as landscaping conversions can become expensive.

No water efficiency projects have been completed after 2022. There are no updates for 2022 to 2024 (see Table 5.16). However, about 116,619 square feet of landscape (61,435 sq. ft. of turfgrass) at the Delta O&M Center is no longer in operation. As a result, estimated water savings at this site could be over two million gallons.

Additionally, the measured irrigated landscape area at Sacramento Maintenance Yard is currently about 87 percent less, overall (84 percent less turfgrass). Estimated water savings at this site could about 2.8 million gallons, with turfgrass water use reduction accounting for an estimated 211,900 gallons.

Table 5.1615. Summary of Completed Living Landscaping Water Efficiency Projects

Year Funded	Est Annual Water Savings (Gallons)	Sum of MWELO Landscape installed (sq. ft.)	Sum of Climate Appropriate Landscape Installed (sq. ft.)
2022	NO CURRENT PROJECTS	0	0
2023	NO CURRENT PROJECTS	0	0
2024	NO CURRENT PROJECTS	0	0

Reporting Narrative on Living Landscape BMPs

Since early 2024, the SWP Field Divisions have been creating and/or updating Maintenance Plans using standardized procedures and templates. This series of Project Operations & Maintenance Directives covers the steps and the workflow for approval of any new Maintenance Plan. The Master Maintenance Plan Priority Lists includes a “Ground/Site” series with a line item on irrigation and on grounds. This series has not been started in 2023 nor 2024 as other priorities took precedent.

During the recent drought, SWP Field Divisions protected trees and large shrubs and continued irrigation in those zones.

Planning Narrative on Living Landscape BMPs

NO PLANS

Reporting on Large Living Landscape Inventory (>20,000 sq. ft.)

DWR has ten facilities with large, irrigated landscapes with a total area totaling nearly 630,000 square feet. In addition, about 1.98 million square feet of DWR facilities are potentially irrigated (evidence of living landscape that might have been irrigated but appears dormant in the remote sensing analysis). Water budgets for these facilities have not been accurately calculated because those require more detailed on-the-ground measurements, nor do these facilities have any personnel who are EPA WaterSense (or equivalent) certified to assess and manage these landscapes (see Table 5.17).

To support reporting in this Roadmap, landscape water use at these facilities was estimated based on the local climate (Eto), screening-level aerial mapping into three vegetation types (turfgrass, trees, and other vegetation), associated water requirements for broad categories of plants, and assumed irrigation efficiency based on studies of CII landscape irrigation. Because there is no regular irrigation system monitoring and maintenance, irrigation is expected to be inefficient with two exceptions. The exceptions include San Luis O&M Subcenter plus Romero Overlook who installed drip irrigation in part of the landscape in 2014 and Lost Hills O&M Subcenter who replaced inefficient sprinkler heads in 2019.

A scenario-level water budget for landscape water use efficiency has also been estimated based on future large landscape water use efficiency requirements that will apply to the turfgrass in DWR's landscapes. This scenario is for 2035 when DWR will need to pursue landscaping changes to match a current evapotranspiration adjustment factor (ETAF) that is considered more sustainable (0.7 or 0.8, depending on age of landscape and water source) instead of the likely existing ETAF of about 0.9 to 1.27 (higher numbers mean more water is used). Future water budgets will need to reflect current regulation requirements and move DWR towards more sustainable landscapes. This includes the ban on using potable water for nonfunctional turfgrass.

Additionally, for the seven sites served by urban retail water suppliers, water budgets should be reduced further in 2035 and 2040 because of the Urban Water Use Objective large landscape water use efficiency standards, which

lowers the overall ETAF from 0.8 to 0.63 in 2035 and then down to 0.45 in 2040 (see fourth column in Table 5.17).

Creating more precise water budgets, getting EPA Watersense-certified staff, and implementing irrigation system operations and maintenance BMPs could become a priority for water efficiency. DWR should also collect data for leased facilities and consider incorporating landscape water use efficiency improvements into lease agreements.

Table 5.1716. Large Landscape Inventory (>20,000 sq. ft.) and the Required Associated Landscape Water Budget Schedule and Possible Scenario in 2035–2040

Name of Facility Sites/Locations with > 20,000 sq. ft. of Landscaping	Landscape Area per Facility (Sq. Ft.)	Water Budget per Facility (Gallons)	Scenario for 2035-2040 Water Budget (Gallons) with Regulations Enforced	EPA WaterSense or Irrigation Association Certified Staff per Facility
San Joaquin O&M Center* **	126,325	5,485,801	1,626,606	0
Oroville O&M Center*	122,088	5,090,388	684,600	0
Sacramento Maintenance Yard*	11,164	342,757	145,260	0
San Luis O&M Subcenter and Romero Overlook**	83,706	2,892,296	2,016,226	0
Pearblossom Subcenters (New + Old)*	78,028	3,019,561	1,345,801	0
Southern California O&M Center*	44,764	1,454,033	678,343	0
Lost Hills O&M Subcenter* **	31,298	929,454	463,881	0
Vista Del Lago Visitors Center**	103,177	4,136,690	2,485,227	0
Thermalito Annex*	21,183	675,591	268,617	0
Lake Oroville Visitors Center*	5,912	183,423	74,971	0

* Water supply from an urban retail water supplier subject to urban water use objective water efficiency standards for landscapes.

** Water supply source listed as “other,” which may be self-supplied or raw canal water.

*** Water supply at least partially from a retail water supplier that is not subject to urban water use objective water efficiency standards for landscapes.

Reporting on Achieving Large Living Landscape Requirements (>20,000 sq. ft.)

Some of the Large Living Landscapes at DWR facilities are under review as a result of AB 1575.

NO PLANS

Critically Overdrafted Groundwater Basins and Water Shortage Contingency Plans

The Sustainable Groundwater Management Act (SGMA) established a new structure for managing California's groundwater resources at a local level by local agencies. SGMA requires, by June 30, 2017, the formation of locally controlled groundwater sustainability agencies (GSAs) in the State's high- and medium-priority groundwater basins and subbasins (basins). A GSA is responsible for developing and implementing a groundwater sustainability plan (GSP) to meet the sustainability goal of the basin to ensure that it is operated within its sustainable yield, without causing undesirable results. For those facilities located in critical groundwater basins, State agencies are to work with the local GSA plan.

Urban water suppliers are required to maintain Water Shortage Contingency Plans customized to local conditions. These plans include a staged response to water shortages and droughts lasting up to three years. When implementing the stages of the Water Shortage Contingency Plan, the water supplier will require increasingly stringent reductions in water use.

EO 37-16 required DWR to strengthen the requirements for these plans, including, among other proposed changes, the creation of common standards for each stage in the plan, and extending the drought planning from three to five years. For smaller water suppliers and rural communities not required to maintain a Water Shortage Contingency Plan, DWR works with counties to facilitate improved drought planning (see Chapter 10).

Reporting on Buildings in Critically Overdrafted Groundwater Basins

Tables 5.18 and 5.19 summarize the number of facilities subject to an urban water shortage contingency plan and in critical groundwater basins. Four DWR facilities are within the San Joaquin Valley basin and DWR has implemented contingency plans for two of the facilities.

Table 5.1817. Buildings in Designated Critically Overdrafted Groundwater Basins

Building Name	Basin Name	Amount of water Used 2023 (Gallons)	Amount of water Used 2024 (Gallons
Delta-San Luis Field Division Office, ME shop, O'Neil Forebay	Delta-Mendota (5-022.07)	26,100	259,600
Delta — Romero Visitors Center	Delta-Mendota (5-022.07)	78,650	784,300
Lost Hills O&M Subcenter	San Joaquin Valley — Kern County (5-022.14)	82,190	1,475,900
South Central Region Office	San Joaquin Valley — Kings (5-022.08)	NO DATA	NO DATA

Reporting on Buildings with Urban Water Shortage Contingency Plans

Since 1983, local water suppliers with greater than 3,000 service connections have been obligated by the State to address water supply and conservation planning through the preparation of an Urban Water Management Plan (UWMP). This plan must assess the reliability of water sources into the future, describe demand management measures and water shortage contingency plans, report progress toward meeting a targeted 20 percent consumption reduction by 2020, and discuss the use and planned use of recycled water. Several of DWR's privately leased buildings are connected to providers with contingency plans (see Table 5.19), but few if any of the SWP Field Offices are connected. Note, new 2025 UWMPs are due July 1, 2026.

Table 5.1918. Buildings with Urban Water Shortage Contingency Plans

Building Name	Name of Water Supplier with Urban Water Shortage Contingency Plans	Year of Publication or Update
South Central Region Office	City of Fresno	2021
Southern Region Office	Glendale Water and Power	2021
Northern Region Office	California Water Service Company (Cal Water) — Oroville District	2021
Joint Operations Center (JOC), JOC Annex, Training Center, warehouses, and various office spaces	City of Sacramento	2021

Source: WUEdata — https://wuedata.water.ca.gov/uwmp_plans.asp?cmd=2020.

Reporting Narrative for Table 5.20: Urban Water Shortage Contingency Plans

NO PLANS

Department's Planning for Urban Water Shortage Contingency Plans

On May 10, 2021, the Governor issued an Emergency Proclamation on drought conditions for the Sacramento — San Joaquin Bay-Delta (Delta) and other watersheds because of the continuing extreme dry conditions in the Delta watersheds. The "State Water Project and Central Valley Project Drought Contingency Plan" (2021) was a collaborative effort with the federal Bureau of Reclamation. This plan outlined over twenty drought actions. These actions (known as the Drought Toolkit) describe the anticipated coordination, process, planning, and potential drought response actions in the event of a prolonged drought. The locations for these actions spanned from the top of the watershed (where the reservoirs which are part of SWP and CVP reside) to the bottom (within the Delta). A diverse set of actions were proposed to adequately protect the water supply for millions of Californians and rich agricultural areas. The Drought Toolkit provides a coordination process and identifies potential measures under three future scenarios: Shasta Cold Water Pool Management Dry Years, Drought Years, and Successive Dry Years.

Because the SWP and CVP have the potential to impact species and habitat, the drought actions proposed were submitted by DWR to CDFW and many were implemented during the emergency. For example, reservoir bypasses were used to keep colder water in reservoirs for use later in the year. The cooler water was instead used when it was the most needed to protect spawning by salmon. Water quality in the Delta was also continuously monitored during the emergency.

Reporting Narrative for Department's Contingency Plan

DWR, as a wholesale water supplier, is in the unique circumstance of performing contingency planning for its own facilities as well as for its wholesale supply which is needed by multiple water suppliers and agricultural users.

DWR-Owned Facility Contingency Planning

For those facilities located in critically overdrafted groundwater basins, state agencies are to work with the local GSA plan.

The SWP implements a number of actions and monitoring activities to understand drought effects on the aquatic environment. These actions and monitoring commitments are implemented to allow SWP scientists to better understand the system and develop action for implementation in future droughts. As an example, during the 2020–2022 drought, the SWP increased its investment in environmental monitoring of drought consequences by funding monitoring of invasive vegetation and harmful algal blooms. This project resulted in a technical report and a series of peer-reviewed journal articles which were published in March 2024 in a special issue of the journal San Francisco Estuary and Watershed Sciences.

The SWP's Delta Field Division recognizes several drought stages and has set forth drought management guidance (written into a guide titles "DFD-M-12"). The actions in those instructions help Delta Field Division minimize the impacts of a drought on the Field Division and the State. Actions such as reducing irrigation, placing up signs, and reducing building use are recommended at various tiers.

The 2020 incidental take permit (ITP) issued by the CDFW to DWR for the long-term operation (LTO) of the SWP requires the development of a drought contingency plan under specific weather conditions. Each drought contingency plan for CDFW typically will include an overview of hydrological conditions, a species status update, hydrology forecast, SWP and CVP operations forecast, areas of potential concern, and any drought actions to be implemented or that may be potentially needed.

Wholesale Water Supply Contingency Planning

During the 2014 drought period, DWR discovered that the Oroville Dam River Valve Outlet System (RVOS) was an important storage and flow regulating facility for maintaining Sacramento and San-Joaquin Bay Delta water quality standards, as well as Feather River instream requirements (which include senior water rights). At that time, DWR began drought emergency contingency planning efforts that would help DWR to return the RVOS to operational readiness following a prolonged drought. For several years, DWR has been evaluating design alternatives from that emergency study and has substantially completed construction in 2025.

On February 13, 2023, Governor Newsom issued Executive Order N-3-23 stating that “to protect public health and safety, it is critical the State take certain immediate actions without undue delay to prepare for and mitigate the effects of the drought condition.” On that same day, SWP and Reclamation (owners of the Central Valley Project) petitioned the State Water Resources Control Boad (SWRCB) for a “Temporary Urgency Change Petition” (TUCP). They were requesting changes to water right requirements included in State Water Board Decision 1641 (D-1641) to allow management of reservoir releases on a pattern that conserves upstream storage for fish and wildlife protection and Delta salinity control while providing critical water supply needs. The TUCP was granted for 180 days, hence modifying requirements for reservoir releases or diversion limitations in Central Valley Project or SWP facilities. The Order from the SWRCB was modified in March 2023 to address changing circumstances.

In 2024, DWR finalized its first comprehensive, public-facing Long-term Drought Plan for the State Water Project as part of an expanded effort to prepare for future droughts and extreme dry conditions. The Long-term Drought Plan compiles information and actions taken by the State Water Project during previous droughts, outlining how those actions have informed current operations and highlighting actions taken by the State Water Project to prepare for future droughts. The plan will be reviewed and updated every five years and after major drought events to ensure the State Water Project continues to adapt to dry conditions exacerbated by climate change.

Planning Narrative on Department’s Contingency Plan

DWR’s Drought Coordinator is our lead for emergency response and recovery efforts after any drought proclamations or Executive Orders. Our response is implemented in accordance with the Standardized Emergency Management System and will vary based on the size of the event. There is a Drought Action Plan in development for the SWP facilities which was released in 2024. In 2026, the Sustainability Coordinator and Drought Coordinator will prepare a plan to allow for continuity of operations if there is an emergency 50 percent cutoff for our remaining facilities.

Because the conveyance of SWP water to 27 million Californians is critical during water shortages, DWR’s decisions are made to best serve the needs of California’s population, and not just our department individually. Actions taken by DWR in recovery from a water shortage event include, but are not limited to:

- DWR's coordinates any statewide response to drought using a Task Force structure. Locally, we involve water providers through the four Regional Offices, because their staff are most familiar with the local water providers. DWR will facilitate any Mutal Aid requests when severe water cutbacks become necessary.

- DWR communicates when drought restrictions should begin or cease.

- DWR has overseen distribution of State and federal funds to help local water providers respond to drought and to make their own contingency plans.

- DWR will lead negotiations for water purchases and transfers. DWR may also facilities the provision of water hauling to provide relief to communities.

- DWR's own systems of groundwater wells and surface water meters are critical to monitoring water supplies. We share this data through portals to ensure response and planning has the best available science (see Chapter 7).

- DWR promotes general conservation tips to the public in several languages (see Chapter 7).

- DWR facilities follow voluntary and mandatory restrictions on outdoor water use.

In 2023, DWR established a standing drought and water shortage interagency task force in coordination with the State Water Board and other relevant State agencies to facilitate proactive State planning and coordination for pre-drought planning, emergency response, and post-drought management, consistent with Senate Bill 552 (chaptered in 2021). The Task Force, called the Drought Resilience Interagency and Partners Collaborative (DRIP Collaborative), is intended to serve as a public forum with State and non-State agency members to advance our drought strategies and continue building resilience to the increasingly arid conditions California faces.

In its inaugural year, the DRIP Collaborative identified three initial focus areas: drought-relevant data, domestic well preparedness, and drought narrative, each with a defined problem statement outlining key issues and

challenges. In 2024, the DRIP Collaborative's primary effort was developing recommendations for the State and its partners to address these challenges.

CHAPTER 6 — FACILITIES' CONSTRUCTION AND OPERATIONS

Department Mission and Facilities Construction and Operations

The large majority of the department's staff are engaged in the maintenance and operations of SWP and Division of Flood Operations ancillary facilities (tunnels, turnouts, canals, levees, etc.) and a smaller percentage work on the non-specialized buildings (those with office space or warehouses).

The SWP has their own strategic plan which they released in 2023. Their "Elevate to '28" is guiding its strategy, programs, projects, and processes to achieve SWP's ideal future. Part of their framework is to use a Strategic Risk Management Plan and an Asset Management Program to enhance organizational adaptability to support key decisions and help the SWP better allocate its resources.

Building Design and Construction

DWR uses a very structured approach for planning new construction, consisting of pre-planning, budgeting, design, construction, and final acceptance. DWR has specific internal processes and guides around construction including:

- Water Resources Memorandum (WRM) 52a — Compliance with Building Regulations, Industrial Safety, Site Accessibility (March 2023): The purpose of this WRM is to establish a compliance process for mandated fire and life safety, industrial safety, accessibility for persons with physical disabilities, and green building practices for design and construction for all DWR facilities.

- WRM 30b — Architectural Motif, State Water Project (April 2023): The purpose of this WRM is to establish an architectural motif which will be applied to all State Water Project facilities with the objective of creating an economical, efficient, identifiable, aesthetically pleasing, and unifying appearance throughout the project.

- WRM 65a — State Water Project Program Initiation and Management (October 2011): This memorandum sets forth standardized documentation and processes to initiate, authorize, administer, and

manage new and legacy programs, projects, and activities funded by the State Water Project (SWP) in a consistent and professional manner.

Executive Order B-18-12 requires that all new buildings, major renovation projects, and build-to-suit leases over 10,000 square feet shall obtain LEED Silver certification or higher. All new buildings under 10,000 square feet shall meet applicable CALGreen Tier 1 Measures. New buildings and major renovations greater than 5,000 square feet are also required certification after construction.

New Building LEED Certification

There is only one new building constructed by DWR since 2012 (see Table 6.1).

Table 6.1. New Building Construction since July 1, 2012

Facility Name	LEED Certification Type & Level Achieved	Commissioning Performed (Y/N)
Pearblossom O&M Subcenter — NEW	LEED-NC Platinum	Yes

Reporting Narrative for Table 6.1: New Building Construction since July 1, 2012

Building managers for DWR-owned buildings are encouraged to work through DWR's Architecture Section to ensure compliance with Governor's Executive Orders specific to green building designs (per the procedures in WRM 52a). DGS is consulted using their CRUISE request forms for leased buildings used by DWR which are greater than 10,000 square feet.

Planning Narrative for Table 6.1: New Building Construction since July 1, 2012

NO PLANS

LEED for Existing Buildings Operations and Maintenance

Executive Order B-18-12 and the State Administrative Manual (SAM) Chapter 1815.3, all state buildings over 50,000 square feet are required to

complete LEED-EBOM certification and meet an Energy Star rating of 75 to the maximum extent cost effective. LEED EBOM certifications expire after three years and require recertification to ensure that sustainable operations are still in place. DWR does not have any buildings that meet these criteria.

Table 6.2. Large Building LEED Certification for Existing Buildings

Number of Buildings over 50,000 sq. ft. and eligible for LEED EBOM	Number of Building over 50,000 sq. ft. that have achieved LEED EBOM	Percentage of Existing Buildings over 50,000 sq. ft. that have achieved LEED EBOM
0	0	0

Reporting Narrative for Table 6.2: Large Building LEED Certification

NO BUILDINGS EXCEEDING 50,000 SQ. FT.

Planning Narrative for Table 6.2: Large Building LEED Certification

NO BUILDINGS EXCEEDING 50,000 SQ. FT

Indoor Environmental Quality (IEQ)

Daylighting and Views in New Construction

Reporting Narrative for Daylighting and Views in New Construction

The last building constructed by DWR was at its SWP Pearblossom O&M Subcenter (NEW), which earned a LEED Platinum rating. As part of the LEED certification, DWR pursued Daylighting Credit 8.1, which maximized daylighting in the facility.

Planning Narrative for Daylighting and Views in New Construction

NO NEW CONSTRUCTION

CALGreen Tier 1 Indoor Environmental Quality Measures

Reporting Narrative for CALGreen Tier 1 Indoor Environmental Quality Measures

State agencies shall implement mandatory measures and relevant and feasible voluntary measures of the California Green Building Standards Code (CALGreen), Part 11, related to indoor environmental quality (IEQ), that are in effect at the time of new construction or alteration and shall use adhesives, sealants, caulks, paints, coatings, and aerosol paints and coatings that meet the volatile organic compound (VOC) content limits specified in CALGreen.

DWR incorporates the IEQ provisions outlined in the CALGreen Code in the building engineering design and contract specifications. As a result, these provisions are included as inspection acceptance criteria during each phase of the project, including design review, construction, and commissioning, helping to ensure the compliance of the outlined requirements.

Planning Narrative for CALGreen Tier 1 Indoor Environmental Quality Measures

NO PLANS

IEQ — New Buildings and Renovation Measures

Reporting Narrative for IEQ-New Buildings and Renovation Measures

Currently paints, coatings, carpet systems, flooring systems, and other building finishing materials are chosen using third-party certifications as well as understanding the planned utilization considering several criteria. Typically, DWR divisions work with Division of Engineering (DOE) to verify that new design and construction projects meet CALGreen requirements. DOE does not review other smaller renovation projects such as replacing carpeting and windows. DOE relies on DWR employees to know the CALGreen requirements.

A review of current leasing activities revealed that DWR complies with CALGreen requirements. For example, Southern Central Regional Office

relocated in 2022 to North Laverne Avenue in Fresno, and that building complies with CALGreen specifications (where applicable).

Planning Narrative for IEQ-New Buildings and Renovation Measures

One of DWR's challenges is ensuring that all new construction and renovation projects include commissioning of all building systems, including those delivering the required amount of outside air. Since DWR is doing far more renovating and maintenance, HVAC maintenance and operation consists of keeping older systems running. Contracted services, flood maintenance, or SWP Field Division staff perform the actual maintenance, depending on each location’s circumstances. However, DWR’s existing designs generally incorporate ventilation requirements, which include improvement of indoor air quality. One option for DWR is to include outdoor airflow monitoring systems in the design of a building. In addition, under DWR's GHG reduction plan, HVAC, refrigerant, and fire suppression equipment that do not contain chlorofluorocarbons or halons are utilized.

For new construction, the construction inspector can determine compliance by simply checking the installed filters to verify the MERV rating. Indoor environmental quality is assured by such measures as removing absorbent materials from moisture, storing odorous materials off-site, and cleaning ducting on a regular basis. Testing for contaminants or indoor air quality is available to ensure levels do not exceed maximum allowable values. DWR will implement these measures through staff training and follow-up inspections and testing.

Furnishing Standards

Reporting Narrative for Compliance with Furnishing Standards

FURNISHING STANDARDS ACHIEVED

Planning Narrative for Compliance with Furnishing Standards

FURNISHING STANDARDS ACHIEVED

Green Seal Cleaning Products

Reporting Narrative on Using Green Seal Cleaning Products

Procurement staff are directed to use DGS's EPP Best Practices Manual when searching for a commodity. Their table allows staff to find selected services and find out more about which have ecolabel options. The current manual includes suggestions on Green Seal Cleaning products by application. DWR's buyers use the Leverage Procurement Agreement (LPA) contracts for cleaning and janitorial supplies (including but not limited to the LPA contracts that were in effect during the reporting period: Contracts ID 4-23-1033 and ID 4-24-06-1019. DGS encourages all state buyers to use LPA contracts as a first priority because they meet State requirements.

Planning Narrative on Using Green Seal Cleaning Products

GREEN CLEANING PRODUCTS STANDARDS ACHIEVED

Cleaning Procedures — Various Standards

Reporting Narrative for Cleaning Procedures — Various Standards

CLEANING PROCEDURES STANDARDS ACHIEVED

Planning Narrative for Cleaning Procedures — Various Standards

DWR's Business Services Office works with the facility managers for each location to ensure that:

- All vacuum cleaners used in Department facilities achieve the Carpet and Rug Institute Seal of Approval.
- Entryways are maintained as specified in CALGreen Section A5.504.5.1.
- Cleaning procedures meet the Green Seal -42 standard.
- Cleaning procedures follow the Carpet and Rug Institute's Carpet Maintenance Guidelines for Commercial Applications.
- Cleaning procedures meet the California Occupational Safety and Health Administration, General Industry Safety Orders, Title 8, Section 3362.

HVAC Operation Requirements

Reporting Narrative for HVAC Operations

At SWP's Field Divisions the HVACs procedures for operations will be standardized inside of Management Plans, but none were written during this reporting period. Until this task is completed, staff are following task orders issued by the central command to prioritize which systems will need maintenance or adjustments.

For our leased buildings, DWR works with DGS to ensure the leases include text requesting HVAC operations and maintenance support staff health including:

- HVAC systems provide no less than the required minimum outdoor air requirements
- HVAC systems are inspected at least annually, and all HVAC inspections and maintenance are documented in writing.

Planning Narrative for HVAC Operations

NO PROCESS IN PLACE

HVAC Inspection Requirements

Reporting Narrative for HVAC Inspection Requirements

While the December 2023 list of unfinished Maintenance Plans includes standardizing the inspections of building HVAC systems (ducting), HVAC systems (fan), HVAC systems (fan, circuit breaker), and Instrumentation and Controls (temperature sensor). Only a Maintenance Plan for the HVAC systems (fans, circuit breakers) was prioritized for 2024. The Division of O&M will continue to evaluate Maintenance Plans for building HVAC systems, but any final determination will be weighed against over 1,000 other Maintenance Plans in the ranking queue. Until then, SWP Field Divisions are working from Preventative Maintenance Plans.

Once a Maintenance Plan is in place, they will be viewable through a tablet-based system. The inspector can dive deeper into the prior inspections reports and identify trends from past experiences with the equipment and enter their own notes. There is no information from the Division of Flood Operations.

Planning Narrative for HVAC Inspection Requirements

Since early 2024, the SWP's Division of O&M has been creating and/or updating Maintenance Plans using standardized procedures and templates. This series of Project Operations & Maintenance Directives covers the steps and the workflow for approval of any new Maintenance Plan. The Master Maintenance Plan Priority Lists includes a "HVAC Structure" series with line items for ducting, fan, and circuit breaker. This ducting and fan series were not started in 2023 nor 2024 as other priorities took precedent and the number of technical writers is limited. Only the circuit breaker Maintenance Plan was completed in 2023.

Integrated Pest Management (IPM)

Department staff and contracted pest management (CPM) companies are expected to follow an integrated pest management (IPM) strategy that focuses on long-term prevention of pest problems through monitoring for pest presence, improving sanitation, and using physical barriers and other nonchemical practices. If nonchemical practices are ineffective, then Tier 3 pesticides are used, progressing to Tier 2 and then Tier 1 if necessary.

In Spring of 2021, staff from SWP's Division of O&M and Division of Flood Operations participated in the Sustainable Pest Management Work Group. The goal was to develop a roadmap to accelerate a systemwide transition away from high-risk pesticides towards the adoption of safer, sustainable pest control practices in agricultural and urban settings. The work group is comprised of stakeholders from a wide range of interests, including conventional and organic agriculture, environmental justice and tribal leaders, urban communities, the pest management industry, government, and academia.

Table 6.3: Self-Managed Pest Control

DWR's Directorate has provided staff with the policy and procedures for the use of pesticides during ongoing maintenance activities or at restoration projects within its Water Resources Memorandum 10b (September 2018). DWR does not have a formal IPM plan in place for structural pest control activities and the efforts vary among facilities.

The five SWP Field Divisions utilize approved IPM practices before applying pesticide. They follow "Project O&M Instructions" and provide monthly reporting on any activities to SWP's Environmental Assessment Branch

within SWP's Division of O&M. In general, DWR staff applies terrestrial herbicides, rodenticides, and aquatic algaecides/herbicides to SWP infrastructure.

Since early 2024, the SWP Field Divisions have been creating and/or updating Maintenance Plans using standardized procedures and templates. This series of Project Operations & Maintenance Directives covers the steps and the workflow for approval of any new Maintenance Plan. The Master Maintenance Plan Priority Lists includes a "Ground/Site" series with line items for Herbicide. The following were completed in relation to self-managed lands:

- In 2023, SWP staff wrote a land applied herbicide spraying maintenance plan (MP070-11-065). Staff follow safe work practices to apply herbicides according to the manual instructions and recommendations. The staff submit monthly spray reports to the County Agricultural Commissioner based upon County Requirements.

DWR performs self-managed pest control at both its facilities and mission-related infrastructure (Table 6.3).

Table 6.3. Self-Managed Pest Control

Self-Managed Pest Control	Y/N	Is there an IPM plan? (Y/N)
Does your department self-manage pest control for any and or all Department buildings and the associated building landscapes?	Yes	No — Need to Verify (see Chapter 9)
Does your department self-manage pest control for any and or all Department mission-related infrastructure including, but not limited to, highway medians and shoulders, levees, reservoirs, canals, campgrounds and recreation areas?	Yes	No — Need to Verify (see Chapter 9)

Reporting Narrative for Table 6.3: Self-Managed Pest Control

The management of undesirable plant and animal pests is necessary for the orderly O&M of the SWP. Pest management provides for SWP facilities (that are not dams) structural and functional integrity, protection of worker health and safety, and the spread of pests to adjacent agricultural land. Per SWP's Project O&M Instruction No. MM-03, all pest management activities on non-dam locations and the use of pesticides on the SWP conform to the Division's annual Pest Management Plan.

DWR also has designated Pesticide Program Managers who ensure compliance with pesticide laws and regulations and oversees utilization of Best Management Practices and safety procedures. Pesticide program managers consult with and follow the direction of Certified Pest Control Advisors (PCA) when determining the need for and selecting pesticides. For aquatic applications or terrestrial applications in or near sensitive habitats, the PCA and pesticide program manager confer with DWR Environmental Scientists. This team considers a variety of control options that may include mechanical and/or cultural techniques that alone or in combination with pesticide use are the most efficacious and protective of the environment.

Herbicide use by SWP's O&M staff can be variable depending on growth of weeds in certain areas of the SWP as well as the assessment of impacts and risks of not treating an area at that time. For the aquatic algaecides and herbicides, the usage pattern and total amount can vary year-to-year as well, depending upon the severity of algae and weed growth, water demands, and the effectiveness of non-pesticide management methods. O&M staff also apply rodenticides to control the number of burrowing animals which are using sensitive levees and canal walls for shelter. All their work falls under a single Maintenance Plan (MP070-11-065).

DWR also has pest control responsibilities over SWP dams and associated structures. To establish an effective maintenance management plan for SWP dams and appurtenances, staff have developed dam-specific maintenance manuals and assigning roles and responsibilities for continuous enhancement of maintenance management and practices. The Standard Maintenance Plan (number MP070-14-244-524) includes inspections for rodent burrows or activity on embankment crest, as well as the upstream and downstream embankment, groins and riprap slope protections. Staff are instructed to provide details, measurements, and take pictures if observed.

The Division of Flood Operations has pest control responsibilities to maintain flood conveyance capacity over some levees, bypasses, and channels in the State Plan of Flood Control (SPFC). The Central Valley Flood Protection Board, the non-federal sponsor of SPFC, and DWR developed the Central Valley Flood Protection Plan with a supporting Conservation Strategy document that incorporated an invasive species management plan (2012 & 2016) to assist with feasible management of invasive species that include the following invasive plant species: giant reed, tamarisk, red sesbania, and Himalayan blackberry. Between 2016 and 2021, within the SPFC, several O&M projects were undertaken along Cache Creek and Elder Creek and

removed approximately 40 acres of invasive species such as Arundo, infestations. In 2022 Sutter Maintenance Yard removed aquatic invasive plants from 10 miles of the east borrow canal of the Sutter Bypass to improve fish passage conditions and for flood management concerns as well. In addition, the Oroville Wildlife Area Flood Stage Reduction Project eradicated infestations of prioritized and non-prioritized species from 700 acres outside of channel.

Due to the tenacity and threat from these species to flood risk, only the most effective method is chosen. The approximate acreage of self-managed pest control by DWR includes:

- For 2023 — Sacramento Maintenance Yard performed pest control on 54 acres of channels and 72 miles of levee. Sutter Maintenance Yard performed pest control on 2,005 acres of channels and 191 miles of levees.
- For 2024 — Sacramento Maintenance Yard performed pest control on 363 acres of channels and 91 miles of levee. Sutter Maintenance Yard performed pest control on 21 acres of channels and 199 miles of levees.

Figure 6-1. Division of Flood Operations, Sutter Maintenance Yard removing aquatic vegetation from Sutter Bypass (2022)

Note: Additional Photos can be access from DWR's Pixel Site (https://pixel-ca-dwr.photoshelter.com/galleries/C0000ECHdF6vvoag/G0000RQOqa19cp0M/Invasive-Species).

Planning Narrative for Table 6.3 Self-Managed Pest Control

Routine maintenance to manage invasive vegetation impacting flood conveyance is ongoing in all SPFC areas. Invasive aquatic vegetation (water hyacinth and water primrose) is an ongoing challenge and an annual routine maintenance operation has been established to control the infestations. With limited Pest Control Advisors at DWR, there has not been an update to the Land Applied Herbicide Spraying Maintenance Plan to ensure it is an IPM plan. A review will be planned with a completion date of 2027.

Table 6.4: External Pest Control Contracts

In 2023 and 2024, DWR had several external pest control contracts (Table 6.4).

Table 6.4. External Pest Control Contracts

Does your department externally contract pest control for any and or all Department buildings and the associated building landscapes? — Yes			
Building Pest Control Contracts*	External Pest Control Contract (Y/N)	Is there an IPM plan? (Y/N)	Contract Renewal Date
Marys Pest Control (2024)	Y	Unk	Dec 2027
Take Care Termite (2024)	Y	No	Sept 2027
Advanced Integrated Pest Mgmt (2024)	Y	Unk	March 2027
Compass Pest Control (2023)	Y	No	Oct 2026

Does your department externally contract pest control for any and or all Department mission-related infrastructure including, but not limited to, highway medians and shoulders, levees, reservoirs, canals, campgrounds and recreation areas? — Yes			
Infrastructure Pest Control Contracts	External Pest Control Contract (Y/N)	Is there an IPM plan? (Y/N)	Contract Renewal Date
ESA and Sweetwater Authority (2023)	Yes	Unk	Q4 2027
CA Dept of Fish and Wildlife (2022) – Oroville Wildlife Area	Yes	Unk	June 30,2024
CA Dept. of Parks and Recreation (2025) – Tidal Wetlands in Delta	Yes	Unk	June 30, 2025
USDA APHIS	Yes	Unk	July 2022
Ca. Conservation Corps	Yes	Unk	Nov. 2025
Ridx Pest Control	Yes	Unk	Oct. 2026

* Contract states only the Contractor must keep informed of all existing and future State and Federal laws.

Reporting Narrative for Table 6.4: Pest Management Contracts

Department staff have been placing a term into each contract which states, "All work must be performed in accordance with the State of California Department of Consumer Affairs Structural Pest Control Act," which has parallel language to what is found in SAM. For other DWR projects, restoration projects, and levee maintenance, DWR staff utilize a written herbicide/pesticide program based on the Department's pesticide regulation and best management practices. DWR has no plans to change current procedures.

Planning Narrative for Table 6.4 Pest Management Contracts

NO PLANS

Table 6.5: Top 5 Department Pests Requiring Pest Control

One of DWR's Environmental Scientists has determined there are five top pests that require pest control (see Table 6.5).

Table 6.5. Top 5 Department Pests Requiring Pest Control

Pest Name (common)	Pest Control Method(s)
Rodents	Rodenticides, riprap, burrow surveying and filling, grading, habitat modifications, rat traps (around buildings)
Terrestrial weeds	Herbicides, mowing, goat grazing, controlled burns, grading
Algae	Algaecides, mechanical removal, monitoring, operational changes, source water blending
Golden and Quagga Mussels	Manual removal, operational changes, anti-fouling coatings, hot water, UV light, chlorine, copper sulfate, desiccation, monitoring
Aquatic weeds	Aquatic herbicides, mechanical removal, monitoring

Reporting Narrative for Table 6.5: Top 5 Department Pests Requiring Pest Control

DWR applies pre-emergent and emergent herbicides to SWP lands to control nuisance vegetation on dams, levees, and aqueduct banks, under transmission lines and power stations, and around other critical SWP infrastructure to aid in safety inspections and prevent wildfires.

Rodenticides are applied seasonally to minimize rodent burrows to protect the structural integrity of dams, levees, and other critical infrastructure.

Aquatic algaecides or herbicides are applied to SWP-owned aqueducts, forebays, and reservoirs, as needed, to control algal blooms and aquatic weeds. Both algae and aquatic weeds pose several serious water quality and water supply problems in the SWP and negatively impact water conveyance for municipal, irrigation, and industrial purposes. It also impacts recreation at the various facilities. Issues include:

- The proliferation of cyanobacteria (blue-green algae), which can produce compounds that cause unpleasant tastes and odors and/or the production of toxins that are potentially harmful to fish, wildlife, and human health. Both of which impact drinking water and recreational uses of SWP water.

- The proliferation of aquatic weeds and filamentous algae, which negatively impact the conveyance of water supplies through the reduction of flow in canals and pipelines as well as the clogging of water intakes and pumping plants.

Golden and quagga mussels attach to SWP infrastructure and can clog small-diameter piping and screens. Mussels will be controlled with a combination of methods such as hot water, power washing, cycling of gates and valves, anti-fouling coatings, UV light, chlorine, and copper sulfate. The method used for control will depend on the type of infrastructure, how vulnerable it is to mussel fouling, and the accessibility of the location with infestations.

The selection of a specific pesticide is based on the target species, life stage, density, historical growth patterns, efficacy, time of year, life stage, environmental setting, adjacent land uses, water use restrictions and contact time (for aquatic treatments), and goal of the treatment. All these factors are considered by the PCA prior to making a recommendation for an application.

Alternative control techniques are an integral component in DWR's multi-pronged approach to managing terrestrial and aquatic pests. Where feasible, DWR uses alternative methods to control vegetation and rodent burrows such as mowing, scraping, hardscapes, crushed aggregate base rock, and desiccation. For aquatic environments, DWR has installed and routinely maintains physical barriers, such as floating debris booms, aquatic weed trash rakes, trash racks and traveling screens, in SWP aqueducts, forebays,

afterbays and reservoirs to limit the impact of aquatic weeds on water intakes, pumping plants, hydropower plants, siphons, pipelines, and other water delivery structures. In some forebays, DWR uses aquatic weed harvesters to manage aquatic weed stands but with limited effectiveness. DWR manages the impacts of algal blooms in the SWP through a comprehensive water quality program, utilizing source water blending techniques to preserve municipal water supplies, periodically dredging concrete-lined reservoirs to reduce nutrient loads, and issuing recreational health advisories at lakes experiencing harmful algal blooms.

Figure 6-2. Staff Inspecting Grates at Skinner Fish Facility for Golden Mussels Prior to Cleaning

Notes: Additional Photos can be access from DWR's Pixel Site (https://pixel-ca-dwr.photoshelter.com/galleries/C0000ECHdF6vvoag/G0000RQOqa19cp0M/Invasive-Species).

Fossil Fuel Landscaping Equipment Replacement with Low Emitting Landscaping Equipment

Reporting Narrative for Replacing Fossil Fuel Landscaping Equipment

SWP Oroville Field Division contracts out landscape services for work around the building facilities. The current contract expires in 2026 and does not include specific language for use of battery or electric equipment. New language will be incorporated into the future contracts requiring the use of

only non-fossil fuel equipment. Oroville staff are in the process of testing battery operated equipment for smaller off-site operations. So far, the limited battery life and long recharge has led to undesirable staff downtime for the larger equipment. In 2023, this Division purchased one fossil-fuel powered blower and two fossil-fuel powered chainsaws.

SWP Delta Field Division contracts out landscape services for work around the building facilities. The current contract expires in 2026 and does not include specific language for use of battery or electric equipment. New language will be incorporated into the future contracts requiring the use of only non-fossil fuel equipment. Staff are replacing smaller fossil fuel hand-held equipment for offsite aqueduct and offsite control building maintenance as the older equipment reaches maturity and viable battery-operated equipment becomes available. In 2023, this Division purchased one fossil-fueled chainsaw.

SWP San Joaquin Field Division contracts out landscape services for work around the building facilities. The current contract expires in 2025 and does not include specific language for use of battery or electric equipment. New language will be incorporated into the future contracts requiring the use of only non-fossil fuel equipment. Staff are replacing smaller fossil fuel hand-held equipment for offsite aqueduct and offsite control building maintenance as the older equipment reaches maturity and viable battery-operated equipment becomes available.

SWP San Luis Field Division contracts out landscape services for work around the building facilities. The current contract expires in 2025 and does not include specific language for use of battery or electric equipment. New language will be incorporated into the future contracts requiring the use of only non-fossil fuel equipment. Staff are replacing smaller fossil fuel hand-held equipment for offsite aqueduct and offsite control building maintenance as the older equipment reaches maturity and viable battery-operated equipment becomes available. They purchased two battery powered leaf blowers in 2024 and one gas-powered one in 2023.

SWP Southern Field Division contracts out landscape services for work around the building facilities. The current contract expires in 2026 and does not include specific language for use of battery or electric equipment. New language will be incorporated into the future contracts requiring the use of only non-fossil fuel equipment. Staff are replacing smaller fossil fuel hand-held equipment for offsite aqueduct and offsite control building maintenance as the older equipment reaches maturity and viable battery-operated

equipment becomes available. In 2023, this Division purchased one battery powered chainsaw.

Division of Regional Assistance Offices

The privately leased buildings include landscape services provided by the building owner through their management company. These locations also have field staff who periodically go to the field to perform monitoring in areas that are not associated with the buildings, and as such this work does not meet the definition used inside of SAM 1821.2 for “landscaping.” During their trips, Department staff may take along a piece of equipment to clear away debris and overgrowth. Currently, most of these hand-held pieces are powered by combustion engines. Depending on availability, these may or may not be replaced with battery-powered equipment in the future.

Division of Flood Operations

Sutter Maintenance Yard staff are actively replacing fossil fuel powered tools with battery powered equipment. They have replaced 75 percent of tools such as chainsaws, concrete saws, and drills. Sacramento Maintenance Yard has replaced 80 percent of similar types of tools where possible.

Planning Narrative for Replacing Fossil Fuel Landscaping Equipment

NO PLANS

The SWP’s Division of O&M published a comprehensive “Maintenance Management Strategy” in September 2023. This plan improves staff’s approach to maintenance and aligns their work with Asset Management plans. Hand-held assets used in landscaping maintenance that are non-critical are placed in the “run to fail” category. In such cases, mitigation strategies (like repairs that take less than 15 minutes) are developed when a failure occurs, but no planning is made towards replacement at a larger level.

Location Efficiency

Most of DWR’s owned buildings are close to or adjacent to SWP infrastructure (dams, pump stations, and spillways), and they have an average Smart Score rating of 13, with the highest score being two visitors centers which are next to reservoirs created by SWP dams.

The buildings that are leased from private owners tend to be long-term rental for our regional offices, which handle many of the grants and local water monitoring tasks for the Department. The average Smart Location score for the leased facilities varied from a high of 91 for a training center in downtown Sacramento, to a low of 1 in a remote warehouse location near a critical river crossing.

DGS' Real Estate Leasing and Planning Section (RELPS) gives all clients, including DWR, the possible sites found in the market for new space lease facilities. They include the building location efficiency score in the site search packet. This gives the client the ability to compare it to their current score and others they will be looking at in the marketplace. This becomes a factor and helps DWR make appropriate decisions on what is the best space for our needs.

Smart Location Score for New Leases after January 1, 2020

DWR has used DGS to find two locations in 2023 and 2024 (Table 6.6) and was supplied their Smart Location score (Table 6.6).

Table 6.6. Smart Location Score for New Leases after January 1, 2022

Facility name	Smart Location Calculator Score
Gold Center Dr. (Sacramento) – Office	9
Hwy 160 – for the purposes of housing our mobile river barrier	1
Average	5
Baseline	23.4
% change from Baseline	-79%

Reporting Narrative for Table 6.6: Smart Location Score after January 1, 2020

DWR has new leased buildings which have a lower average score than the buildings used for a "baseline." Each of these two new locations since 2022 had a specific purpose in mind, and the "operational needs" described in the CRUISE request would have eliminated most buildings which were in a downtown area or that were considered bikeable and transit-accessible worksites. Because DWR's remote locations often store boats and a large number of State fleet vehicles, the use of downtown locations is discouraged because of the threats of crime. We are unlikely to meet the 10 percent target in any future year.

Planning Narrative for Table 6.6: Smart Location Score after January 1, 2020

NO PLANS

Current (non-expired) Leases Prior to 2020 — Lowest Smart Location Score

DWR has leased facilities to house both staff and materials that support operations (Table 6.7).

Table 6.7. Current (non-expired) Leases Prior to 2020 — Lowest Smart Location Score

Facility name	Smart Location Calculator Score	Lease Renewal Date
N Laverne Ave (Fresno)	19	June 2034
River Park Dr. (Sacramento)	15	Dec. 2030
Gateway Oaks (Sacramento)	15	Nov. 2030
JOC Annex (Sacramento)	14	Dec. 2026*
JOC (Sacramento)	10	Dec. 2032
Gold Center Dr. (Sacramento)	9	June 2035
Howe Ave. (Sacramento)	8	March 2028
Industrial Boulevard (West Sacramento)	6	June 2033
N Market Boulevard (Sacramento)	6	Dec. 2031

Notes: * In process of negotiating a renewal.

Reporting Narrative on Table 6.7: Current (non-expired) Leases Prior to 2020 — Lowest Smart Location Score

DWR has several warehouses that score lower than 50 points on the SmartScore scale but have limited staffing (<10). The facilities listed in Table 6.7are those with higher staffing levels but are in locations with less than 20 points on the Smart Location scoring chart.

Planning Narrative on Table 6.7: Current (non-expired) Leases Prior to 2020 — Lowest Smart Location Score

NO PLANS

CHAPTER 7 — WASTE MANAGEMENT AND RECYCLING

Department Mission and Waste Management and Recycling

DWR republished its Strategic Plan in 2023. Across communication platforms, DWR is committed to providing timely, accurate, and accessible information to the public, partners, and media. We have completed all recycling and waste management-related reporting for 2023 and 2024.

Waste and Recycling Programs

Designated Waste and Recycle Coordinator and Program Basics

California's Department of Resources Recycling and Recovery (Cal Recycle) brings together the State's recycling and waste management programs. State agencies must report their waste and recycling efforts by May 1 of each year, delineating the activities conducted during the prior calendar year.

Reporting Narrative on Designated Waste and Recycle Coordinator and Program Basics

DWR has a Recycling Coordinator who reports our annual statistics to CalRecycle. Having clear signage and container labeling encourages proper sorting and minimizes contamination. DWR has labeled containers inside State-owned and DGS-leased buildings. At some of the privately leased buildings (such as the South Central Region Office), the private owner is not providing recycling bins because the community’s main waste provider does not use a multi-bin system, or the provider does not offer recycling services. At the SWP Field Divisions, each site has labeled dumpsters for collection of recycling materials from multiple buildings. We do not have an education and outreach program around recycling.

Planning Narrative on Designated Waste and Recycle Coordinator and Program Basics

The Sustainability Coordinator shall seek out a student assistant who can engage staff in informal training on recycling. When a privately leased building is in a community without a multi-bin recycling program, there is little staff can do to contribute to the State's goals.

SARC Report

DWR disposal rate has increased compared to previous reporting year, with per capita waste returning to Pre-COVID levels 2–3 pounds per year (see table 7.1)

Table 7.1. State Agency Reporting Center (SARC) Report on Total Waste per Capita

Per Capita Disposal Rate	2023	2024	Total Waste 2023	Total Waste 2024	3/2024
	2.29	1.33	1353	1281	-5%

Reporting Narrative on Table 7.1: SARC Report on Total Waste per Capita

With the assumption that 45.55 percent of employees are in the office, and a workforce of 3,522, DWR had +72.2 percent increase in waste per capita in 2023 and 2024 in comparison to 2022. DWR calculates waste disposal by estimation weight-to-volume conversions when weight tickets are not provided by the hauler. DWR calculates waste disposal by estimation weight-to-volume conversions.

Planning Narrative on Table 7.1: SARC Report on Total Waste per Capita

NO PLANS

Recycling Program and Practices

Reporting Narrative on Recycling Program and Practices

The California Integrated Waste Management Act (Assembly Bill 939, Sher, Chapter 1095, Statutes of 1989 as amended) established the solid waste

management hierarchy. Source reduction is at the top of the State's waste management hierarchy; recycling and composting is next, followed last by environmentally safe disposal. CalRecycle administers the State's recycling and waste management programs.

Planning Narrative on Recycling Program and Practices

DWR has a Recycling Coordinator who reports our annual statistics to CalRecycle. Having clear signage and container labeling encourages proper sorting and minimizes contamination. DWR has labeled containers inside State-owned and DGS-leased buildings. At some of the privately leased buildings (such as the South Central Region Office), the private owner is not providing recycling bins because the community's main waste provider does not use a multi-bin system, or the provider does not offer recycling services. At the SWP Field Divisions, each site has labeled dumpsters for collection of recycling materials from multiple buildings. We do not have an education and outreach program around recycling.

Organics Recycling

Reporting Narrative on Organic Recycling Program and Practices

State agencies must abide by AB1826, which requires that State agencies arrange for recycling services for the following types of organic material:

- Food waste.
- Green waste.
- Landscape and pruning waste.
- Nonhazardous wood waste.
- Food-soiled paper.

DWR does not provide janitorial or waste removal staff or services for DGS-owned facilities nor private-leased facilities. Within all the privately leased facilities, these services are included in the lease agreement which is negotiated by DGS Real Estate staff. In DGS-leased buildings, food waste bins are supposed to be included in break rooms and cafeterias. In the privately leased buildings that DWR occupies, this service is not typically part of the lease since many were negotiated several years ago.

The following privately leased locations reported they had no access to organic waste recycling containers in breakrooms: Gateway Oaks, Joint Operations Center (JOC), JOC Annex, Industrial Boulevard, North Market Boulevard, and Howe Avenue. The following properties owned by DGS and leased to DWR reported no way to access organic waste recycling containers in breakrooms: 2200 X St and 909 S St.

At some SWP Field Divisions, the facility managers mentioned in their 2025 reporting that weed removal, landscape and pruning waste, and hazard trees are collected and diverted to on-site compositing. In other cases, the vegetation is mulched and composted at the locations where it is cut. For example, at SWP Oroville O&M Center (in 2023), they chipped wood from a fuel reduction program and placed it as mulch over the landscaped areas (approximately 1,300 tons). In all DWR service contracts which include waste removal, it is required that the contractor report the method of waste removal and the weight of materials being removed. The following State-owned locations reported their contractor did not provide them with organic waste recycling containers in breakrooms and therefore they have no way to adhere to the State requirement for organic waste recycling: SWP Pearblossom O&M Subcenter, SWP Delta O&M Center, and Sutter Maintenance Yard.

Planning Narrative on Organic Recycling Program and Practices

Until renewal periods when DGS Real Estate staff could negotiate a change in DWR's private leases, there is very little organic waste diversion at DWR's privately leased facilities. DWR could place waste bins with signage throughout privately leased buildings identifying types of waste (food, paper, trash) to be disposed, but only once the building owner indicates they will be selectively picking up organics.

Edible Food Recover Program

DWR does not operate cafeterias (see Table 7.2).

Table 7.2. Edible Food Recovery Program Elements

Building Name	Cafeteria >5,000 sq. ft. (Enter sq. ft.)	Cafeteria +250 Seats (Enter number of seats)	Cafeteria Open in 2023?	Cafeteria Open in 2024?	Food Recovery Agreement (Yes, No or Unknown)
NO EDIBLE FOOD RECOVERY PROGRAM REQUIRED					

Reporting Narrative on Table 7.2: Edible Food Recovery Program Elements

NO EDIBLE FOOD RECOVERY PROGRAM REQUIRED

Planning Narrative on Table 7.2: Edible Food Recovery Program

NO EDIBLE FOOD RECOVERY PROGRAM REQUIRED

Food Service Items Program

Reporting Narrative on Food Service Items Program

DWR does not provide food service (see Table 7.3).

Table 7.3. Food Service Concessionaire Items Program Elements

Building Name	Prepared Food Service Operations Type	Food Service Packaging Meets Requirements	Process in Place for selecting Food Services that meet Packaging Requirements
NO FOOD SERVICES			

Reporting Narrative on Table 7.3: Food Service Items Program

NO FOOD SERVICES

Planning Narrative on Table 7.3: Food Service Items Program

NO FOOD SERVICES

Hazardous Waste Materials

Reporting on Hazardous Waste Materials

For DWR sites in Sacramento, the DWR Central Warehouse facilitates disposal of batteries. DWR's Central Warehouse maintains a contract for the removal of batteries (which are considered hazardous waste). Proper battery disposal is listed in the procedures below. In an effort to make this as simple and safe as possible, we are asking that ALL batteries be taped prior to putting them in the containers.

The Division of Business Services, Facilities and Property Branch, uses a DGS-approved recycler for surplus IT equipment. For privately leased

buildings, DWR Procurement Branch has created “Non-IT Service” contracts for items such as antifreeze, oil, batteries, biowaste, asbestos, and others that require the contractor to:

“Assume ownership and responsibility of all materials collected and waste generated by their operation and be held responsible to ensure that all services will be performed in accordance with all applicable State, federal, and local regulations to include proper identification, handling, storage, and disposition of all solid and hazardous wastes."

At construction sites, the SWP’s Division of Engineering has provided specific terms in the contract specifications around hazardous material disposal. Contractors are required to provide a comprehensive plan plus routine reports on the amount of hazardous waste removed from construction sites. None of these inventories are collected by DWR since we are not considered the waste handler in these cases.

Table 7.4 shows the amount of hazardous waste materials removed in 2024 from State-owned facilities, such as the five SWP O&M Centers and the two Division of Flood Operations’ subcenters. These locations follow WRM 64: “Maintenance of Records Concerning Generation, Remediation, Transport and Disposal of Hazardous Materials” (published in 2001). Each division/district/office/field division is responsible for dealing with hazardous materials and must maintain complete and accurate records of their activities and those of contractors hired to handle these materials.

Table 7.4. Hazardous Waste Materials

Department-Wide Hazardous Material Name	Department Total Hazardous Material Amount (lbs.)
Used Oil/Antifreeze	37,380
Paint	10,640
Other (Stripping products, Oil Filters, Paint Thinner, etc.)	73,360

Reporting Narrative for Table 7.4: Hazardous Waste Materials

Proper handling of Hazardous Materials ranging from silica to lead is outlined in DWR’s “Code of Safe Work Practices.” To ensure that all users understand the health risks and hazards associated with various products, a hazard warning and labeling system ensures labels are placed on containers to convey any health and/or physical hazards of the substance(s). Each SWP

Field Division appoints a hazmat coordinator to oversee compliance with hazmat laws and regulations.

DWR performs Annual Safety Inspections at the five SWP Field Divisions. When a problem with hazardous waste is identified, the item is tracked inside of an internal database which leverages SharePoint. The database fields include a description of the action, responsible party, deliverables, and the priority for the action. DWR now has “BinderWorks” software at every SWP Field Division to enable users to track down Safety Data Sheets (SDS) for any product on-site. Posters are found throughout the O&M Centers describing the steps to access the safety data sheets with the SDS BinderWorks mobile application.

Planning Narrative for Table 7.4: Hazardous Waste Materials

DWR will continue to update each SWP’s Field Division’s “Hazardous Materials Business Plan” and promote employee awareness through formal trainings and Safety Moments. DWR shall maintain a list of all hazardous substances stored within all DWR facilities and shall make the list available to all employees. The list shall be reviewed annually and be updated whenever new products are introduced. SDS files shall be kept current and replaced with updates as they become available.

In early 2025, the SWP’s Division of O&M updated their Directive around Safety and Training Standards around Worker Safety and Hazardous materials management (ST-25). The Directive applies to the entire Division and documents DWR’s commitment to the protection of the environment and compliance with hazardous materials regulation. This Directive identifies that some items, such as the worker training plans are in place and functional. It also noted that a new Hazardous Materials Management Manual and Emergency Action Plan are under preparation by the Environmental Assessment Branch and Civil Maintenance Branch, respectively.

Universal Waste Program

Reporting on Department-Wide Universal Waste Materials

DWR does have contracts for collection of Universal Waste Materials (Table 7.5).

Table 7.5. Reporting on Department-Wide Universal Waste Materials

Category	Universal Waste Contract in Place YES or NO
Electronic Waste	Yes, individual contracts are specific to each Field Divisions — "E cycle Pros" and "Surplus Salvage" were noted as contractors.
Batteries	Yes, individual contracts are specific to each Field Divisions — "Hust Bros." was noted as a contractor.
CRTS	NO DATA
CRT glass	NO DATA
Lamps	Yes, individual contracts are specific to each Field Divisions — "Industrial Waste Utilization" was noted as a contractor.
Mercury Wastes	NO DATA
Non-empty aerosol cans	NO DATA
PV modules	NO DATA

Reporting Narrative for Table 7.5: Department-Wide Universal Waste Materials

All of the SWP Field Divisions have a Hazardous Waste Materials Coordinator who follows the individual "Hazardous Material Program Guidance Document." Under this guidance, containers holding universal waste shall be labeled and include the following information: (a) the name and address of the facility producing the waste, (b) the contents or type of universal waste, and (c) the date of accumulation. Disposal methods will vary, with some SWP Field Divisions transporting the waste to a proper disposal location using State vehicles, and some may be using contractors to come and pick up the waste.

DWR performs annual safety inspections at the five SWP Field Divisions. When a problem with a universal waste is identified, the items are tracked inside of an internal database which leverages SharePoint. The database fields include a description of the action, responsible party, deliverables, and the priority for the action.

Planning Narrative for Table 7.5: Department-Wide Universal Waste Materials

Each division/district/office/field division is aware of its responsibilities related to labeling and removal of Universal Waste Materials from State-owned locations. At construction sites supervised by Division of Engineering, DWR staff will continue to ensure that contractors are following the

construction specifications related to Universal Waste. No changes to current procedures are expected in the coming years.

Material Exchange Programs

Reporting Narrative on Department-Wide Material Exchange

These programs promote the exchange and reuse of unwanted or surplus materials from any department or division. The exchange of surplus materials reduces the cost of materials/products for the receiving agency and results in the conservation of energy, raw resources, landfill space, and the reduction of greenhouse gas emissions, purchasing costs, and disposal costs.

The BSO has supported efforts to have IT and non-IT equipment recycled or repurposed rather than thrown away. The DWR Green Pastures Re-Use Room is an office materials re-use program managed by BSO and is open to all DWR employees. The re-use room offers free gently used or surplus materials. The room reduces Departmental costs for new supplies and expands the opportunity for increased use of our used office supplies.

Planning Narrative on Department-Wide Material Exchange

Waste Prevention Program

Reporting Narrative on Department-Wide Waste Prevention

The Department shall develop and adopt an internal integrated waste management program to be updated every five years (Public Resources Code §42920). Authors for this report were unable to find a Department-wide program to prevent waste.

Planning Narrative on Department-Wide Waste Prevention

The Department will request examples of a program guide from staff at CalRecycle. Based on the complexity of the work, either a student assistant or a permanent staff member could be asked to write a program guide by 2026.

Reuse Program

Reporting Narrative for Department-Wide Material Reuse

DWR's facilities management has supported efforts to have Information Technology (IT) and non-IT equipment recycled or repurposed rather than thrown away. They continue to seek out opportunities to reduce waste by donating materials to local schools and sending usable items to the DGS warehouse for repurposing or sale. They also take advantage of the recycling contract maintained by DGS for IT equipment so that it does not end up in a landfill.

Planning Narrative for Department-Wide Material Reuse

The Department will request examples of a program guide from staff at CalRecycle. Based on the complexity of the work, either a student assistant or a permanent staff member will be asked to write a program guide by 2026.

Employee Waste and Recycling Training and Education

Reporting Narrative for Employee Waste and Recycle Training and Education

Pursuant to AB 2812 (Gordon, Chapter 530, Statutes of 2016), each State department is required to provide training and education to staff. The bill requires, at least once per year, each covered State agency and large State facility to review the adequacy and condition of receptacles for recyclable material and of associated signage, education, and staffing.

DWR's Recycling Coordinator reviews the adequacy and condition of receptacles for recyclable material and of associated signage, education, and staffing at 715 P St.

Planning Narrative for Employee Waste and Recycle Training and Education

The Department will request examples of a program guide from staff at CalRecycle. Based on the complexity of the work, either a student assistant or a permanent staff member will be asked to write a program guide by 2026.

CHAPTER 8 — PROCUREMENT

Department Mission and Procurement

DWR's "sustainable Business Operations Policy" was embedded into the Departmentwide Administrative Manual in 2013. The Policy assists all levels to comply with State law, Executive Orders, and Management Memos related to Environmentally Preferred Purchasing (EPP) and waste management.

Because DWR has nearly continual construction on both SWP and SPFC projects, our contract terms contain guidance for our contractors on Buy Clean California Act limits and waste diversion goals that match the most current CalGreen Building Code.

DWR republished its Strategic Plan in 2023. Across communication platforms, DWR is committed to providing timely, accurate, and accessible information to the public, partners, and media. We have completed all procurement-related reporting for 2023 and 2024 to CalRecycle which publishes the numbers within Annual Reports.

Reporting Narrative for Measure and Report Progress on EPP Spend

The environmental impact of the goods we buy is often larger than the impact of our own Department's operations. DWR is committed to reducing the environmental impact of the goods and services it purchases.

Compliance with the State's goals for purchasing recycled content goods, reducing waste, recycling, and moving toward a more sustainable existence is an established ongoing priority for the Department. Policies in support of these initiatives are included in the Department Administrative Manual, and DWR provides a training manual for the Buy Recycled Program to all buyers. Periodic reviews of all Purchasing Services guidelines and materials ensure that they are current.

Category ratios continue to fluctuate because of the Department's ever-changing needs, and PCRC products with data available for reporting are difficult to identify because suppliers and manufacturers often indicate "unknown" when asked for certification status.

DWR includes Exhibit C — General Terms and Conditions (GTC 04/2017) in all service contracts. Paragraph 9 of GTC 04/2017 reads as follows "9. RECYCLING CERTIFICATION: The Contractor shall certify in writing under penalty of perjury, the minimum, if not exact, percentage of post-consumer material as defined in the Public Contract Code Section 12200, in products, materials, goods, or supplies offered or sold to the State regardless of whether the product meets the requirements of Public Contract Code Section 12209. With respect to printer or duplication cartridges that comply with the requirements of Section 12156(e), the certification required by this subdivision shall specify that the cartridges so comply" (Pub. Contract Code Section12205).

Additionally, DWR includes Exhibit D — Special Terms and Conditions for Department of Water Resources (Exhibit D) in service contracts, when applicable. Paragraph 8 of Exhibit D reads as follows:

"8. REPORT OF RECYCLED CONTENT CERTIFICATION: In Accordance with Public Contract Code Sections 12200–122217, et seq. and 12153–12156, et seq., the contractor must complete and return the form DWR 9557 Recycled Content Certification, for each required product to the Department at the conclusion of services specified in this contract. Form DWR 9557 is attached to this Exhibit and made part of this contract by this reference."

DWR also includes DWR 9557, Recycled Content Certification form in service contracts as Exhibit D, Attachment 1. Per Paragraph 8, contractors are required to submit a completed DWR 9557 directly to the appropriate DWR contract manager.

Planning Narrative for Measure and Report Progress on EPP Spend

Periodic reviews of all Purchasing Services guidelines and materials ensure that they are current. DWR is working to ensure goods and services bought meet the current DGS purchasing standards and specifications available from the Department of General Services Buying Green website. The Department will continue to follow the requirements listed above. Additionally, DWR will revise its contract provisions to ensure compliance with all elements of SCM Volume 1, sections 3.34 and 7.70.

DWR's efforts to measure, monitor, report, and oversee progress to increase EPP include the following:

- DWR recently implemented a new data analytics system that can analyze purchasing data to identify areas where improvement may be possible.

- Strengthen efforts to gather certification information for commodity purchases. In addition to the certification form being included with all solicitations for price quotes, buyers are encouraged to search the manufacturer's website and seek out information from other buyers to address situations in which the vendor does not provide certification or certifies "unknown" content.

- Contractors are required to submit a completed DWR 9557 for each required product at the conclusion of services. Contractors return this form directly to the DWR Recycling Coordinator. DWR is evaluating these forms to redefine existing processes.

Goods and Services Categories with the Greatest Potential to Green

Reporting on Goods and Services Categories with the Greatest Potential to Green

The two goods that are easiest to buy with recycled content are paper and plastics (Table 8.1). Cleaning products that are "green seal" are also easier to find than ever since plant-based products are showing good cleaning properties. DWR uses a separate financial planning from Fi$CAL that does not capture the EPP potential of any particular line item. When DWR's data is uploaded to Fi$CAL through the State Contracts portal, the assignment of "EPP Potential" is made solely based on whether the provider has a Leveraged Procurement Agreement on not, and not on the actual EPP potential. So in some cases, the same product and related codes are entered into SAP by our buyers and then uploaded to Fi$CAL, but the default system is coding them differently based on whether the buyer is using an existing LPA or not. This makes investigations into EPP spending by DWR difficult to find and classify for a Roadmap. Staff did not attempt to fix the inconsistent coding by Fi$CAL for this Roadmap, so we are unable to show any "Percent EPP spend" less than 100%.

Table 8.1. Goods and Services Categories with the Greatest Potential to Green

Good or Service	2023 & 2024 Total Spend ($)	2023 & 2024 Percent EPP Spend (%)	EPP Target (%)
Paper Products			
Corrugated boxes and pads	$1,488	Data shows 100%S	100%
Paper Towels and Rags	$130,979	Variance may be due to contractor's name and not product selection	75%
Plastic Products			
Plastic Trash Can Liners	$90,628	Variance may be due to contractor's name and not product selection	75%
Cleaning Products	$12,378	Variance may be due to contractor's name and not product selection	75%

Reporting Narrative on Table 8.1: Goods and Services with the Greatest Potential to Green

Policies in support of green initiatives are included in the Department Administrative Manual Section 8000, and a training manual for DWR's Buy Recycled Program is provided to all buyers. All Purchasing Services guidelines and materials are periodically reviewed and updated to ensure that they are current. Newsletters by the Sustainability Coordinator have emphasized this topic (Chapter 10).

Planning Narrative on Table 8.1: Goods and Services with the Greatest Potential to Green

DGS notifies buyers of mandatory contracts for materials often purchased for an office space (like paper towels and boxes). DWR also includes DWR 9557, Recycled Content Certification form in goods contracts as Exhibit D, Attachment 1. Per Paragraph 8, contractors are required to submit a completed DWR 9557 directly to the appropriate DWR contract manager. DWR will continue to strive for more accuracy with the data entry.

Reporting Narrative for EPP BMPS

Paint (i.e., master painters institute certified paint and recycled paint)

Requestor has specifications typically listed in the requisition long text or uses a material master. Edward Dunn is DWR's vendor for paint in a couple of SWP Field Divisions. Their product conformance table and information for paint is available on the main website for Dunn-Edwards paint (https://www.dunnedwards.com/wp-content/uploads/2021/04/DE-product-conformance-table.pdf). DWR's recently released EPP Best Practices table suggests the use of Green Seal 43 Recycled Latex Paint. In December 2023 this standard was withdrawn due to lack of market demand.

IT goods (energy star rated computers, monitors, and televisions meet DGS-52161505 Purchasing Standard or meet current specifications of Statewide contracts)

- DWR uses DGS LPA's when purchasing IT goods. DGS obtains the Certification for EPP compliance. Equipment purchased outside of contracts require a DGS exemption.
- Mandatory contracts account for nearly all (80–90 percent) of DWR's IT items. As a result, those devices are EPEAT and Energy Star compliant.
- For items not acquired from Statewide contracts, new solicitations include the EPP requirement. DWR's recently released EPP Best Practices table suggests the use of EPEAT Silver or better for IT goods.

Janitorial supplies, paper products (i.e., SABRC compliant and DGS_141117A Purchasing Standard Compliant)

- DWR leases the majority of its properties from DGS and private property management entities required to meet DGS property lease standards. Lessors are responsible for providing janitorial services and supplies used to service the facilities and meet this standard for service.
- Janitorial Supplies, paper products — Tissue purchased is 39 percent PCRC, paper towels are 100 percent PCRC, and toilet tissue jumbo roll are 40 percent PCRC.

- Janitorial Products and Cleaners — Whenever possible, DWR purchases janitorial products with the “Green” filter from Grainger, etc. Mostly “SimplGreen” line products.

- DWR’s recently released EPP Best Practices table suggests the use of Green Seel cleaners for many categories (bathrooms, floors, dish cleaning, etc.) because they are made with low or non-toxic ingredients.

Office equipment (i.e., EPEAT compliant and EnergyStar rated printers and copiers, and DGS_432121A Purchasing Standard compliant for high-end multifunctional devices)

- DWR has received rebates from Grainger/PG&E for buying energy reducing light bulbs. Most lighting purchased is LED which is energy star green certified.

- Office equipment (i.e., EPEAT compliant and EnergyStar rated printers and copiers, and DGS_432121A Purchasing Standard compliant for high-end multifunctional devices).

- DWR uses DGS LPA’s when purchasing office equipment. DGS obtains the Certification for EPP compliance. Equipment purchased outside of contract requires a DGS exemption.

- Mandatory contracts account for nearly all (90 percent) of DWR’s IT office equipment. As a result, those devices are EPEAT and Energy Star compliant. For items not acquired from Statewide contracts, new solicitations include the EPP requirement.

Paper products (i.e., Sustainable Forestry Initiative certified, SABRC compliant copy paper, DGS-441200-A Purchasing Standard compliant)

- Copy paper is purchased through the DGS contract and all copy paper is 30 percent post-consumer recyclable. For all other paper not purchased via the contract, it is 30 percent PCRC.

- DWR’s recently released EPP Best Practices table suggests the use of Forest Stewardship Council ratings for paper products.

- Corrugated boxes are being purchased with EPP standards.

Remanufactured toner cartridges (available from PIA, Statewide contract ID/Number: 1-24-75-60)

Toner cartridges use mandatory contract 1-24-75-60.

Traffic Control (cones, delineators, and crash cushions)

- Some are made with recycled plastics and metal. DWR's recently released EPP Best Practices table suggests the use of such types.

Bath towels and cleaning gowns

- DWR's recently released EPP Best Practices table suggests buyers look for materials with bamboo or hemp. This includes the brands of OEKO-TEX or GOTS.

Planning Narrative for EPP BMPs

Examples of strategies and plans that DWR has taken or will take to increase EPP are:

- Measure percent EPP spend in comparison to non-EPP spend inside of SAP. As currently configured, the export to State Contract & Procurement Registration Systems within Fi$Cal is only capturing EPP spend on LPAs. When our buyers use independent vendors, the EPP standards are not coded, and as such, the purchase is disqualified without any further analysis.

- Incorporate EPP criteria in the goods and services the State buys.

- Embed sustainability roles and responsibilities into purchasing procedures. For example, the Division of Engineering is currently updating administrative directives.

    - Because more than one Recycled Content Certification form has been in use, DWR hopes to achieve standardized documentation by using only the Cal Recycle report form.

- DWR is strengthening its efforts to gather certification for commodity purchases by ensuring that the certification form is included with all solicitations for price quotes. Additionally, DWR will consider how DWR can better address situations in which the vendor does not provide certification or certifies "unknown" content.

- Train buyers in the benefits of buying EPP products, how to apply EPP best practices, the importance of accuracy in recording buys within SCPRS and reporting labor separate from goods in service contracts, and listing EPP goods by line item.
- Continuously update DWR training materials used in the DWR Fundamentals of Commodity Procurement course to place greater emphasis on this topic.
- Engage and educate suppliers to offer EPP products when selling to the State.

Reporting on EPP Training and Outreach

While Cal Recycle classes were available three of DWR's staff took the classes in 2023 but none in 2024.

Table 8.2. 2023 and 2024 EPP Basic Training Completions

CalHR Classification	Total Number of Staff	EPP Basic Training Completion	Percent Trained	2025 EPP Training Goal
Varied — SSM I, AGPA, and SSA who are acting as buyers and contract analysts are placed throughout our divisions and offices	Between 50 to 60	3	8–10%	8–10%

Table 8.3. 2023 and 2024 EPP Executive Training Completions for Executive Members

Executive Member	Title	Date Completed
Varied — SSM II, SSM III	N/A	None

Reporting Narrative on Tables 8.2-3: EPP Training and Education

The Department plans to improve its procurement of green cleaning products and recycled content goods. Plans include re-educating buyers in SWP's Division of O&M because they function independently when purchasing goods and services. Many of their experienced buyers retired

within the last two years, and the new buyers need time to develop the skills that ensure accurate reporting. This is significant because SWP's Division of O&M purchases are a large component of the Department's total expenditure. A workshop on this topic was conducted March 9, 2023, via Microsoft Teams Meeting with Michelle Cevallos of CalRecycle, which is part of the annual DWR Buyers Conference.

The Department's efforts to promote the understanding and advancement of sustainable procurement internally and with external suppliers are as follows:

- DWR notifies bidders of EPP requirements within the following areas: construction contracts, service and transportation agreements, commodity purchases, grants, interagency agreements, and Architecture and Engineering (A&E) contracts.
- DWR is working to ensure contractors provide EPP goods and meet SABRC requirements in service contracts. Collaboration with Contracts Services to incorporate the Recycled Content Certification form with every services contract will improve these requirements. This will include working on a system to better capture that data for incorporation into the annual SABRC report.

The total number of employees assigned as buyers or contract analysts numbers between 50 and 60 at any given time.

Planning Narrative on Tables 8.2-3: EPP Training and Education

DWR is researching ways to include more specialty staff dedicated to EPP. Compliance with EPP was added to duty statements for procurement staff.

Future workshops and updated training materials will place greater emphasis on EPP to ensure improved compliance. Updated training materials used in DWR's Fundamentals of Commodity Procurement course will place greater emphasis on this topic. DWR has departmentwide tracking of training through a single ServiceHub which can be queried by Training Program staff.

Reporting on State Agency Buy Recycled Campaign (SABRC), and Reducing Impacts

Reporting on SABRC Progress

DWR continues to report spending to the SABRC Annual Report (See Table 8.4 for our results).

Table 8.4. State Agency Buy Recycled Campaign (SABRC) FY 23/24 Performance

Product Category	SABRC Reportable Dollars	SABRC Compliant Dollars	% SABRC Compliant
75% Total Purchase Requirement			
Building Finishes	7,026.18	5,831.50	83 %
Carpet	413.10	413.10	100 %
Erosion Control Products	1,466,650.79	1,224,437.51	83.49 %
Glass Products	80,958.55	69,937.91	86.39 %
Lubricating Oils	598842.35	497645.62	83.10 %
Metal Products	30,235,083.84	29,870,782.15	98.80 %
Paper Products	453,298.06	378,798.16	83.56 %
Pavement Surfacing	177,535.60	176,165.30	99.23 %
Plastic Products	2,5404,13.02	1,828,685.93	71.98 %
Printing and Writing Paper	119,962.07	103,858.92	86.58 %
Soil Amendments and Soil Toppings	86,904.62	86,904.62	100 %
Textiles	232,179.11	197,908.93	85.24 %
Tire Derived Products	83,024.89	79,196.53	95.39 %
50% Total Purchase Requirement			
Antifreeze	18,535.25	17,753.67	95.78 %
Paint	1,249,003.62	63,748.14	51.04 %
Tires	365,009.88	281,519.57	77.13 %

Reporting Narrative for Table 8.4: Measure and Report SABRC Progress

Compliance with the State's goals for purchasing recycled content goods, reducing waste, recycling, and moving toward a more sustainable existence is an established ongoing priority for the Department. Policies in support of these initiatives are included in the Department Administrative Manual, and DWR provides a training manual for DWR's Buy Recycled Program to all

buyers. Periodic review of all Purchasing Services guidelines and materials ensures that they are current with all requirements.

In 2023, DWR issued a Procurement Broadcast to all contract managers, requisitioners and buyers about SABRC. It served as a reminder for these staff to follow the new SABRC changes. Staff were invited to a March 2023 SABRC Training. During 2023, DWR was experiencing some issues with vendors not putting information on Form 74. Collectively the buyers were asked to make progress.

Planning Narrative for Table 8.4: Measure and Report SABRC Progress

DWR is working to ensure that purchased goods and services meet or exceed the current DGS purchasing standards and specifications available from the DGS Buying Green website. The Department will continue to follow the requirements listed above. Additionally, DWR will revise its purchasing practices to ensure all elements of the State Contracting Manual (SCM), volumes 1,2, 3, & F, are kept current.

Reducing Impacts

Reporting Narrative for Reducing Impacts

The environmental impact of the goods we buy is often larger than the impact of our own department operations. Sustainable Operations is a commitment to reducing the environmental impact of your department’s purchased goods and services.

Planning Narrative for Reducing Impacts

In December 2024, DWR’s Environmental Coordinating Committee approved a Charter for a Sustainability Informational Working Group. This group is empowered to review the Departmentwide Administrative Manual Section 8000, Sustainability Operations, and suggest updates. Meetings will be held in 2025 to discuss various options.

CHAPTER 9 — FUNDING OPPORTUNITIES

The DWR's Budget Staff and SWP's Financial Manager continue to prioritize sustainability initiatives in accordance with our budgeting and planning, Asset Management, legislative requirements, and the policy priorities of SWP, DWR, and the governor's administration.

Several ongoing SWP-funded projects that pertain to the Governor's Sustainability roadmap are described below. Note, SWP work done on the State's sustainability initiatives is prioritized and funded through the SWP budgeting and planning process in alignment with their Asset Management framework. DWR's managers produce an annual budget designed and controlled to complete planned program goals. Each Division/Office/Region Manager is responsible for developing, approving, and monitoring their budgets on an annual basis. Each Division/Office/Region Managers sets priorities, reassigns resources as necessary, and ensures annually appropriated funds are not over-expended.

The Capital Outlay program assists DWR's various branches with long-term planning for program space needs not using SWP bond financing. This program looks at both traditional and non-traditional development, delivery methods for securing, and meeting the space needs for Department programs and its employees.

State Water Project Funding

The State Water Project (SWP) is an enterprise funded operation. The State Water Project's funding comes from annual payments from the 29 public water agencies (SWP Contractors) who signed the long-term water supply contracts. The State Water Project also receives reimbursement from federal agencies for joint use facilities and some funding through financial assistance agreements for delta operation compliance.

Annually, the SWP receives $10 million from the State General Fund to pay for portion of the expenditures related to SWP recreation and fish and wildlife enhancement costs (required under Davis-Dolwig Act), which is not-reimbursable from the SWP contractors.

As costs to operate and maintain the SWP continue to increase, DWR is prioritizing improved processes to track and monitor our budget. DWR is financially responsible for planning, budgeting, and justifying projects that benefit the SWP, while also coordinating with the SWP contractors who

reimburse DWR for operating and maintaining the SWP. DWR is pursuing new opportunities for alternative funding such as grants from the state and federal governments, cost-sharing agreements with other beneficiaries, and opportunities for emergency cost-recovery.

The SWP prioritizes work in its 2-year budget and 5-year capital plan in alignment with the development of the SWP framework of Asset Management. This allows SWP to budget for implementing projects in the near-term while also providing the opportunity to continually adjust longer-term planning as needed.

The SWP planning and budgeting is built on analysis and priorities of the SWP operation. The Financial Manager formulates financial planning targets in consultation with the SWP Executive Management Team. SWP Divisions and Offices then review and update new priority project or activity proposals. Next, Divisions and Offices plan within these targets, prioritizing upcoming projects and activities with a risk-informed approach.

Funding Opportunity Climate Change Adaptation

DWR's Climate Action Plan (Phase II), and the associated Water Resources Memorandum 75, are expected to provide more overarching requirements to plan for climate change scenarios which could impact DWR activities.

As the California climate has changed over the last decade, the need to rely on groundwater has increased. The excess draw from groundwater over the years has caused subsidence in the Central Valley, especially in the upper San Joaquin Valley. Severe subsidence is resulting in a reduction of capacity of 25–50 percent in four canal facilities, including the California Aqueduct and San Luis Canal, which are managed by SWP. Design and modeling teams continue to assess how continued groundwater pumping will impact these critical assets. New capital investments began in 2024.

Table 9.1. Climate Change Priority Projects

Building Name	Project	Funding Source	Est. Begin Date	Est. Completion Date
California Aqueduct Subsidence Program (Linear Rises — several locations)	Several	5-Year Capital Investment Plan	2024	2026
Oroville Reservoir — Butte Co., Oroville Operations and Maintenance Center	Forecast Informed Reservoir Operations and Oroville Reservoir Water Control Manual Update	SWP Capital Outlay	2019	2026
New — Proposed Asset	Delta Conveyance Project	SWP Capital Outlay	2028	2040

Note: Based on CAP Committee Planning for CY 23–26 with records up to July 1, 2025.

Funding Opportunities for ZEVs and EV Infrastructure

DWR's Division of O&M is working with the DGS Office of Sustainability Transportation Unit to install new EV charging infrastructure at a few of the DWR-owned facilities (Table 9.2). DWR will also seek out utility, private, and non-profit electric vehicle supply equipment (EVSE) programs in the future to secure funds for building and installing the electrical infrastructure and electrical charging stations. DWR continues to place possible EVSE projects into the capital budget prioritization process for its Division of O&M.

The SWP's Division of O&M's Electric Vehicle Charging program is targeted at providing sufficient capacity to existing infrastructure to support the increasing State fleet's ZEV as mandated by EO B-16-12 (see Chapter 2). O&M will continue to assess the development of zero-emissions heavy equipment to determine how this emerging technology can be applied to its fleet to meet our mission of being a net-zero carbon emitter by 2035.

Table 9.2. EV Priority Projects

Building Name	Project	Funding Source	Est. Begin Date	Est. Completion Date
Oroville O&M Center	Electric Vehicle Charging Stations (2022–000034)	EVSE Special Funding	01/01/2027	12/31/2027
Delta O&M Center	EVC Stations — Phase 3 (2022–000032)	EVSE Special Funding	TBD	TBD
San Joaquin O&M Center	EVC Stations — Phase 3 (2022–000032)	EVSE Special Funding	01/01/2027	12/31/2027
Southern O&M Center	EVC Stations — Phase 3 (2022–000033)	EVSE Special Funding	07/01/2026	06/30/2027

Note: Based on CAP Committee Planning for CY 23–26 with records up to July 1, 2025.

Funding Opportunities for Building Energy Conservation and Efficiency

DWR has been relying on utility on-bill-financing (OBF) programs, such as those offered by Southern California Edison (SCE) and PG&E, to provide funding for energy efficiency upgrade and improvement projects. In addition to participating in such electric utility-offered programs to provide funding for retail efficiency improvement projects, the proposed feasibility studies and plan will identify the cost of energy efficiency upgrade projects and offer funding recommendations (see Chapter 3).

5-year Capital Plan

DWR's Efficiency and GHG Management section (housed under SWP) is developing an energy- and water-efficiency improvement plan designed to meet the various legislative and executive mandates (see Appendix F). This plan and its estimated costs will be presented to DWR Executive managers for approval and implementation. Once approved, DWR's Division of O&M will include this improvement plan into their 5-year capital improvement plan. Individual projects are moving forward in the meantime (Table 9.3).

Table 9.3. Building Energy Conservation and Efficiency Priority Projects

Building Name	Project	Funding Source	Est. Begin Date	Est. Completion Date
Delta O&M Center	Skinner Fish Facility Water Treatment Plant Roof Replacement	5-Year Infrastructure Plan	1/1/2022	12/31/2025
San Luis O&M Subcenter	S&S Building Roof Replacement (2020-000400)	5-Year Infrastructure Plan	06/21/23	03/28/2025
Southern O&M Center	O&M Center Roof Replacements (2025-000062)	5-Year Infrastructure Plan	08/2025	01/2026

Note: Based on CAP Committee Planning for CY 23–26 with records up to July 1, 2025.

Funding Opportunities for Decarbonization

Plans for complying with SB 1203 and decarbonizing operations by 2035 are in development by the SWP's Division of O&M. However, these concepts have not been entered into the AM prioritization process. Individual projects are moving forward in the meantime (Table 9.4).

Table 9.4. Funding Opportunities for Decarbonization

Building Name	Project	Funding Source	Est. Begin Date	Est. Completion Date
Oroville O&M Center	O&M Center HVAC (2024-0000107)	5-Year Infrastructure Plan	2025	2026
Delta O&M Center	PM Electric Shop HVAC (2024-000043)	5-Year Infrastructure Plan	2025	2027
Delta O&M Center	Admin. Building HVAC (2021-000170)	5-Year Infrastructure Plan	2027	2027
San Joaquin O&M Center	EDPP HVAC Refurb (20245-000137)	5-Year Infrastructure Plan	2026	2028
Southern O&M Center	O&M Center Civil Maintenance Replacement of HVAC (2025-000062)	5-Year Infrastructure Plan	2025	2026

Note: Based on CAP Committee Planning for CY 23-26 with records up to July 1, 2025.

Funding Opportunities for Water Conservation and Efficiency

DWR's biggest challenge is integrating landscape and irrigation improvement projects into its capital improvement plan and scheduling the personnel to implement those projects. In the interim, DWR has been applying for various available funding programs, including State-sponsored programs; however, funding for most programs were exhausted or DWR was determined "Not Eligible." DWR also attempted to collaborate with the DGS on a demonstration project related to water conservation; however, DWR & DGS were unable to implement the projects because of a lack of human resources and funding.

A comprehensive list of irrigation fixtures, equipment, and assets was completed in 2024 and DWR does know which assets need to be replaced at state-owned facilities (see Chapter 5). Removal of non-functional turf and conversion to drought tolerant plants in SWP Field Divisions is being considered, but no location is planned nor designed. Table 9.5 contains a few projects that will impact water quality or water supply at SWP facilities. The conversion to drought tolerant plants in SWP's Southern Field Division has already occurred.

Table 9.5. Water Conservation and Efficiency Priority Projects

Building Name	Project	Funding Source	Est. Begin Date	Est. Completion Date
Oroville O&M Center	FRFH Water Treatment Upgrade (2020-000765 and 2024-000124)	5-Year Infrastructure Plan	2025	2030
Delta O&M Center	Skinner Fish Facility WTP* (2020-000764)	5-Year Infrastructure Plan	2027	2028
San Joaquin O&M Center	BV Power Plant Water Treatment Plant (2020-000540)	5-Year Infrastructure Plan	2029	2030

Note: Based on CAP Committee Planning for CY 23-26 with records up to July 1, 2025. WTP = Water Treatment Plant.

Funding Opportunities for Facilities Construction and Maintenance

In 2024, the Manager for SWP's Division of O&M sent a memo with adopted procedures to ensure an early evaluation of HVAC replacements to balance out energy efficiency and newer decarbonization goals. This same language was sent to the Division of Flood Operations' subcenters under the signature of the Sustainability Coordinator. Additional staff could ensure the forms are read and advice could be dispensed, so there are no stranded investments while a final decarbonization plan is written (see Chapter 4).

The Oroville Field Division is anticipating the construction of a new building to house staff that were operating out of temporary trailers. A business case analysis has recommended an approximately 10,000 sq. ft. building be constructed on the campus. The review of designs is on-going and incomplete at the time of this writing. The are also discussions for a new Storage Warehouse at Oroville, but funds have not been budgeted toward a business case or design.

DWR is beginning several physical security upgrades that will provide for protection of staff, equipment, and fleet vehicles. These projects are paid for by the SWP funds.

Table 9.6. Sustainable Operations Priorities

Building Name	Project	Funding Source	Est. Begin Date	Est. Completion Date
Oroville Field Division — LCB Design and Construction building on existing OFD campus	Need Funding	5-Year Capital Plan	2025	2028
At SWP Field Divisions, support procedures to efficiently balance ZNE and decarbonization when replacing HVAC Systems until a 10-year plan with priorities is prepared	Need Additional Staff	Existing Personnel Budget	2024	2035
At Division of Flood Operations' subcenters, replace manual thermostats with networked options for Demand Response	Need Special Equipment	BCP	2027	2028

Building Name	Project	Funding Source	Est. Begin Date	Est. Completion Date
At SWP Field Divisions, replace manual thermostats with networked options for Demand Response	Need Special Equipment	Existing Maintenance Budget	2027	2028
All — Initiate a review of the SWP's Land and Aquatic Herbicide spraying Maintenance Plans to ensure they are IPM plans	Need Staff Training	Existing Maintenance Budget	2027	2027

Funding Opportunities for Waste Management and Recycling

DWR's Business Services Office has a single Recycling Coordinator. They also review DWR's Waste Management reporting (Chapter 7). The current gap in education is with organic waste (Table 9.7).

Table 9.7. Waste Management and Recycling Priorities

Building Name	Project	Funding Source	Est. Begin Date	Est. Completion Date
All — Annual Organic Waste campaign to comply with regulations	Need Signage	Existing Training Budget	2026	2027

Funding Opportunities for Procurement

DWR's Business Services Office prepares training for its staff on Environmentally Preferred Purchasing and Buy Clean California Act purchases through a financial academy. DWR is reviewing how to dedicate more specialty staff to EPP (Table 9.8).

Table 9.8. Procurement Priorities

Building Name	Project	Funding Source	Est. Begin Date	Est. Completion Date
All — Hire specialty staff dedicated to EPP	Need Additional Staff	Existing Personnel Budget	2027	2029

Full Life Cycle Cost Accounting

Reporting on Life Cycle Cost Accounting

EO B-30-15 directs State agencies to employ full life cycle cost accounting in all infrastructure investment. Life cycle cost accounting includes:

- Considering initial investment costs, as well as lifetime operation and maintenance costs under changing climate conditions, including changing average conditions and increases in extreme events.
- Applying non-market evaluation methods such as travel cost, avoided costs, or contingent valuation to capture hard to quantify benefits and costs.

In 2023, the Department's SWP Division of O&M re-issued their "State Water Project Operations and Maintenance Directive" and began to use new statistical tools specifically focused on a life-cycle analysis. Their vision is to establish and maintain a consistent and unified framework for condition assessment, risk management, maintenance, and strategic planning of capital investments in SWP electrical, mechanical, and civil infrastructure for the next 50 years. The new process is known as "Business Case Evaluation." Over 20 Business Case Evaluations have been started or are complete. The Life Cycle costs considered within these evaluations include labor, materials, engineering time, capital costs, and the need for inspections. The costs of an outage are also considered, since the SWP's reliability is of paramount importance to the Department.

Planning for Implementing Life Cycle Cost Accounting

SWP's Division of O&M continuously receives repair projects and evaluates several alternatives for each one. Over the next few years, staff will use the Business Case Evaluations tools to compare the relative risks and costs of various alternatives over a 50-year time horizon. They anticipate having at least 10 capital improvement projects evaluated by Asset Management staff over the next two years. These alternatives are then presented to the 29 SWP contractors as part of their budget considerations. Efforts are underway by the Asset Management staff to improve the process to ensure this type of planning is done consistently. The O&M Directive which specifies the use of a Strategic Asset Management Plan was signed in 2023.

Using free software tools, DWR could begin to take climate change into account in planning and investment decisions and employ whole-building life-cycle cost accounting (WBLCA) to evaluate and compare investments and alternatives for work outside of SWP. The whole-building life-cycle assessment (WBLCA) described under CalGreen requires a cradle-to-grave WBLCA be performed in accordance with ISO 14044 reference standard, excluding the operating energy, and demonstrates a 10 percent reduction in Global Warming Potential. For DWR to engage in WBLCA work will require additional training of staff and adoption of Duty Statements with this skill.

Currently, the Buy Clean California Act (Public Contract Code, Sections 3500-3505, Management Memo 22-02, and CalGreen, Chapter 5, Table 5.409.3.2) asks for the maximum Global Warming Potential values to be part of State purchasing decisions in six common construction products. The initial stage of compliance requires DWR's Division of Engineering to secure the Type III environmental product declaration (EPD) for these common construction materials. An EPD is a third-party verified report that summarizes how a product impacts the environment. Type III EPDs can be either product-specific, factory-specific, or industry-wide EPDs. Type III EPDs for these six types of products, if included in the construction project, shall be provided in the construction documents. A review process for each EPD was approved and circulated at Division of Engineering in 2024 (known as REG-02-02). Most of SWP's construction documents are stored in COSMOS, which has a module named Secretariat as a centralized Enterprise Record Management System. DWR's specification writers and construction monitors will continuously need training on how to identify a valid EPD so they can approve contracted work.

CHAPTER 10 — PUBLIC EDUCATION AND OUTREACH

Staff Training and Education

DWR has a Sustainability Coordinator and several staff within its training office to supports communications around sustainability topics. They also help promote awareness of the many opportunities for staff to participate and engage to improve the sustainability of DWR. Some of the examples below for 2023 and 2024 are new and exciting developments that are hopefully carried forward into future years.

Newsletters and Articles

DWR's Sustainability Coordinator is now publishing a Newsletter titled "Sustainabilty.UP" for employees. The Newsletters are published quarterly, and these are distributed through the DWR Sustainability Sharepoint and DWR's intranet (known as BLUE). The inaugural newsletter was published in December 2023 and four times in 2024. Hard copies of the Newsletter were handed out at the 2025 Earth Day celebration. In addition to the Newsletter, periodic articles on sustainability topics are circulated using the DWR Sustainability Sharepoint. There have been over 200 page views for these stories.

Emails Campaigns and Intranet Postings

May is Bike Month is traditionally advertised to all Sacramento employees using an email listserv. Sign-ups for the Sacramento Area Bicycle Advocates free tune up clinic are popular with DWR employees. In 2024, DWR earned first place for the Top Rider for most miles and the Top Rider for most rides. Overall, there were 165 riders (35 new riders) and nearly 4,500 commuter miles by DWR's team.

Events

In celebration of 2023 Earth Day, River Partners and DWR hosted a community cleanup event at Dutch Slough Tical Marsh Restoration.

Staff from the offices of public affairs and tribal affairs, as well as the Sustainability Coordinator participated in the California Natural Resources Agency's (CNRA) 2024 Earth Day celebration located at CNRA headquarters

in downtown Sacramento. At this event, the outreach team educated employees in attendance who stopped by DWR's table, or about 50 people.

Figure 10.1. Visitors to the DWR table at Earth Day 2024

Note: Photos available at DWR's Pixel Site (https://pixel-ca-dwr.photoshelter.com/galleries/C0000xzpuji9HpV8/G0000VixavgLO73w/Earth-Day).

Starting in June 2025, DWR's Public Affairs Office setup several lunch-time climate change speakers. Invited speakers covered how climate change is increasing post-fire debris flows, changing flood risks, and how to effectively communicate about climate change with others. Staff also had the opportunity to attend the CNRA Secretary's speaker series, which also covered climate change.

Working Groups and Affinity Groups

The Justice, Equity, Diversity, and Inclusion (JEDI) page on BLUE is always expanding. Staff have posted links to DWR's Racial Equity Action Plan, information about Affinity groups, JEDI Moments, and more. Posters and other outreach about Affinity Events are displayed throughout DWR's buildings inside the break rooms.

The kick-off meeting of the Sustainability Community of Practice, formed under the Environmental Coordinating Committee, was held February 21, 2025. The Sustainability Community of Practice will meet every other third Friday of the month (6 meetings per year) moving forward.

Advice on Alternative Transportation

In 2023 and 2024, the Department has heavily marketed and encouraged employee participation in DWR's Commuter Subsidy Program, which encourages the use of alternative transportation methods to lessen the environmental impacts. Additionally, there is a Bicycle Commuter Program that was widely advertised though email and at the Wellness Fair.

Educational and Training Materials or Events Illustrative of Sustainable Practices within California

Public education ensures DWR serves as a leader in important water conservation legislation, regulations, and Executive Oder directives.

Curriculum and Student-Based Learning

DWR's School Education Program seeks to educate California's students, parents, and educators about water conservation, the role of the SWP in California's water conveyance systems, and the effects of the state's geography, climate, and population on water resources.

The program is overseen by a Water Education Specialist who provides classroom resources to California teachers, attends events, coordinates water education professional development workshops, and facilitates a statewide network of water educators.

School Events and Educator Outreach

DWR staff in the Public Affairs Office typically attend a half-dozen district-wide events each year, where they are able to educate hundreds of students about California's water resources and the SWP. Staff from other DWR offices, including the Northern, Southern, and South-Central Region Offices also attend local events and occasionally make presentations to local school groups. Many DWR staff also do presentations at their children's schools in classrooms or at STEM night events. PAO and SWP's Division of Integrated Science and Engineering also continued their partnership to present 2-day, in-class lessons to middle students in Rio Vista.

In 2023 and 2024, DWR staff attended events such as the SMUD back-to-school night in Sacramento and the California Association of Science Educators Conference in both Palm Springs and Sacramento. These events allowed DWR's education staff to provide teachers with samples of DWR's

free classroom materials and let them know of their availability. In 2023, DWR provided approximately 31,000 water education materials to educators, a 50 percent increase over the previous year. In 2024, DWR purchased a marketing database which they used to send e-blasts to over 100,000 K-12 teachers statewide. This led to unprecedented interest in ordering classroom materials and resources.

Supplementary Teaching Materials

The school education program provides supplementary teaching materials including posters, maps, worksheets, workbooks, and videos to California teachers, water agencies, and other non-formal educators. These can be ordered through the Education page on the DWR website or educators can receive them at outreach events. Thanks to the acquisition of a marketing database in 2024, DWR was able to significantly increase the number of materials distributed to K-12 teachers. In 2024, an updated California Waterways poster was finalized.

Professional Development for Teachers

DWR partners with numerous public and private partners to provide professional development opportunities for K-12 educators.

In 2023 and 2024, DWR partnered with the Water Education Foundation and local partners including the Cosumnes River Preserve, Solano Resource Conservation District, and CSU Chico to offer four-day professional development workshops for teachers. These workshops reached approximately 200 teachers who learned about their local watersheds and their ties to the SWP.

In 2023, DWR also hosted single-day Project WET workshops on floodplains, thanks to a Federal Emergency Management Act grant, and climate change. In 2023, DWR also helped support the California Environmental Education Foundation's Best Practices in Environmental Education teacher workshop.

Educational Exhibits

In 2023 and 2024, DWR had educational tables at the following events:

- Oroville Salmon Festival (Figure 10-1).
- Sacramento County Fair School Days.

- California State Fair Kids Days.
- SMUD Electricity Fair.
- Stanislaus Salmon Festival.

In 2024, DWR also did non-personal outreach through exhibits, signage, videos and public service announcements at the California State Fair, Mid-State Fair, Ventura and Kern County Fairs, and Big Fresno Fair. These focused on the importance of the State Water Project and water deliveries in California.

Figure 10-2. Two people look at the tank at the Feather River Fish Hatchery during the Oroville Salmon Festival

Note: Photos from DWR's Pixel Site (https://pixel-ca-dwr.photoshelter.com/galleries/C0000xzpuji9HpV8/G0000wJpBEOrb6VY/Salmon-Festival).

SWP Visitors Centers

DWR's three visitors centers at Lake Oroville, San Luis Reservoir, and Pyramid Lake house exhibits and information related to the SWP and DWR's mission by engaging visitors with current and future water issues. DWR also provides the public with information on water safety and recreational opportunities at SWP facilities.

In 2023, combined visitation at the centers totaled over 200,000 people, a 73 percent increase from the previous year. In addition to staffing the centers and interacting with guests, DWR's Guides led over 150 tours and participated in community events. Guides provided and staffed educational

tables in Oroville at the Wildflower Festival, Earth Week, Healthy Kids Day YMCA, BCOE Track Meet, Feather Fiesta Day, and Salmon Festival. Guide and outreach staff assisted C.A.S.T. for Kids at O'Neil Forebay and at the Poppy Festival in Lancaster.

Museum of Science and Curiosity (MOSAC) Partnership

DWR is a sponsor of the SMUD Museum of Science and Curiosity (MOSAC), formerly known as the Powerhouse Science Center. The museum is home to a 3,700 square foot exhibit space focused on California's water. The 50,000 square foot building also includes a planetarium and exhibit halls focused on health, nature, space, engineering, and energy. It opened to the public in November 2021.

In Spring of 2023, DWR furthered our partnership with SMUD and began hosting community field trips to MOSAC. SMUD has existing partnerships with local nonprofits that provide a myriad of services to underserved community members that may not otherwise have the opportunity to enjoy a day at the museum or be exposed to various career paths. The first field trips took place in April 2023 (in conjunction with Earth Day) and the second in late June 2023. DWR and MOSAC have co-hosted two additional community events in 2024.

Targeted Community Outreach

SWP Outreach Events

Public outreach is important because it can help individuals and organizations build relations, provide assistance, or foster a sense of community.

The goal of the SWP outreach program is to educate the public about water safety and the many recreational opportunities available at SWP facilities. As part of this outreach effort, PAO attends community events, state and county fairs, and State and federally sponsored events. PAO also forms partnerships with State, federal, and community organizations groups.

SWP's Water Safety program is designed to encourage safe and responsible water recreation at various locations along the State Water Project's lakes. To this end, the program provides hard-copy water safety resources, such as posters and workbooks, develops water safety public safety announcements,

and sponsors events to help promote appreciation of and access to SWP aquatic recreation sites and instilling lifelong habits in the next generation.

The Oroville Dam Citizens Advisory Committee continued to meet in 2023 and 2024. In addition, the Oroville Recreation Advisory Committee (ORAC) also met in both 2023 and 2024. The ORAC was established by the Federal Energy Regulatory Commission (FERC) to review and provide recommendations regarding DWR's recreation plan for the Lake Oroville State Recreation Area.

Salton Sea Outreach Events

DWR is hosting press corps and giving public tours to help explain the benefits from the Species Conservation Habitat (SCH) Project at the southern end of the Salton Sea (Figure 10-2). This part of the Salton Sea is being expanded to restore habitat and suppress dust, protecting air quality and supporting wildlife. The project aims to create wetlands and ponds, providing habitat for fish and birds, and address the issue of airborne dust from the receding Salton Sea lakebed.

Figure 10.3. Section Manager Salton Sea Restoration Office Vivien Maisonneuve speaks with guests on a Salton Sea tour

Note: Photo available at DWR's Pixel Site (https://pixel-ca-dwr.photoshelter.com/search?terms=2025%20salton%20sea&).

Flood Preparedness Week

Every October, DWR coordinates California Flood Preparedness Week (CFPW) to raise public awareness of flood risk and educate the public on actions they can take to prepare for flood emergencies.

National Groundwater Awareness Week

DWR supports groundwater awareness, the agencies and local citizens working to manage groundwater sustainably, by among other things providing data and educational resources for groundwater practitioners, water managers, and the general public. DWR kicked off National Groundwater Awareness Week 2023 in March with an engaging educational event held at the California Natural Resources Agency headquarters in Sacramento (Figure 10-3).

Figure 10-4. Deputy Director Paul Gosselin speaks as DWR kicked off National Groundwater Awareness Week 2023

Note: Photo available at DWR's Pixel Site (https://pixel-ca-dwr.photoshelter.com/galleries/C0000xzpuji9HpV8/G0000VsPI_AjJeU4/Events).

SGMA 10-Year Anniversary Event

Those attending this 2024 "10th Anniversary of SGMA" event heard from DWR's Director, Karla Nemeth, and DWR Sustainable Water Management Office (SGMO) Deputy Director, Paul Gosselin, about the progress made over the first 10 years of SGMA. Invited speakers discussed State-local partnerships and innovative projects that are putting more water into the

ground, helping to ensure current and long-term water supply resiliency for communities, businesses, and environmental habitats that are dependent on groundwater (Figure 10-4).

DWR's SGMO staff also highlighted the status of California's groundwater following multiple years of statewide drought interrupted by a wet year and how California's highly variable climate can influence what is happening underground. In addition, speakers covered how local agencies and groundwater managers can leverage staff and documents from SGMO to help them engage with their communities during SGMA implementation.

Figure 10-5. Former California Governor Jerry Brown speaks at 10-Year Anniversary of the historic passage of SGMA in Sacramento

Note: Photo available at DWR's Pixel Site (https://pixel-ca-dwr.photoshelter.com/galleries/C0000xzpuji9HpV8/G0000NUBRjXwUofU/SGMA-10-Year-Anniversary).

Webinars on EO N-4-23 — Flood Water and Groundwater Recharge

The Executive Order N-4-23 workshops were hosted by DWR, SWRCB, and CDFW. These 2023 webinars included opening remarks, a presentation detailing the requirements of the Executive Order, and a questions and answer session. The slides are housed on the CNRA website for Open Data.

Flood-MAR Forum

In 2023, the 4th biennial Flood-MAR Forum was hosted by DWR and our partners at the CSUS Harper Alumni Center in Sacramento for anyone interested in learning about Flood-MAR and expanding its implementation. Since the last Flood-MAR Forum in 2021, California experienced a historically

wet winter and saw Flood-MAR implementation expand in real-time. This Forum shared several success stories and lessons learned from the landmark wet winter of 2022–2023 and help the Flood-MAR community better prepare for the next wet winter to further advance Flood-MAR implementation for the benefit of communities, ecosystems, and agriculture.

Guidance Supporting Sustainable Use of California's Critical Resources

In law, DWR was designated as the author of several planning documents which consolidate information from several regions, and DWR's planning document shows the interbasin trends of water use and flood severity in the state. Without these plans, the use of critical resources would become obscured by the span of various approaches and the lack of a centralized data collection method. Table 10.1 describes a few of the technical guidance documents that DWR staff supply and publish for California's decision makers.

In April 2023, the DWR hosted the 2023 California Tribal Water Summit as part of the California Water Plan Update (Water Plan), a key planning document that informs water resource decisions for water districts, cities, and counties across the state. The summit proceedings were released as part of the supporting documents for the Water Plan.

In April 2024, DWR released the final version of "California Water Plan Update 2023." This plan can now be used by water managers, water districts, cities and counties, and Tribal communities, to inform and guide the use and development of water resources in the state. "Update 2023" builds on the Water Resilience Portfolio, and California's Water Supply Strategy to ensure a more climate-resilient future for the state's water supplies. As part of the package of documents, in April 2024, DWR published the California Watershed Resilience Assessment.

Table 10.1. Guidance Published to Inform Decision-Makers about Sustainable Development and to Support Sustainable Development in California

Name of Plan (year)	Intended Audience	Update Interval(s)	Critical Resources Covered	Example(s) of a typical use
County Drought Resilience Plan Guidebook (2023)	County planners	As needed	Water Supply, Response to Water Shortages	Data and tools to assist counties in making water resilience improvements
Water Shortage Contingency Plan templates for small water suppliers	Water suppliers	None	Water Supply, Response to Water Shortages	Templates for annual reporting and contingency planning
Water Plan (2023)	Water managers, water districts, cities and counties, and Tribal communities	Every 5 years	Water supply, water quality, climate risks	Strategic Plan for the entire state. Used to check progress and performance against prior commitments. Proposes strategies.
California Watershed Resilience Assessment (2024)	Water managers, water districts, cities and counties, and Tribal communities	Every 5 years	Water supply, water quality, climate risks	High-level evaluation of the current state of watershed climate vulnerability, climate risk, and climate preparedness for watersheds throughout California
Reservoir Reoperation Resource Management Strategy (2023)	Dam Operators	N/A	Water supply, public safety, climate risks	Supports initial planning for various weather scenarios.
Urban Water Management Plan (UWMP) Guidebook (2024, for use in 2025)	Water managers, water districts, cities and counties, and Tribal communities	5-years		Helps Suppliers prepare their UWMP in a way that is consistent with the legal requirements.

* All data is January 2023 through December 2024.

Water Efficiency

The Model Water Efficient Landscape Ordinance (MWELO) was adopted in 1992 as directed in the Water Conservation in Landscaping Act, Statutes of 1990 (AB 325). Stakeholders from many sectors were actively involved in drafting the MWELO and have been consulted in two updates. The first update occurred in 2009 and the second in 2015 in response to the drought emergency. From January 2023 to December 2025, DWR and the California Water Commission have been developing the rulemaking package to establish an amended MWELO. The MWELO provides a statewide model for local agencies to enforce minimum water-efficiency standards in landscape design, construction, management, and maintenance. In addition, it drives water-efficiency through water budgets and thoughtful selection of soil, plants, irrigation, stormwater management, and non-potable water supplies. MWELO must be adopted and enforced by local agencies (currently 500 plus city and county agencies use it).

Sustainability of Groundwater Supplies

The Sustainable Groundwater Management Act (SGMA) established a new structure for managing California's groundwater resources at the local level by local agencies. SGMA required Groundwater Sustainability Agencies (GSAs) to form in the state's high- and medium-priority basins and subbasins by June 30, 2017. Over 260 GSAs in over 140 basins were formed by SGMA's initial planning milestone. DWR revised its GSA Frequently Asked Questions and GSA Formation Notification Guidelines documents in May 2019 to address updates to SGMA and the modification of basin boundaries.

Staff from DWR's four Regional Offices serve as primary Points of Contact for the SGMA basins. These staff provide information and help GSAs and interested parties connect with DWR and locate resources, including guidance on communication and community engagement and assistance services such as technical support, facilitation support, written translation, and financial assistance. Events and webinars are used to provide information and resources to locals for implementing SGMA. Events held between June 2023 and December 2024 include a Groundwater Sustainability Agency Forum (November 2023) and an update on SB 552 for County Drought Resilience Plans.

DWR launched the Be Well Prepared Program and Website (May 2023) to provide resources to help communities and individuals that are dependent on groundwater for their drinking water. The following informational flyers

were developed and are available for download in multiple languages on the Be Well Prepared website. These flyers were distributed at the California State Fair:

- What Do I Do if My Well Goes Dry? (July) (English, Spanish, Hmong).
- Understanding Groundwater — A Guide for Well Users (September) (English, Spanish, Hmong).
- Who to Contact — Resources for Well Owners (September) (English, Spanish, Hmong).

The goal of the **California Tribal Water Summit (TWS)** is to create a roadmap with strategies for preserving native water rights and providing for the sustainable management of California's sacred waters. The most recent TWS took place in April 2023 in downtown Sacramento. The agenda covered diverse topics from Tribal participation in planning to Tribal water rights. Over 200 members of California Tribes participated in the TWS. Proceedings from TWS were finalized in early 2024.

In 2023, there was a companion TWS Film Festival. DWR hosted films at the Secretary of State auditorium in downtown Sacramento for a full day during the TWS. Each film highlighted was produced in collaboration with California Tribes and highlighted the theme of the Tribal Water Summit which was “The Water that Connects Us.”

Control of Invasive Species

The goals of the California Invasive Species Action Week (CISAW) are to increase public awareness of invasive species issues and promote public participation in the fight against California's invasive species and their impacts on our natural resources. This week took on new meaning with the discovery of a new invasive species in 2024. DWR stood up both compliance and education programs around the invasive Golden Mussel during this reporting period. Our laboratories became a centralized resource for confirming the presence of this species in various locations.

DWR identified the presence of golden mussels in the Delta in 2024. Crews immediately were generated to inspect boats that would be used on DWR’s reservoirs. Public notices about the spread of this invasive species through dirty boats were published in several publications (Figure 10-5).

Figure 10.6 — DWR Employees at Oroville Reservoir Performing a Mussel Inspection

Note: Photo available at DWR's Pixel Site (https://pixel-ca-dwr.photoshelter.com/galleries/C0000ECHdF6vvoag/G0000RQOqa19cp0M/Invasive-Species).

Data-Sharing to Support Sustainability or Resilience Planning within California

DWR shares their models and findings about the State water supply reservoirs, groundwater basins, dams, levees, and water demands to a broad audience though "portals." Table 10.2 contains some of DWR's most frequently used data portals. Information is shared publicly in order to increase general knowledge of possible threats, advance awareness, and support/facilitate the inclusion of such threats into future projects by DWR and others. This helps California to plan for sustainable communities and quickly respond to catastrophic events. Some of the key data portals that support sustainability include:

- Groundwater supplies and dry domestic well susceptibility within groundwater basins.
- Estimates of outdoor landscape areas for urban retail water suppliers.
- Risks to consider in emergency planning (from dam breaches and floods).

In May 2023, DWR announced the official launch of the new Be Well Prepared program that provides information and resources to help well owners, well users, and local agencies be ready for impacts of climate-driven weather extremes on groundwater supplies and drinking water wells. On the website, DWR references and explains several data portals (see Table 10.2) and provides community members with links to contacts who provide immediate assistance with private wells.

With the goal of water conservation and drought planning after the 2012 and 2016 droughts in California, AB 1668 and SB 606 became effective under Governor Brown's Executive Order B-37-16. Assembly Bill 1668 directs the DWR, in coordination with the California State Water Resources Control Board, to develop new water use efficiency standards and guidelines for urban retail water suppliers. In November 2023, DWR released their final report and datasets which identify the outdoor water uses within residential parcels found within urban retail water supplier areas (n = 398). A unique land cover and land use model was created for each urban retail water supplier in order to tune the landscape area measurement results to the unique land cover characteristics within their service area boundaries.

In early 2024, DWR began a second land classification dataset focused in on Commercial, Institutional, and Industrial (CII) lands for urban retail water suppliers. This project will provide suppliers with provisional geographic informational systems (GIS) data and will be completed by Spring 2027. Suppliers can use the data on CII functional and nonfunctional turf to assist with implementing AB 1572 (2023).

As a result of SB 552, DWR hosted public meetings from June 2022 through March 2023 to support development of a drought guidebook to help with consistency in implementation, serve as a reference for best planning practices and provide examples for counties to follow to facilitate drought and water shortage preparedness for state small water systems and domestic wells. A Workgroup that is made up of county representatives that are working on meeting their SB 552 requirements was also meeting to provide input during this window of time. DWR also provided financial assistance to counties through an application.

In March 2023, DWR published the "County Drought Resilience Plan Guidebook." As a compliment to the guidebook, in July 2024, DWR began beta-testing a map-based Water Shortage Vulnerability explorer tool. This tool was offered to assist counties and others explore drought risks and vulnerabilities for domestic wells and state small water systems. The risk

assessment is one of the first steps of the County Drought Resilience Plan. The tool was fully released in 2025 and any map layers are continuously updated when new data sets are released from partners (like CAL FIRE wildfire rankings maps or data from Oregon State University on precipitation).

Table 10.2 Department-Collected Data Published and Interpreted to Inform Decision-Makers and Community Members Released in 2023 or 2024

Name of Data Portal	Intended Audiences	Resource(s) Covered	Partners
Be Well Prepared	Local Water Suppliers	Risk score of wells, how to test for water quality	None
Water Shortage Vulnerability Explorer Tool	County Staff preparing Drought Resilience Plans	Assist counties and others explore drought risks and vulnerabilities for domestic wells and state small water systems.	None
Residential Landscape Area Measurements (LAM)	Local Water Suppliers	Using state-wide remote sensing and machine learning the maps estimate the outdoor landscape area in residential parcels for all qualifying urban retail water suppliers in California (n=398)	State Water Resources Control Board
CII Landscape Area Measurement and Outdoor Classification Dataset (In progress 2024 – 2026)	Local Water Suppliers	The new GIS data complements the earlier residential data that most suppliers received in 2021. Covers CII locations in their boundaries.	State Water Resources Control Board
CASGEM New On-Line System (2023 was first release)	Local Water Suppliers, Regional Water Managers	Seasonal and long-term groundwater elevation trends statewide	None
Weather Generator (2023)	Modeling community, hydrologists, scientists, and technical practitioners in water resources management	Increase temperature, changes to precipitation (associated with atmospheric rivers), water systems	National Weather Service, Bureau of Reclamation

Advancing Equity and Social Justice

Inequality, or the perception of inequality, in decision making and the distribution of benefits and impacts can be a potential source of conflict. Conflicts can disrupt project development or become sources for broader social disruption, causing new rifts or exacerbating existing rifts between communities, organizations, and governments.

DWR supports engaging surrounding communities early and keeping them informed of the historic context of equity, social justice, and environmental justice. When projects impact, or potentially impact, indigenous communities, specific attention is given to developing a relationship of respect and mutual understanding that supports the autonomy, authority, and rights of these communities. These tasks are tracked internally using the methodology outlined in section QL 3.1 "Advance Equity and Social Justice" inside of the Envision Rating Tool. The Rating Tool is currently being used to structure DWR's conversations around sustainable infrastructure.

DWR is committed to ensuring equity of its programs and services through inclusive outreach and engagement with the state's diverse population. The Racial Equity Plan (2022) will advance DWR's Racial Equity Vision that all people in California are healthy, financially stable, and safe. This vision inspired the strategies contained in the plan and conveys an ideal state of being that DWR wants all Californians to experience. The plan outlines ways DWR will improve engagement with communities most impacted by structural racism. Under this plan, DWR staff at all levels will apply a racial equity lens to the planning, programming, and implementing of projects. DWR's Racial Equity Officer is responsible for overseeing the implementation of this plan.

The Department has further developed its internal practices and approaches to eliminate bias and support growth of more equity efforts. This includes:

- The "Wave of Hope," a team of several multi-cultural members from various disciplines and programs, with over 210 hours of specialized racial equity education, were instrumental in the creation of the Racial Equity Action Plan and continue to support the enactment of racial equity change across the Department.

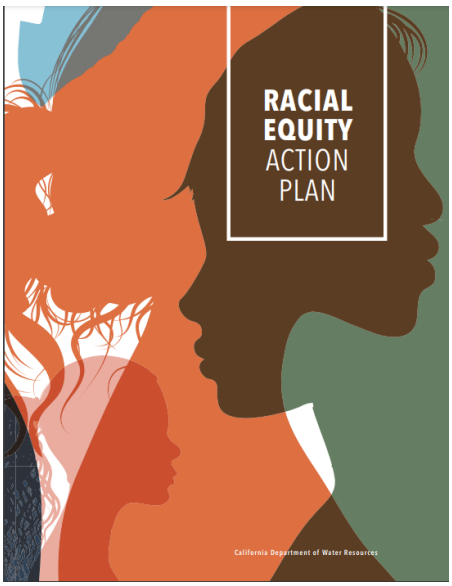
- Racial Equity Action Plan (see Figure 10.7), which has 23 strategies that focus on workforce diversity, community engagement, and embedding racial equity into staff's work. This Racial Equity Action Plan

was inspired by the Racial Equity Vision that “All people in California are healthy, financially stable, and safe.”

- Created a permanent Racial Equity Office within the Executive team and hired a Racial Equity Officer who will manage the implementation of the Racial Equity Action Plan and provide annual progress reports to the Department.

- The launch of a new process to support language service requests at Department public meetings, including meeting materials, live translation support, and other DWR resources.

Figure 10.7. Cover of the Racial Equity Action Plan (June 2022)



Public Engagement

Public engagement can lead to broader participation and wider community input in decision-making. Through deliberate, well planned public engagement, community members become informed about, participate in, and influence public decisions.

Public Engagement During Project Design and Planning

Unfortunately, infrastructure projects are often perceived as having negative impacts on communities. This “not in my back yard” (NIMBY) mentality can be addressed through active engagement and the proper alignment of projects with community needs, goals, and issues. Community support and

engagement are critical to ensure the appropriate and effective investment of resources in infrastructure. DWR's project managers take time to consider how to align their project with community goals. This can be especially important for the planning of flood control infrastructure.

The DWR outreach projects represented in Table 10.3 are just a few of many who worked closely with community stakeholders to identify and assess potential social impacts. Social impacts include the intended and unintended social consequences, both positive and negative, of infrastructure projects and any social changes initiated by those projects. These tasks are tracked internally using the methodology outlined in section QL 1.1 "Improve Quality of Life" inside of the Envision Rating Tool. The Rating Tool is currently being used to structure DWR's conversations around sustainable infrastructure.

Table 10.3. Example Public Engagement to Improve Designs

Project Name	Processes used	Acknowledgments and endorsements	Listing of signed agreements
Cache Creek Channel and Levee Rehabilitation Project	Public Comments sought through a news release	None at this time	None at this time
Cache Slough Recreation Action Plan	Public Meeting (2023)	None at this time	None at this time
Sunset Weir and Pumps Fish Passage Project	Public Comments sought through a news release; Public Meeting in community	None at this time	None at this time
Delta Conveyance Project	Committee Meetings, Board Meetings, Surveys and public meetings (PDF). This final EIR was certified Dec. 2023	Kern County Water Agency, Imperial Irrigation District, Santa Clara Valley Water, and other water suppliers.	Contra costa Water District (2023), Caltrans (for Hwy. 160, 2021), Sac. Municipal Utilities District (2021)

* All data is June 2023 through December 2024.

Public Engagement to Minimize Construction Impacts

DWR is on occasion building infrastructure in rural communities and next to sensitive facilities where construction will seem louder, larger, and more obtrusive because of the contrast. To mitigate the impacts during construction, DWR has implemented a specific feedback mechanism for high-impact projects which enables staff to take additional steps to engage with the community during construction. These tasks are tracked internally using

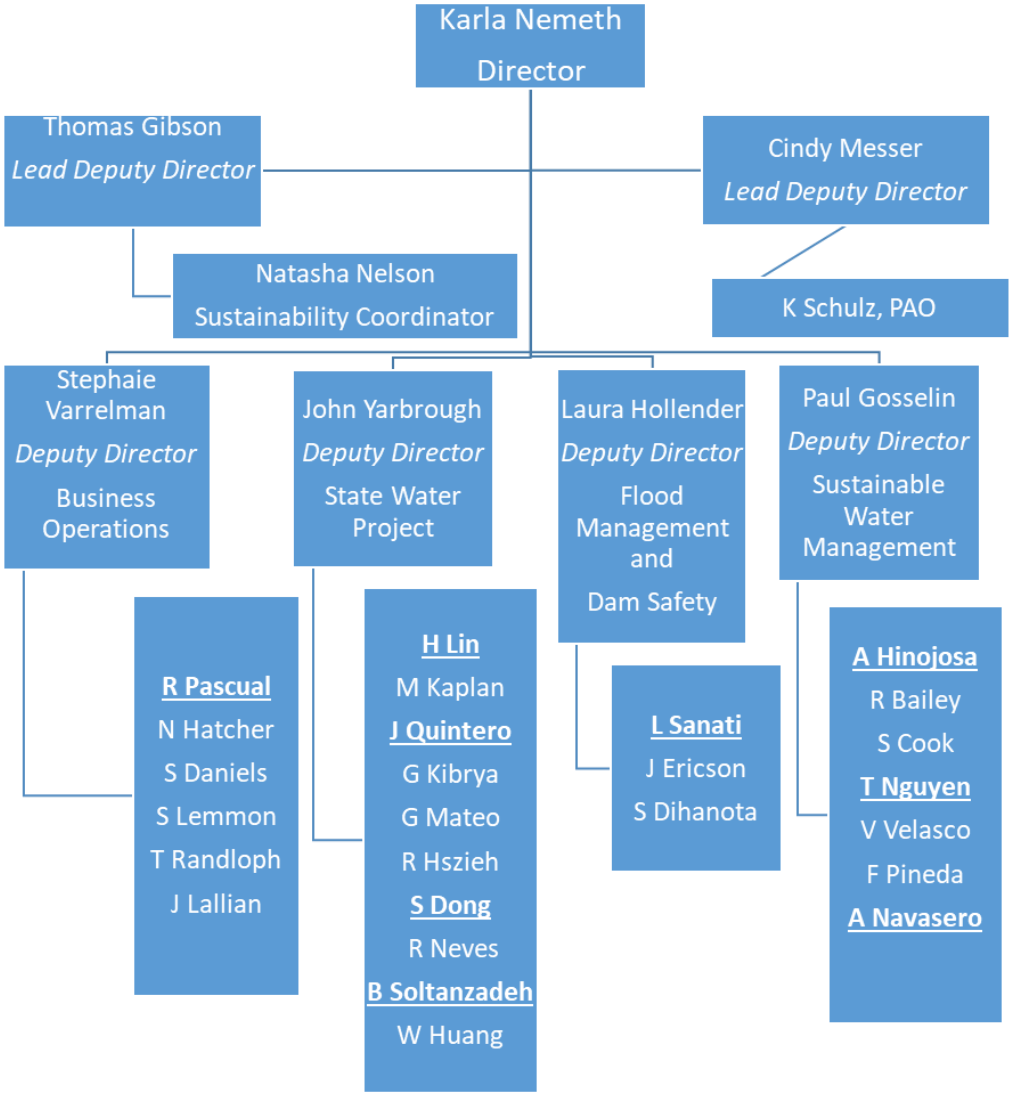
the methodology outlined in section QL 1.6 “Minimize Construction Impacts” inside of the Envision Rating Tool. The Rating Tool is currently being used to structure DWR’s conversations around sustainable infrastructure.

Noise is a common complaint against a wide variety of infrastructure projects. Noise can have significant negative health effects, including hearing impairment, hypertension, and sleep disturbance. It can also reduce performance in cognitive tasks. Residential property values may be improved as a result of reduced ambient noise levels. Noise pollution can also interfere with animal communication, predator-prey relations, and mating habits, particularly among birds. DWR provides specifications in its contracts to reduce noise impacts and for some projects allow for a hotline number to call.

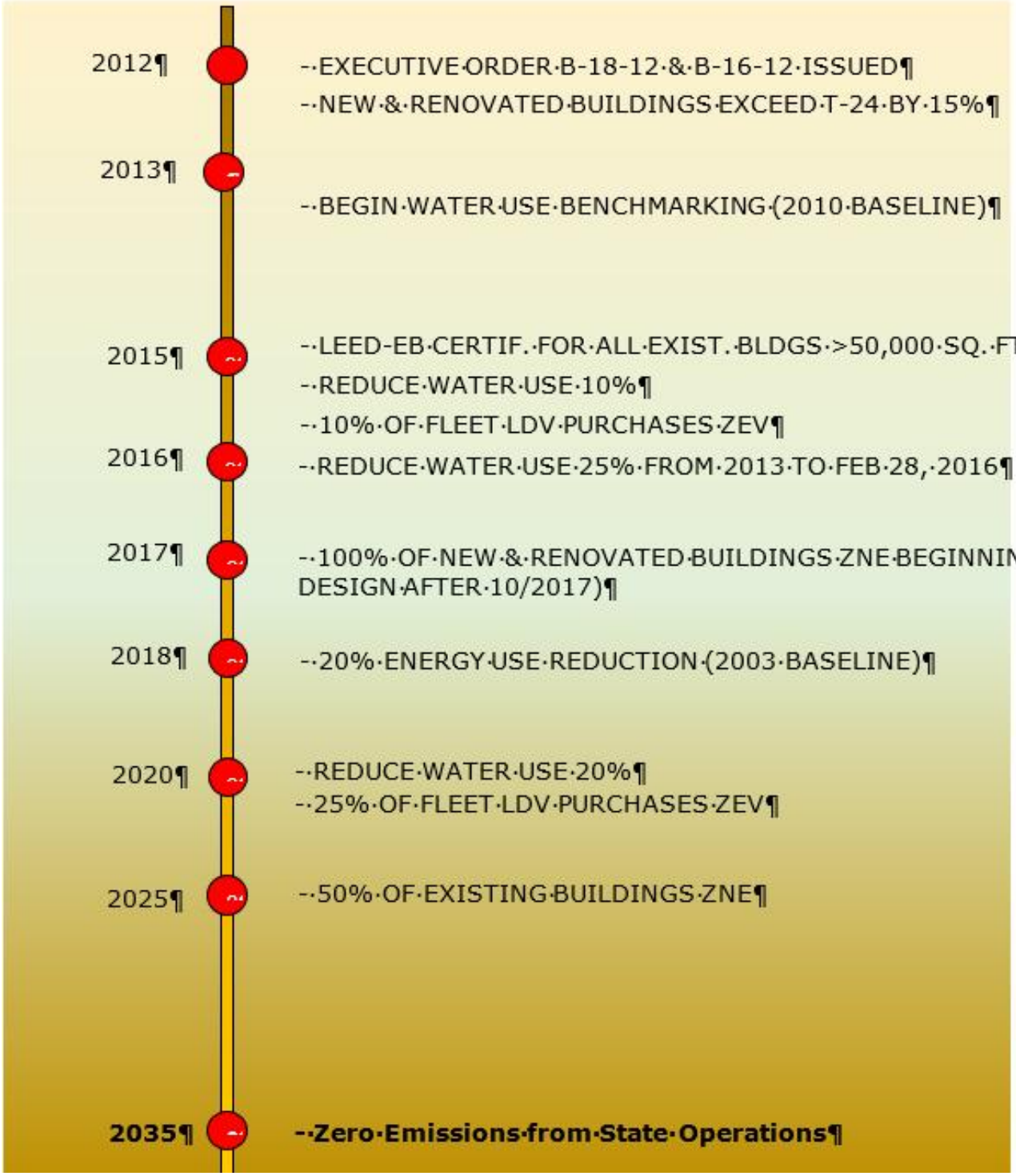
Confusing signage or complicated site access is a nuisance that can lead to accidents and injuries. Clear access, signage, and wayfinding improves overall flow and efficiency, and aids in incident management by reducing accidents. The application may vary depending on the project type. DWR provides specifications in its contracts to improve signage.

In 2023, DWR added Spanish Language signage for Perris Dam Construction to reach out to all parts of the community.

APPENDIX A — SUSTAINABILITY LEADERSHIP



APPENDIX B — SUSTAINABILITY MILESTONES & TIMELINE



APPENDIX C — ACRONYMS

Customize to include organizations and acronyms within your specific department

ACRONYM	DEFINTION
AB	Assembly Bill
ADR	Automated Demand Response
AMB	Asset Management Branch (at DGS)
BEV	Battery Electric Vehicle
BMP	Best Management Practices
CA	California
CALGREEN	California Green Building Code (Title 24, Part 11)
CAP	Climate Action Plan
CEC	California Energy Commission
CRT	Cathode Ray Tube
CWP	California Water Plan
DGS	Department Of General Services
DWR	Department Of Water Resources
EPD	Environmental Product Declarations
EHT	Extreme Heat Threshold
EMS	Energy Management System (Aka EMCS)
EMCS	Energy Management Control System (Aka EMS)
EO	Executive Order
EPP	Environmentally Preferable Purchasing
ESCO	Energy Service Company
ESPM	Energy Star Portfolio Manager
ETS	Enterprise Technology Solutions (A Division At DGS)
EUI	Energy Use Intensity (Source Kbtu/Sq. Ft.)
EVSE	Electric Vehicle Supply Equipment (Charging Equipment)
Flood-MAR	Floodwaters for Managed Aquifer Recharge
FMD	Facilities Management Division (A Division At DGS)
GCM	Global Circulation Model
GHG	Greenhouse Gas
GHGe	Greenhouse Gas Emissions
GSP	Groundwater Sustainability Plan
HD	Heavy Duty Vehicles

ACRONYM	DEFINTION
HIPP	Heat Illness Prevention Plan
HVAC	Heating, Ventilation, and Air Conditioning
IEQ	Indoor Environmental Quality
kBTU	Thousand British Thermal Units (Unit of Energy)
LCM	The Landscape Coefficient Method
LD	Light Duty Vehicles
LEED	Leadership In Energy and Environmental Design
MAWA	Maximum Applied Water Allowance
MD	Medium Duty Vehicles
MM	Management Memo
MPG	Miles per Gallon
MWELO	Model Water Efficient Landscape Ordinance
NG	Natural Gas
OBF	On-Bill Financing
OFAM	Office Of Fleet and Asset Management (At DGS)
O&M	Operations and Maintenance
OS	Office Of Sustainability (At DGS)
PAO	Public Affairs Office
PHEV	Plug-in Hybrid Electric Vehicle
PPA	Power Purchase Agreement
PUE	Power Usage Effectiveness
PV	Photovoltaic Vehicles
RCP	Representative Concentration Pathway
SABRC	State Agency Buy Recycled Campaign
SAM	State Administrative Manual
SB	Senate Bill
SCM	State Contracting Manual
SGA	Sustainable Groundwater Agency
SGMA	Sustainable Groundwater Management Act
SPFC	State Plan of Flood Control
SUV	Sport Utility Vehicle
SWP	State Water Project
WMC	Water Management Coordinator
VHSP(s)	Vehicle Home Storage Permits
WH	Water Heater
WUCOLS	Water Use Classifications of Landscape Species
ZEV	Zero-Emission Vehicle
ZNE	Zero Net Energy

APPENDIX D — GLOSSARY

Backflow — is the undesirable reversal of the flow of water or mixtures of water and other undesirable substances from any source (such as used water, industrial fluids, gasses, or any substance other than the intended potable water) into the distribution pipes of the potable water system.

Backflow Prevention Device — a device that prevents contaminants from entering the potable water system in the event of back pressure or back siphonage.

Blowdown, Boilers — is the periodic or continuous removal of water from a boiler to remove accumulated dissolved solids and/or sludge. Proper control of blowdown is critical to boiler operation. Insufficient blowdown may lead to deposits or carryover. Excessive blowdown wastes water, energy, and chemicals.

Blowdown, Cooling Towers — Is the water discharged to remove high mineral content system water, impurities, and sediment.

Building Best Management Practices (BMPs) — are ongoing actions that establish and maintain building water use efficiency. BMPs can be continuously updated based on need and tailored to fit the facility depending on occupancy and specific operations.

Compost — Compost is the product resulting from the controlled biological decomposition of organic material from a feedstock into a stable, humus-like product that has many environmental benefits. Composting is a natural process that is managed to optimize the conditions for decomposing microbes to thrive. This generally involves providing air and moisture, and achieving sufficient temperatures to ensure weed seeds, invasive pests, and pathogens are destroyed. A wide range of material (feedstock) may be composted, such as yard trimmings, wood chips, vegetable scraps, paper products, manures and biosolids. Compost may be applied to the top of the soil or incorporated into the soil (tilling).

Cooling Degree Day (CDD) — is defined as the number of degrees by which a daily average temperature exceeds a reference temperature. The reference temperature is also typically 65 degrees Fahrenheit, and different utilities and planning entities sometimes use different reference temperatures. The reference temperature loosely represents an average

daily temperature below which space cooling (e.g., air conditioning) is not needed.

Critically Overdrafted — a condition in which significantly more water has been taken out of a groundwater basin than has been put in, either by natural recharge or by recharging basins. Critical overdraft leads to various undesirable conditions such as ground subsidence and saltwater intrusion.

Ecosystem Services — are the direct and indirect contributions of ecosystems to human well-being. They support directly or indirectly our survival and quality of life. Ecosystem services can be categorized in four main types:

1. Provisioning services are the products obtained from ecosystems such as food, fresh water, wood, fiber, genetic resources, and medicines.

2. Regulating services are the benefits obtained from the regulation of ecosystem processes such as climate regulation, natural hazard regulation, water purification and waste management, pollination, or pest control.

3. Habitat services provide living places for all species and maintain the viability of gene-pools.

4. Cultural services include non-material benefits such as spiritual enrichment, intellectual development, recreation, and aesthetic values.

Erosion Control Product — includes products such as compost filter socks, compost blankets and hydraulic mulch.

Environmental Product Declarations (EPD) — third-party verified reports that detail a product's impacts on the environment. The International Standards Organization (ISO) 14025 defines EPDs as a Type III declaration that "quantifies environmental information on the life cycle of a product to enable comparisons between products fulfilling the same function." EPDs can be product-specific, factory-specific, or industry-wide.

Grass Cycling — refers to an aerobic (requires air) method of handling grass clippings by leaving them on the lawn when mowing. Because grass consists largely of water (80% or more), contains little lignin, and has high nitrogen content, grass clippings easily break down during an aerobic process. Grass cycling returns the decomposed clippings to the soil within one to two weeks acting primarily as a fertilizer supplement and, to a much

smaller degree, mulch. Grass cycling can provide 15 to 20% or more of a lawn's yearly nitrogen requirements

Heating Degree Day (HDD) — is defined as the number of degrees by which a daily average temperature is below a reference temperature (i.e., a proxy for when heat would be needed). The reference temperature is typically 65 degrees Fahrenheit, although different utilities and planning entities sometimes use different reference temperatures. The reference temperature loosely represents an average daily temperature above which space heating is not needed. The average temperature is represented by the average of the maximum and minimum daily temperature.

Hydrozone — is a portion of a landscaped area having plants with similar water needs that are served by one irrigation valve or set of valves with the same schedule.

Landscape Coefficient Method (LCM) — describes a method of estimating irrigation needs of landscape plantings in California. It is intended as a guide for landscape professionals.

Landscape Water Budget — is the calculated irrigation requirement of a landscape based on landscape area, local climate factors, specific plant requirements and the irrigation system performance.

Life cycle Cost Accounting — includes initial investment costs, as well as lifetime operation and maintenance costs under changing climate conditions, including changing average conditions and increases in extreme events. It may involve applying non-market evaluation methods such as travel cost, avoided costs or contingent valuation to capture hard to quantify benefits and costs

Makeup Water — Makeup water, or the water replacing evaporated or leaked water from the boiler, is first drawn from its source, whether raw water, city water, city-treated effluent, in-plant wastewater recycle (cooling tower blowdown recycle), well water, or any other surface water source.

Model Water Efficient Landscape Ordinance (MWELO) — The Water Conservation in Landscaping Act was signed into law on September 29, 1990. The premise was that landscape design, installation, and maintenance can and should be water efficient. Some of the provisions specified in the statute included plant selection and groupings of plants based on water needs and climatic, geological, or topographical conditions, efficient

irrigation systems, practices that foster long term water conservation and routine repair and maintenance of irrigation systems. The latest update to MWELO was in 2024 with an effective date of January 2025. MWELO applies to all state agencies' landscaping.

Mulch — Mulch is a soil topping consisting of a layer of material applied on top of soil. Examples of material that can be used as mulch include wood chips, grass clippings, leaves, straw, cardboard, newspaper, rocks, and even shredded tires. Benefits of applying mulch include reducing erosion and weeds and increasing water retention and soil vitality. Whenever possible, look for mulch that has been through a sanitization process to kill weed seeds and pests.

Natural infrastructure — is the "preservation or restoration of ecological systems or the utilization of engineered systems that use ecological processes to increase resiliency to climate change, manage other environmental hazards, or both. This may include, but need not be limited to, flood plain and wetlands restoration or preservation, combining levees with restored natural systems to reduce flood risk, and urban tree planting to mitigate high heat days" (Public Resource Code Section 71154(c)(3)).

Nonpurchased Water — is water that a department uses that does not come from a 3rd party supplier. It may be water from domestic wells owned by the department or water that is taken from a river, lake, canal, or other source and used by the department. The water may be returned to source after use.

Trickle Flow — A device that allows users to reduce flow to a trickle while using soap and shampoo. When the device is switched off, the flow is reinstated with the temperature and pressure resumes to previous settings.

Soil Amendments and Soil Toppings — Soil amendments Include adding ingredients such as sulfur, or sand to change the original soil, soil conditioner for potting or plant mix, Soil toppings include organic materials used for water conservation; organic materials such as biosolids or other comparable substitutes such as livestock, horse, or other animal manure, food residues or fish processing byproducts; mechanical breakdown of materials.

Sprinkler system backflow prevention devices — are devices to prevent contaminants from entering water supplies. These devices connect to the

sprinkler system and are an important safety feature. They are required by the California Plumbing Code.

Submeter — a metering device installed to measure water use in a specific area or for a specific purpose. Also known as dedicated meters, landscape submeters are effective for separating landscape water use from interior water use, evaluating the landscape water budget and for leak detection within the irrigation system.

Urban Heat Islands — are areas with localized spikes in temperature, which impact human health, increase pollution, and increase energy demand. Urban heat islands occur during the hot summer months in areas with higher percentages of impervious surface and less vegetation. This is likely in areas with large parking lots, dense development, and lower tree density and shading. Urban heat islands can be mitigated (i.e., reduced) through tree planting and other greening measures, cool roofs (e.g., lighter roofing materials that reflect light), cooler pavements, and other measures.

Water Budget — A landscape water budget is the calculated irrigation requirement of a landscape based on landscape area, local climate factors, specific plant requirements and the irrigation system performance.

Water Energy Nexus — Water and energy are often managed separately despite the important links between the two. 12 percent of California's energy use is related to water use with nearly 10 percent being used at the end water use. Water is used in the production of nearly every major energy source. Likewise, energy is used in multiple ways and at multiple steps in water delivery and treatment systems as well as wastewater collection and treatment.

Water Shortage Contingency Plans — Each urban water purveyor serving more than 3,000 connections or 3,000 acre-feet of water annually must have an Urban Water Shortage Contingency Plan (Water Shortage Plan) which details how a community would react to a reduction in water supply of up to 50% for droughts lasting up to three years.

Water Use Classification of Landscape Species (WUCOLS) — WUCOLS are used to help determine water budgets and irrigation schedules. Use this link to access the necessary information for your landscaping needs. WUCOLS Plant Search Database (ucdavis.edu)

Zero Energy Buildings — A zero-energy building is "an energy-efficient building where, on a source energy basis, the actual annual delivered energy is less than or equal to the on-site renewable exported energy”. Department of Energy (DOE), September 2015.

APPENDIX E — DEPARTMENT STAKEHOLDERS

List individuals, offices, and divisions responsible for leading efforts related to each initiative identified in this report. Include their respective titles, roles, responsibilities.

Climate Change Adaptation

Understanding Climate Risk at Existing Facilities
Francisco Pineda, Vanessa Velasco
Understanding Climate Risk at Planned Facilities
Francisco Pineda, Vanessa Velasco
Integrating Climate Change into Department Planning and Funding Programs
Francisco Pineda, Vanessa Velasco
Measuring and Tracking Progress
Francisco Pineda, Vanessa Velasco

Zero Emission Vehicles

Incorporating ZEVs Into the Department Fleet
Robert Neves
Telematics
Robert Neves
Public Safety Exemption
Natasha Nelson
Outside Funding Sources for ZEV Infrastructure
Natasha Nelson
Hydrogen Fueling Infrastructure
N/A
Comprehensive Facility Site and Infrastructure Assessments
Jorge Quintero
EVSE Construction Plan
Darren Choyce, Jorge Quintero
EVSE Operation
Darren Choyce, Jorge Quintero

Energy

Zero Net Energy (ZNE)
Golam Kibrya
New Construction Exceeds Title 24 by 15%
Natasha Nelson
Existing Buildings Energy Efficiency
Golam Kibrya
Energy Savings Projects
Golam Kibrya
Demand Response
Golam Kibrya
Renewable Energy
Golam Kibrya, Gerold Mateo
Monitoring-Based Commissioning (MBCx)
Natasha Nelson
Building Controls
Natasha Nelson

Decarbonization

Greenhouse Gas Emissions
Golam Kibrya, Randolph Hszieh
Inventory of Buildings
Golam Kibrya
Planning
Golam Kibrya, Balpreet Heer

Water Efficiency and Conservation

Indoor Water Efficiency Projects in Progress First initiative
Golam Kibrya
Boilers and Cooling Systems Projects in Progress
Golam Kibrya

Landscaping Hardware Water Efficiency Projects in Progress
Golam Kibrya
Living Landscaping Water Efficiency Projects in Progress
Dr Sabriana Cook, Martin Ricci.

Buildings with Urban Water Shortage Contingency Plans in Progress
Natasha Nelson, Anthony Navasero

Facilities Construction and Operations

Building Design and Construction
Natasha Nelson
LEED for Existing Buildings Operations and Maintenance
Natasha Nelson
Indoor Environmental Quality
Natasha Nelson
Integrated Pest Management
Natasha Nelson, Simarjit Dhanota, Brianne Sakata
Fossil Fuel Landscaping Equipment Replacement
Natasha Nelson
Location Efficiency
Natasha Nelson

Waste Management and Recycling

Waste and Recycling Programs
Jaspreet Lallian, Jackie Robinson
SARC Report
Jaspreet Lallian, Jackie Robinson
Recycling Program and Practices
Jaspreet Lallian
Organics Recycling
Natasha Nelson
Hazardous Waste Materials
Jaspreet Lallian
Universal Waste Program
Jaspreet Lallian
Material Exchange Programs
Natasha Nelson
Employee Waste and Recycling Training and Education
Jaspreet Lallian

Procurement

Goods and Services with the Greatest Potential to Green
Natasha Nelson, Jaspreet Lalian, Sharmane Daniels

EPP BMPs
Natasha Nelson.
Reporting on EPP Training and Outreach
Natasha Nelson, Matthew Pinkerton, Sharmane Daniels
Reporting on State Agency Buy Recycled Campaign
Jaspreet Lallian
Reducing Impacts
Natasha Nelson

Financial Planning

Internal Contracts
Natasha Nelson
Life Cycle Analysis
Scott Hunt, Natasha Nelson

Outreach and Education

Internal Events and Newsletters
Natasha Nelson
Museums Exhibits, Visitors Centers Counts, Staffed Events
Kathy Schultz
Planning Documents and Data Websites
Natasha Nelson
Racial Equality
Natasha Nelson, Ebenezer Ampah

APPENDIX F — SUSTAINABILITY STATUTORY REQUIREMENTS, EXECUTIVE ORDERS, AND MANAGEMENT MEMOS REFERENCES

The following legislative actions, executive orders, State Administrative Manual (SAM) Management Memos, resources, and guidance documents provide the sustainability criteria, requirements, and targets tracked and reported herein.

Recent Legislative Actions

Several pieces of legislation were signed in 2023 that codified several elements of the executive orders, or provided further requirements included in the policies. These include the following:

Senate Bill (SB) 416 (Laird 2023)**:** Requires all new building and major renovation projects larger than 10,000 gross square feet undertaken by state agencies, and for which the project schematic design documents are initiated by the state agency on or after January 1, 2024, to obtain the Leadership in Energy and Environmental Design or "LEED" Gold or higher certification, except as provided. Requires the state agency to obtain LEED Silver certification if the state agency concerned makes a finding that achieving LEED Gold conflicts with critical operational or security requirements, is demonstrably cost ineffective, or conflicts with California Building Code requirements. Authorizes certification to an alternative equivalent or higher rating system or standard, if any, only when approved by the Director of General Services.

Senate Bill SB 837 (Archuleta 2023): The State Energy Resources Conservation and Development Commission as of January 1, 2024, shall consider revising the definition of "conditioned space, indirectly" for purposes of those regulations to include sealed and unvented attics, where the space is enclosed by the primary thermal and air barrier and directly adjoining conditioned space.

Assembly Bill (AB) 43 (Holden 2023): Authorizes the state board to establish an embodied carbon trading system. Authorizes the state board to integrate the embodied carbon trading system into the framework for measuring the average carbon intensity of the materials used in the construction of new buildings, as described above, on or before December

31, 2026, and to implement the system on and after January 1, 2029. Authorizes the state board to adopt rules and regulations for the credit allocation approach, the anticipated carbon price in the scheme, and trading periods. Requires the state board to periodically review and update its emission reporting and compliance standard requirements, as necessary.

Other Significant Legislative Actions

- **Assembly Bill (AB) 661** (Bennet 2022): Requires a state agency, if fitness and quality are equal, to purchase recycled products instead of nonrecycled products whenever recycled products are available at no more than 10% greater total cost than nonrecycled products, and specified circumstances exist. Requires the Department of Resources Recycling and Recovery, in concurrence with the DGS and in consultation with impacted agencies, to update a list of products and minimum recycled content percentages, as determined to be appropriate, commencing January 1, 2026, and every 3 years thereafter. Requires the Department of Resources Recycling and Recovery to report a state agency that does not meet SABRC purchasing requirements in each product category to the DGS. The bill would require all state agency procurement and contracting officers, or their designees, to participate in mandatory annual training, as prescribed, conducted by the Department of Resources Recycling and Recovery. The bill would require the DGS and the Prison Industry Authority to prioritize the use of recycled content products.

  Senate Bill (SB) 1020 (2022): *Clean Energy, Jobs, and Affordability Act of 2022.* States that eligible renewable energy resources and zero-carbon resources supply 90% of all retail sales of electricity to California end-use customers by December 31, 2035, 95% of all retail sales of electricity to California end-use customers by December 31, 2040, 100% of all retail sales of electricity to California end-use customers by December 31, 2045, and 100% of electricity procured to serve all state agencies by December 31, 2035, as specified.

- **Assembly Bill (AB) 2446** (Holden 2022): Require the Air Resources Board, by July 1, 2025, to develop, in consultation with specified stakeholders, a framework for measuring and then reducing the average carbon intensity of the materials used in the construction of new buildings, including those for residential uses. The bill would require the framework to include a comprehensive strategy for the state's building sector to achieve a 40% net reduction in greenhouse gas emissions of building materials, as determined from a baseline

calculated using a certain 2026 report, if that report is adequate, or as specified. The bill would require the strategy to achieve this target as soon as possible, but no later than December 31, 2035, with an interim target of 20% net reduction by December 31, 2030.

Senate Bill SB 1203 (Becker 2021): Requires the Department of General Services, in consultation with the state board, and to the extent feasible, to publish, on its internet website or other publicly available location, an inventory of the greenhouse gas emissions of state agencies for the prior calendar year, on or before July 1, 2024, and annually thereafter until the goal has been achieved. Requires DGS to develop and publish a plan, on or before January 1, 2026, that describes required actions and investments for achieving net-zero emissions of greenhouse gases and an estimate of the costs associated with the planned actions and ensure that the required actions and investments are incorporated into the sustainability roadmaps of all state agencies. Requires the department to update the plan beginning June 30, 2028, and every 2 years thereafter until the goal has been achieved. Requires that, subject to an appropriation by the Legislature, the department to provide information, training, coordination, best practices, and other technical assistance to state agencies to help those state agencies implement the required actions and investments. Requires state agencies to incorporate the required actions and investments into their future budget proposals, as provided. Requires the department, beginning December 31, 2027, and biennially thereafter until the achievement of the above stated goal, to report to the Legislature on progress toward achieving that goal, as provided.

- **Senate Bill SB 1335** (Allen 2018): Enacts the Sustainable Packaging for the State of California Act of 2018, which would prohibit a food service facility located in a state-owned facility, operating on or acting as a concessionaire on state property, or under contract to provide food service to a state agency from dispensing prepared food using a type of food service packaging unless the type of food service packaging is on a list that CalRecycle publishes and maintains on its Internet Web site that contains types of approved food service packaging that are reusable, recyclable, or compostable.

- **Assembly Bill (AB) 739** (Chau 2017): Requires, beginning December 31, 2025, at least 15% of newly purchased vehicles with a gross vehicle weight rating of 19,000 pounds or more purchased by the department and other state entities for the state fleet to be zero emission, and beginning December 31, 2030, at least 30% of those vehicles to be zero emission. The bill would require, if the department

finds, in a public hearing on or after December 31, 2026, that it cannot meet the needs of the state while meeting this requirement, the department to disclose this finding at the hearing and to the Legislature.

- **Assembly Bill (AB) 2800** (Quirk 2016): Requires state agencies to take the current and future impacts of climate change into planning, designing, building, operating, maintaining, and investing in state infrastructure. CNRA will establish a Climate-Safe Infrastructure Working Group to determine how to integrate climate change impacts into state infrastructure engineering. (Public Resources Code Section 71155)

- **Assembly Bill AB 2812** (Gordon 2016): Provide adequate receptacles, signage, education, staffing, and arrange for recycling services. Report annually on how each of these is being implemented

- **Senate Bill** SB 1383 (Lara 2016): 50 percent reduction in the level of the statewide disposal of organic waste from the 2014 level by 2020, a 75 percent reduction by 2025, and 20 percent of currently disposed edible food is recovered for human consumption by 2025.

Agencies already in compliance with AB 1826 may need to further expand their organic waste recycling service to comply with the new requirements

Jan. 1, 2024, Tier 2 Commercial Edible food Generators will be required to donate edible food to a recovery organization.

- **Assembly Bill (AB) 1482** (Gordon 2015): Requires that the California Natural Resources Agency (CNRA) update the state's adaptation strategy safeguarding California every three years. Directs state agencies to promote climate adaptation in planning decisions and ensure that state investments consider climate change impacts, as well as the use of natural systems and natural infrastructure. (Public Resources Code Section 71153)
- **Senate Bill (SB) 246** (Wieckowski 2015): Established the Integrated Climate Adaptation and Resiliency Program within the Governor's Office of Planning and Research to coordinate regional and local efforts with state climate adaptation strategies to adapt to the impacts of climate change. (Public Resources Code Section 71354)

- **Assembly Bill AB 1826** (Chesbro 2014): Implement mandatory commercial organics recycling program (if meet threshold). Report annually on organics recycling program.

- **Assembly Bill AB 2583** (Blumenfield 2012): **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 January 1, 2012, and a 20 percent reduction or displacement by January 1, 2020.

- **Assembly Bill AB 341** (Chesbro 2011): Implement mandatory commercial recycling program (if meet threshold). Report annually on recycling program.

- **Senate Bill SB 1106** (Lowenthal 2005): Have at least one designated waste management coordinator. Report annually on how your designated waste and recycling coordinator meets the requirement.

- **Assembly Bill AB 75** (Strom-Marting1999): Implement an integrated waste management program and achieve 50 percent disposal reduction target. State Agencies report annually on waste management program.

- **Assembly Bill (AB) 4**: Passed in 1989. The State Agency Buy Recycled Campaign (SABRC) statutes are in Public Contract Code Section 12153–12217. The intent of SABRC is to stimulate markets for materials diverted by California local government and agencies. It requires state agencies to purchase enough recycled-content products to meet annual targets, report on purchases of recycled and nonrecycled products, and submit plans for meeting the annual goals for purchasing recycled-content products.

Executive Orders

The governor issued the following executive order relevant to chapters of this roadmap:

- **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 10 percent with ZEVs, and by 2020 to ensure at least 25 percent of replacement fleet vehicles are ZEVs.

- **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 on-site 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. Agencies annually report current energy and water use into the Energy Star Portfolio Manager (ESPM).

- **Executive Order B-29-15**

  EO B-29-15 directs state agencies to take actions in response to the ongoing drought and to the state of emergency due to severe drought conditions proclaimed on January 17, 2014. Governor Brown directed numerous state agencies to develop new programs and regulations to mitigate the effects of the drought and required increased enforcement of water waste statewide. Agencies were instructed to reduce potable urban water use by 25 percent between 2013 and February 28, 2016.

- **Executive Order B-30-15**

  In 2015, the governor issued EO B-30-15, which 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 GHG emission reduction target of 40 percent below 1990 levels by 2030 and reaffirms California's intent to reduce GHG emissions to 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. It also directs state agencies to take climate change into account in their planning and investment decisions and employ life-cycle cost accounting to evaluate and compare infrastructure investments and alternatives. State agencies are directed to prioritize investments that both build climate preparedness and reduce GHG emissions; prioritize natural infrastructure; and protect the state's most vulnerable populations.

- **Executive Order B-37-16**

  The Department of Water Resources (Department) shall work with the Water Board to develop new water use targets as part of a permanent framework for urban water agencies. These new water use targets shall build upon the existing state law requirements that the state achieve a 20% reduction in urban water usage by 2020. (Senate Bill No. 7 (7th Extraordinary Session, 2009-2010).) These water-use targets shall be customized to the unique conditions of each water agency, shall generate more statewide water conservation than existing requirements, and shall be based on strengthened standards for:

  - Indoor residential per capita water use.
  - Outdoor irrigation, in a manner that incorporates landscape area, local climate, and new satellite imagery data.
  - Commercial, industrial, and institutional water use.
  - Water lost through leaks.

The Department shall strengthen requirements for urban Water Shortage Contingency Plans, which urban water agencies are required to maintain. These updated requirements shall include adequate actions to respond to droughts lasting at least five years, as well as more frequent and severe periods of drought. While remaining customized according to local conditions, the updated requirements shall also create common statewide standards so that these plans can be quickly utilized during this and any future droughts.

State Administrative Manual & Management Memos

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

- **SAM Chapter 1800**: Energy and Sustainability
- **SAM Chapter 1900**
- **SAM Chapter 4100**
- **SAM Chapter 3600, Section 3627**
- **MM 14-2**: Water Efficiency and Conservation
- **MM 15-03**: Minimum Fuel Economy Standards Policy
- **MM 16-07**: Zero-Emission Vehicle Purchasing and EVSE Infrastructure Requirements

State-wide Action Plans

- **2016 Zero-Emission Vehicle Action Plan**

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

- **Safeguarding California Implementation Action Plans:**

  Directed under EO B-30-15, the Implementation Action Plans outline the steps that will be taken in each sector to reduce risks from climate change.

- **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 percent reduction in GHG by 2030 and 80 percent reduction by 2035.

State Resources and Guidance Documents

California has invested significant resources in understanding the risks of climate change, water efficiency, strategic growth, and state actions available to respond to and reduce these risks. These include the following:

- **Safeguarding California**: The state's climate adaptation strategy organized by sector. Each sector identifies risks from climate change and actions to reduce those risks.
- **Planning and Investing for a Resilient California**: Prepared under direction of EO B-30-15, this document provides a framework for state agencies to integrate climate change into planning and investment, including guidance on data selection and analytical approach.
- **California's Climate Change Assessments**: California has completed three comprehensive assessments of climate change impacts on California. Each assessment has included development of projections of climate impacts on a scale that is relevant to state planning (i.e., downscaled climate projections). These data are available through **Cal-Adapt**, an online data visualization and access tool.
- **Water Use Reduction Guidelines and Criteria**: Issued by the California Department of Water Resources February 28, 2013, pursuant to Executive Order B-18-12. Each applicable agency was required to take actions to reduce water use in facilities and landscapes that are operated by the state, including owned, funded, or leased facilities. State-operated facilities are defined as facilities where the agency has direct control of the buildings' function, maintenance, and repair. For leased facilities, the Green Building Action Plan directed at that time that new and renegotiated leases include provisions for water conservation, reporting water use, and installation of sub-meters to the extent possible and economically feasible.

- **Strategic Growth Council (SGC) Resolution on Location Efficiency:**
  Location efficiency refers to the greenhouse gas emissions arising from the transportation choices of employees and visitors to a building as determined by the Smart Location Calculator. Adopted on December 6, 2016, the resolution directs members of the SGC to achieve a 10 percent improvement in the Smart Location Score of new leases compared to the average score of leased facilities in 2016.

- **EDP Compliance Guide** Environmental Product Declarations (EPD) are third-party verified reports that detail a product's impacts on the environment.

Tables of Applicable Statutory Requirements, Executive Orders and SAM and Management Memos

Table F-1 Statutory Requirements, Executive Orders, Management Memos, and the State Administrative Manual and the Applicable Roadmap Chapters

Legislation, Executive Orders, & Management Memos	Year Enacted	Climate Adaptation	ZEV	Energy	Decarb	Water	Facilities	Waste	Procurement
SB 32	2015	X			X				
SB 246	2015	X							
SB 416	2023						X		
SB 837	2023						X		
SB 1016	2008						X		
SB 1020	2022	X		X	X				
SB 1106	2005							X	
SB 1168	2014					X			
SB 1203	2021	X			X				
SB 1319	2014					X			
SB 1335	2018							X	
AB 32	2006	X	X		X				
AB 43	2023	X			X				
AB 75	1999							X	
AB 197	2016	X			X				
AB 262	2017								X
AB 341	2011						X	X	
AB 498	2002								X
AB 661	2022							X	
AB 739	2017		X						
AB 939	2021							X	

Legislation, Executive Orders, & Management Memos	Year Enacted	Climate Adaptation	ZEV	Energy	Decarb	Water	Facilities	Waste	Procurement
AB 1343	2010							X	
AB 1482	2015	X							
AB 1739	2014					X			
AB 1826	2014							X	
AB 2396	2016						X	X	
AB 2446	2022				X				
AB 2800	2016	X							
AB 2812	2016						X		
EO B-16-12	2012		X				X		
EO B-18-12	2015		X	X		X	X		
EO B-29-15	2015					X			
EO B-30-15	2015	X	X	X			X		
EO B-37-16	2016					X			
MM 14-02	2014					X			
MM 15-03:	2015		X						
MM 16-07	2016		X						
Public Resources Code 25722.8	2001		X						

Table F-2 Action Plans, and State Resources and Guidance Documents and the Applicable Roadmap Chapters

Action Plans, and State Resources and Guidance Documents	Year	Climate Adaptation	ZEV	Energy	Decarb	Water	Facilities	Waste	Procurement
2016 ZEV Action Plan	2016		X						
Cal-Adapt website		X							
California's 4th Climate Change Assessment	2018	X							

Action Plans, and State Resources and Guidance Documents	Year	Climate Adaptation	ZEV	Energy	Decarb	Water	Facilities	Waste	Procurement
Planning and Investing for a Resilient California	2018	X							
Safeguarding California	2014	X							

APPENDIX G — LIST OF TABLES, FIGURES, AND GRAPHS

APPENDIX H DWR POLICY — STATE-OWNED CHARGING STATIONS FOR ELECTRIC & PLUG-IN HYBRID VEHICLES

I. Purpose

To establish a standardized instruction in managing State-owned charging stations within the State Water Project (SWP) facilities operated by the Division of Operations and Maintenance (O&M).

II. Audience

This directive applies to the Division of Operations & Maintenance and all related Branches, Offices, and Sections.

III. References

A. Acronyms

- ACC — Area Control Center.
- ADA — Americans with Disabilities Act.
- DP — Disabled Person.
- DWR — Department of Water Resources.
- EV — Electric Vehicles.
- FD — Field Division.
- MG — Management.
- O&M — Operations and Maintenance.
- SWP — State Water Project.

IV. Background

The Department of Water Resources (DWR) is committed to promoting the use of electric vehicles (EVs) as part of its efforts to reduce its carbon footprint and improve air quality across the State. To support this initiative, DWR has installed several Level 2 (240 V) EV charging stations at SWP facilities, with plans for additional installations in the near future. This instruction provides guidelines for managing EV charging stations, prioritizing the charging of DWR's State-owned EV fleet while allowing personal EV charging as a secondary priority. Charging of any State-owned or employee-owned personal EVs at SWP facilities must only occur in designated EV charging spaces with operational equipment.

V. Actions

A. Use of Charging Stations at SWP Facilities

Charging Station Site Coordinator

The Field Division (FD) Manager, or their designee, serves as the FD Charging Station Site Coordinator and is responsible for the following:

- Determining who will oversee overall efficiency.
- Managing the safety, operability, and reliability of the charging equipment.
- Managing the schedule for all charging station locations.
- Ensuring charging station locations and associated parking spaces are prioritized for State vehicles.
- Contacting the vendor for repairs or services.
- Posting notifications when charging equipment is unavailable or out of service.

Requesting to Charge

All vehicle owners requesting to charge must register with the FD Charging Station Site Coordinator:

- FD employees must schedule a charging location locally via SharePoint with the FD Charging Station Site Coordinator.
- External FD employees must fill out the visitors log and include the following:
    - Person's name, vehicle make, vehicle color, vehicle model, vehicle license plate number, and the person's cell phone number.
    - In some cases, placing a sign in the vehicle window may be required, and instructions from the Coordinator must be followed.

On-site Charging Station Priority

All charging station locations and associated parking spaces will serve State-owned EV fleet vehicles, with some spaces designated for personal use by DWR employees. The priority for using the on-site charging stations is as follows:

1. State-owned EV fleet vehicles.
2. Employee's personal EVs (privately-owned or rentals).

Notice

Use of external/personal sockets or extension cords at SWP facilities is strictly prohibited.

Notice

If State-owned EV fleet vehicles cannot charge because a parking spot is occupied, all other drivers will be asked to stop charging their personal vehicle and move it.

B. DWR Personal Use of Charging Stations

Workplace Charging

Parking spaces with charging stations for personal plug-in EVs are available on a first-come, first-served basis for all employees and visitors in accordance with the following use policy and guidelines:

- Personal EVs are prohibited from occupying parking spaces designated exclusively for State EV fleet vehicles.
- ADA or accessible parking spaces containing charging stations may only be occupied by EVs displaying a valid disabled person (DP) parking placard or license plate.
- EVs must be actively charging while parked in designated spaces and must be moved to alternate spaces when not charging.
- All employee's personal EV's must be registered in the EV registration system on the FD SharePoint site, including the owner's name, cell phone number, and vehicle license plate number.
- Charging times for employee's personal EVs are limited to a maximum of 4–5 hours per day (work schedule dependent). There is a morning and afternoon charging session. The morning session begins at the start of the workday and concludes at 11:00 AM. The afternoon session starts at 11:30 AM and ends at the close of the workday. These sessions do not apply to night shifts.
- If the 4–5 hour time limit is exceeded, a FD Supervisor will contact the driver move their vehicle. If an employee is found to be abusing this privilege, they will be issued a warning. Repeat violations may result in the termination or loss of charging privileges.
- Employees shall not rely on DWR charging station availability when making decisions regarding private EV purchases.
- Upon completion of charging, vehicles must be moved promptly to allow others to charge. State-supplied charging cords must be neatly replaced to prevent safety hazards.
- A list of registered EV owners shall be available to the FD Coordinator on the FD SharePoint site.
- Charging station locations or associated parking spaces may be closed for special events, maintenance, or construction. Notification of regularly scheduled maintenance will be distributed by the FD Coordinator. For any questions or concerns, employees must contact their supervisor who relays any issues to the FD Coordinator.

- Charging is provided at no cost to employees, unless otherwise noted, or if changes are made to this instruction.
- The Department of Water Resources is not responsible for any damages that may occur while utilizing a State-owned charging station to charge an employee's personal EV. Any use of State-owned charging stations for a personal vehicle is at the owner's risk.
- If an employee is aware of any charging problem with their vehicle (like a short), they may never plug into State-owned equipment or buildings.
- At no time should an employee use the vehicle's supplied charging cord to plug into a standard electrical outlet (120 V) at any SWP facility. It is considered unsafe to use outlets for charging vehicles in undesignated locations or with plugs that have unmeasured and unlabeled loads. Only the FD Coordinator can grant an exception.
- If employees have an emergency or an urgent need to charge their personal EV outside of their scheduled works hours, they must have their supervisor's approval to be on-site outside of their work hours, and the Area Control Center (ACC) must be notified.

VI. Approval

Behzad Soltanzadeh, Division Manager

Date 1/28/2025

Division of Operations and Maintenance

APPENDIX I — SUSTAINABILITY THROUGH CARBON REMOVAL AND EMISSION REDUCTIONS

Governor Newsom signed AB 1757 (C. Garcia and Rivas) into law, which requires California's Natural Resources Agency (CNRA), with DWR and other CNRA agencies, to set and pursue ambitious targets for carbon sequestration and nature-based climate strategies across the state's natural and working lands, including wetlands. These targets are closely tied to CNRA's Natural and Working Lands (NWL) Climate Smart Strategy, which outlines actions to scale up nature-based solutions (NBS), and drive carbon sequestration to help California reach carbon neutrality.

Carbon sequestration is the process of capturing and storing atmospheric carbon dioxide through the natural processes of photosynthesis and decomposition of organic matter that is stored in the soil. DWR continues to track and report carbon sequestration and greenhouse gas (GHG) reduction benefits occurring across its habitat restoration projects and land stewardship practices.

DWR's Climate Action Plan (CAP) encourages DWR to maximize opportunities for carbon sequestration in habitat restoration projects and land management activities to support climate mitigation. DWR currently funds, leads, and supports large-scale wetland, riparian, and floodplain restoration projects across California. These efforts have resulted in tens of thousands of acres of restored or enhanced wetlands, with projects have focused in the Sacramento-San Joaquin Delta (Delta), where research shows that these restored wetlands are among the most carbon-rich landscapes per acre in the state.

Research collaborations between DWR and other institutions (Delwiche et al., 2025; Deverel et al., 2020; Hemes et al., 2019; Windham–Myers et al., 2023) has shown that restoring these managed freshwater wetlands on peat soils within the Delta reverses subsidence, sequesters carbon, and reduces total GHGs. These collaborations have developed methodologies for quantifying GHG reductions and carbon sequestration resulting from wetland restoration. This directly led to an American Carbon Registry-approved protocol designed to enable rigorous accounting of carbon sequestration and for these wetland restoration projects to generate tradable carbon offsets. DWR is further legitimizing protocols by exploring the generation of and sale

of credits from its projects, allowing these California wetland restoration projects to produce certified carbon offsets, establishing the quality and rigor of these nature-based climate solutions as ideal carbon sequestration and greenhouse gas reduction projects.

Continued research and monitoring in DWR-owned wetlands in the Delta have observed an average emissions reduction of 6 metric tons CO_2e (carbon dioxide-equivalence) per acre per year for growing tules relative to GHG emissions from baseline drained agricultural conditions. DWR has also conducted research on growing rice on these same peat soils, showing that while rice does not reverse or sequester carbon, it reduces rates of greenhouse gas emissions relative to more traditional agricultural activities. To date, DWR has constructed approximately 2,855 acres of wetlands and 588 acres of rice on Sherman and Twitchell Islands in the Delta.

> Using the rates above, it is estimated that DWR projects on Sherman and Twitchell sequester an estimated -8,100 mt CO_2e of GHG per year and reduce overall emissions by 29,000 mt CO_2e of GHG per year.

Tidal wetlands can also sequester carbon and provide greenhouse gas emission reduction benefits, particularly in the Delta and Suisun Marsh as tidal wetland restoration projects can additionally protect California's peat soils. DWR has constructed several tidal wetland restoration projects in the Delta and Suisun Marsh from the period 2015 to 2024. This has resulted in +9,000 acres of restored tidal wetlands and includes California's largest tidal restoration project, Lookout Slough at a total of 3,000 acres. Additionally, DWR efforts across the Delta aim for ~33,000 additional wetland acres currently completed, in construction, or in planning. Additionally, DWR is actively monitoring greenhouse gas emissions from the Dutch Slough Tidal Restoration project, where annual greenhouse gas budgets suggest Dutch Slough sequesters more carbon than 99% of monitored ecosystems globally (Arias-Ortiz & Baldocchi, 2023).

Currently most other tidal wetland restoration sites do not have data collection instrumentation available to verify actual carbon sequestration rates. However, it is conservatively estimated that the tidal wetland acres DWR has restored since 2015 may be sequestering ~54,000 mt CO_2e annually. Current efforts are underway, in collaboration with the University of California (UC) Berkeley, UC Santa Cruz, and Lawrence-Berkeley National Lab, to leverage DWR's continuous greenhouse gas measurements, advanced modelling techniques, machine learning, and satellite remote

sensing to more accurately and cost effectively scale the quantification of carbon sequestration across DWR's restored ecosystems. This will allow for more accurate reporting and accounting of DWR's carbon sequestration efforts in the context of CNRA's Natural and Working Lands Climate Smart Strategy.

References:

Arias-Ortiz A, & Baldocchi D. 2023. *AmeriFlux US-Dmg Dutch Slough Marsh Gilbert Tract, AmeriFlux AMP, (Dataset).* AmeriFlux AMP. https://doi.org/10.17190/AMF/1964086.

Delwiche K, Matthes JH, Arias-Ortiz A, Knox SH, Oikawa P, Sturtevant C, Verfaillie J, Szutu D, Keenan TF, & Baldocchi D. 2025. Dynamic methane emissions in a restored wetland: Decadal insights into uncertain climate outcomes and critical science needs. *Agricultural and Forest Meteorology*, *373*, 110735. https://doi.org/10.1016/j.agrformet.2025.110735.

Deverel SJ, Dore S, & Schmutte C. 2020) Solutions for subsidence in the California Delta, USA, an extreme example of organic-soil drainage gone awry. *Proceedings of the International Association of Hydrological Sciences*, *382*, 837–842. https://doi.org/10.5194/piahs-382-837-2020

Hemes KS, Chamberlain SD, Eichelmann E, Anthony T, Valach A, Kasak K, Szutu D, Verfaillie J, Silver WL, & Baldocchi DD. 2019. Assessing the carbon and climate benefit of restoring degraded agricultural peat soils to managed wetlands. *Agricultural and Forest Meteorology*, *268*, 202–214. https://doi.org/10.1016/j.agrformet.2019.01.017.

Windham–Myers L, Oikawa P, Deverel S, Chapple D, Drexler JZ, & Stern D. 2023. Carbon Sequestration and Subsidence Reversal in the Sacramento–San Joaquin Delta and Suisun Bay: Management Opportunities for Climate Mitigation and Adaptation. *San Francisco Estuary and Watershed Science*, *20*(4). https://doi.org/10.15447/sfews.2023v20iss4art7.