Sustainability Roadmap 2022–2023

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 April 2024



Gavin Newsom, Governor

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DEPARTMENT OF WATER RESOURCES ROADMAP Sustainability Roadmap FY 2022–2023 Department of Water Resources

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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:

- 1) Be an employer of choice.
- 2) Build community capacity.
- 3) Pursue innovative infrastructure solutions.
- 4) Respond to public safety emergencies.
- 5) 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 mission statement declares that "DWR is responsible for managing and protecting California's water resources. DWR works with other agencies to benefit the state's people and to 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

The DWR Vulnerability Assessment (VA) (2019), the first for a large State infrastructure agency, includes a detailed analysis of climate change vulnerabilities to its infrastructure, operations, and staff. The Vulnerability Assessment evaluates, describes, and quantifies — where possible — DWR's vulnerabilities to increases in wildfire, extreme heat, and sea-level rise. Further, DWR reviews how changes in hydrology and ecosystems will impact DWR's facilities, operations, and other activities.

In 2023, DWR began an update to its Climate Change Adaptation Plan. This plan goes beyond CalAdapt's statistical analysis and addresses climate-driven hazards to the most vulnerable DWR facilities, managed lands, operations, and staff activities. The AP provides adaptation strategies and initiatives including infrastructure improvements, enhanced maintenance and operation procedures, revised health and safety procedures, and improved habitat management to reduce climate change vulnerabilities and build climate resilience.

DWR's award-winning work in reducing greenhouse gas emissions (GHG) includes five national climate leadership awards. In addition, DWR has been consistently awarded All-Star certification, the highest level of certification from the credible carbon reporting organization, The Climate Registry. Since The Climate Registry began giving this award in 2018, DWR has continually received this recognition for setting goals, reducing emissions, having credible strategies, and showing transparency in reporting and verification.

In 2020, DWR updated its internal protocols to fulfill directives under EO B-30-15 to support implementation of the Governor's Water Resilience Portfolio and to facilitate inter-agency coordination. Under Water Resources Memorandum 75 (WRM, issued May 12, 2020), Project Managers are required to submit the Climate Change Screening Assessment Form to document considerations of climate change exposure risks and impacts. During 2021 and 2022, a work group was formed to improve the messaging and assist Project Managers in making comparable decisions across the various programs.

DWR has included climate change in its engagement and planning process, with DWR's Division of Regional Assistance working extensively with local communities, vulnerable populations, and disadvantaged communities to provide technical and financial support. Additionally, DWR's California Water Plan, updated every five years, contains climate change guidance for the California water community and is the Administration's roadmap for California water management considering climate change, more extreme droughts and floods, rising temperatures, declining fish populations, groundwater overdraft, and other challenges. The 2023 update of the California Water Plan will advance a statewide vision, watershed resilience planning framework with strategies and toolkit, and indicators and metrics to track progress, sustainability, and resilience.

DWR has over five funding programs that include climate change considerations in their funding criteria. In September 2022, Assembly Bill 179 was signed creating a funding source for piloting key elements of the Watershed Resilience Program. The legislation authorized funding to, "be provided as grants to water agencies and other public agencies for drought resilience and identification and assessment of climate risks on a watershed basis." DWR is currently structuring the Program to pilot implementation of this funding authorization.

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 the California Ari Resources Board (CARB) in response to AB 1757 in the coming years.

Vulnerability and Adaptive Capacity

DWR engineers and constructs facilities and select 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.

However, DWR as an employer and as a water provider is vulnerable to climate change in the following areas:

1. One area is heat impacts on DWR field employees' health. However, DWR has determined that adequate flexibility in operations and staffing as well as heat risk procedures are in place to mitigate the risk until the middle of the century.

- 2. Potential hydrologic changes will affect operations of the State Water Project (SWP). These hydrological changes include the loss of snowpack due to precipitation falling as rain instead of snow, snow melting faster, larger volumes of runoff entering reservoirs during the winter and early spring and less runoff arriving in late spring and early summer. Further, these changes could lead to higher downstream flow during flood events and reduced late summer storage levels.
- 3. Climate change brings both changes in temperature and precipitation, which are critical operational factors. Higher temperatures act to increase evapotranspiration, sublimation, and snowmelt rates, while decreasing soil moisture and snowpack. This, in turn, leads to reduced water storage, and changed water runoff patterns.
- 4. Changes in precipitation may affect average annual precipitation rates or the frequency, magnitude, and duration of extreme events. These changes can affect water quantity and quality and, in turn, the ecosystems and water systems dependent on the watersheds.

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, 92 percent of the fleet consists of vehicles that are suited to rough terrain. Until 2022, there were only sedans on ZEV State contracts, so internal-combustion engine (ICE) vehicles still dominate our purchasing. DWR Operations and Maintenance has installed 22 "Level 2" charging stations (using higher capacity refueling ports) at two of the State Water Project (SWP) Field Divisions. In the next two phases of the project, an additional 193 "Level 2" and even a few "Level 3" charging stations are planned throughout all five SWP Field Divisions (at 39 sites) in the next few years.

A 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. However, the average miles per gallon achieved by DWR's fleet continues to rise as a result of replacing older ICE vehicles with models which have better gas-milage ratings.

Energy

Retail Energy Use

DWR's retail source energy use was 37,658,717 Kilo British thermal units (KBtu) in 2022 compared to 46,569,200 KBtu in 2003. DWR has met the 20 percent retail energy use reduction target. Since 2010, DWR has completed 10 major energy efficiency projects for a one-time cost of \$228,081 with an annual savings of \$168,394 and an energy savings of 3,910,000 kBTUs, or 26 percent of DWR's total retail use.

Demand Response Programs

As of 2022, DWR participated in demand response programs for 6 percent of its buildings and was able to reduce energy demand by approximately 21 kW when required.

On-site Renewable Energy Generation

DWR has a 9.5 MW onsite solar generation plant at its SWP Pearblossom O&M Center. Renewable generation from this plant may be used for the Zero Net Energy Buildings (ZNE). 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 Renewable Energy Procurement Plan (REPP) to replace energy from thermal and unspecified sources with renewable energy. The REPP is being updated in 2023 to achieve new GHG emissions reduction targets set forth by legislation. DWR intends to add increasing amounts of renewable energy from a variety of sources, including solar, hydroelectric, and other renewable resources.

Zero Net Energy Buildings

DWR has nine facilities in operation that are ZNE compliant. These buildings constitute about 21 percent of DWR's building area. DWR is planning to take measures toward achieving ZNE for 50 percent of its existing building space by 2025. DWR is preparing an implementation plan to improve the energy use intensity (EUI) of buildings toward achieving this goal.

DWR meets the Power Use Effectiveness (PUE) requirements for its new Data Center in Rancho Cordova. The Natural Resources Data Center maintains temperature control between 73–81 degrees and operates within American Society of Heating, Refrigerating and Air-Conditioning Engineers-Technical Committee (ASHRAE-TC) 9.9 under the Class A1-A4 guidelines. All installed network switches meet current energy efficiency standards. The new Data Center is 95 percent virtualized and 5 percent physical.

DWR has an ongoing water and energy efficiency condition assessment for all the facilities which will be completed by 2024. DWR will then evaluate options related to installing efficiency and demand response measures.

Water Efficiency and Conservation

DWR facilities do not have submeters to separate potable and processed water use. DWR currently monitors and reports 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 instead, rely on groundwater to operate and maintain daily functions. Water use to operate these facilities is based on factors such as individual buildings within a site, function type, and the number of occupants. DWR's purchased water use for 2022 was 15,720,300 gallons. In 2022, DWR contracted with PG&E for water audits for all the SWP facilities.

Top Water Users

Typically, the top water consuming facilities include DWR visitor centers. However, because of the pandemic, the top users are the southern Operation and Maintenance (O&M) Centers, which in 2022 accounted for 66 percent of DWR's total water use, or 10,348,400 gallons.

Landscaping

Landscaping needs account for a large amount of water use; however, without irrigation water separated from total water use because there is a lack of submeters, it is difficult to know how much water is devoted to landscaping. DWR facilities have nearly 570,000 square feet of landscaping surface area, 84 percent of which is located at its five SWP Field Division O&M centers. Of the current landscaping, nearly 50 percent is turf grass. The San Joaquin O&M Center is the largest landscaped area, with 133,800 square feet of total landscaping, mostly turf grass, and watering it is thought to consume nearly 4.3 million gallons per year. DWR's biggest challenge is integrating landscape and irrigation improvement projects into its capital improvement plan as well as scheduling personnel to implement such projects. In the interim, DWR has been applying for various available funding programs, including State-sponsored programs. To date, the response to DWR's funding requests has resulted in either DWR being "Not Eligible," or the requested funds are already exhausted.

Drought Response

DWR and the Bureau of Reclamation prepared an extensive Drought Contingency Plan to protect water deliveries while under the Governor's 2021 Emergency Proclamation. Many actions which protected sensitive species in the watershed were taken. For example, both agencies began to preserve cooler water in the lower portion of their Reservoirs in anticipation of needing that water later in the year for protection of spawning salmon. DWR played a critical role in responding to this emergency.

Sustainable Operations

Greenhouse Gas Reductions

DWR began reporting its GHG emissions to the California Climate Registry in 2007 and then transitioned to the national Climate Registry in 2010. By 2012, DWR had formally committed to reducing its GHG emissions to 50 percent below 1990 levels by 2020 and 80 percent below 1990 levels by 2050. DWR's Greenhouse Gas Emissions (GHGe) reductions are award-winning, with DWR receiving the prestigious national Climate Leadership Award from the United States Environmental Protection Agency, The Climate Registry, and the Center for Climate and Energy Solutions for excellence in greenhouse gas management. This award recognizes organizations that publicly report and verify organizationwide GHG inventories and set and achieve aggressive GHG emissions reduction goals.

DWR is currently making plans to meet new legislative targets that will reduce GHGe to zero by 2035. The Greenhouse Gas Reduction Plan (GGERP) projected that 2015 emissions should be around 2.1 million metric tons CO2e to be on track to achieve the reduction goals by 2020. In fact, DWR achieved its target emissions reductions for 2020 in 2015, five years ahead of schedule. DWR set an emission reduction goal to 60 percent below its 1990 level by 2030. DWR has already achieved that goal, nine years in advance of the target date.

Environmentally Preferred Purchasing and Green Operations

DWR's Environmentally Preferred Purchasing (EPP) program is also noteworthy, DWR is taking several steps to increase both its EPP purchasing percentages and its State Agency Buy Recycled Campaign percentages.

While DWR still has challenges in meeting all green operations goals, especially in the areas of Indoor Environmental Quality (IEQ), Landscaping Equipment, and

Integrated Pest Management (IMP), DWR is committed to the continued implementation of green operations strategies and goals.

Organic recycling within breakrooms is a new challenge for DWR, as most ruralcommunity waste providers have not established programs with specific bins dedicated to food waste. The SWP Field Division O&M Centers and the Division of Flood Management O&M Yards are mulching and chipping waste on-site when staff undertake hazard-tree removal, weed control, or similar vegetation maintenance tasks.

Funding Opportunities

DWR operates the State Water Project (SWP), which is an enterprise-funded operation. This funding comes from annual payments from 29 public water sector contracts. Under SWP's O&M Division, DWR's Asset Management (AM) staff is 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. DWR plans and budgets for projects to bring SWP facilities into compliance with State Administrative Manual (SAM) and State Fire Marshal requirements.

As one example, severe ground surface subsidence is resulting in a reduction of capacity of four canal facilities including the California State Aqueduct and San Luis Canal. DWR is using SWP funds to prepare a feasibility study and designs to ensure these critical assets are recovered. Second, once energy and water audits are completed, DWR will incorporate the costs of proposed upgrades into AM planning process. Finally, DWR has spent and set aside SWP funding to pay for electric vehicle supply equipment at the Field Divisions in order to comply with the annual goals provided in SAM.

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

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CHAPTER 1 — CLIMATE CHANGE

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 developing its own comprehensive <u>Climate Action Plan</u> (CAP) to guide how DWR is and will continue to address climate change for its programs, projects, and activities.

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 and the impacts on individual and 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 determined the overall vulnerability 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 completed the 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 is working outside; the State Water Project (SWP) with expected reduction of water delivery reliability; Upper Feather River Watershed from more frequent and intense wildfires; and Landscapes, specifically ecosystem and habitat degradation within restoration projects. Since completion of the CAP Phase III: Adaptation Plan, DWR has been working to develop adaptation strategies to address the vulnerabilities of these four key assets.

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 facilities that are DWR-owned that do not serve the SWP and are included in this document are associated with mitigation and flood control.

Assessing Risk from Changing Extreme Temperatures

As our 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 2022 and globally, 2023 being the hottest summer ever recorded.

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 (DWR 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, DWR 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 contribute to many water management changes, 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.

Table 1.1 shows the DWR-owned facilities that are expected to experience the greatest increased number of extreme heat events by mid-century.

Table 1.1: Top 5–10 Facilities that Will Experience the Largest Increase in Ex	dreme
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)
CA AQUEDUCT — LOS ANGELES, MOJAVE DIVISION	99.3	4.4	35.1	30.7	58.7	54.3
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
— 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

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)
CA AQUEDUCT- SAN BERNARDINO COUNTY	95.9	4.4	34.7	30.3	58.8	54.4
ENVIRONMENTAL- LOS ANGELES COUNTY	97.4	4.4	34.2	29.8	56.6	52.2

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 5.6–6 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 5.6–7.6 degrees by mid-century.

Table 1.2a: Top 5–10 Owned and Occupied Facilities Most Affected by Char	nging
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)
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

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)
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
Beckwourth Subcenter	61.1	66.4	5.2	70.7	9.6
Romero Overlook	72.8	78.3	5.5	82.2	9.4
San Luis Operations and Maintenance Subcenter (No Electricity)	72.8	78.3	5.5	82.2	9.4
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
Tehachapi East Afterbay Maintenance Center	66.4	72.0	5.6	75.7	9.3

Table 1.2b: Top 5–10 Owned and Occupied 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

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)
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.

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
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

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

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.

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
— 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

Table 1.3b: Top 5–10 Occupied 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
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 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, 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 precautions and protocol is not taken. As determined in 2021 during a DWR Climate Change Program 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.

Planning Narrative 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), and 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 (updated in 2022). 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 the 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.

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 an *urban heat island*. Heat islands (see Table 1.4) 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).

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
Perris Reservoir Visitors Center	Yes	NO DATA
Water Quality Test Building	Yes	NO DATA
East Branch Extension — San Bernardino County	Yes	NO DATA
East Branch Extension — Riverside County	Yes	NO DATA

Table 1.4: Facilities in Urban Heat Islands

Reporting Narrative on 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 Narrative for 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, CA, 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 which significantly subsidizes the energy needed to run air conditioning for the inhabitants of the building.

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. It is also likely that extremes will intensify in both drought and heavy precipitation events. Larger rains can result in flooding but will also result in timing shifts with earlier runoff and greater runoff volumes. It will also result in decreased snowpack.

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)
NO INDIVIDUAL IMPACTS ON PERCENT CHANGE PRECIPITATION								

Reporting Narrative on Precipitation Impacts

The data provided from Cal-Adapt in Table 1.5 showed there were no change to precipitation for any of DWR's facilities when variances were rounded up (they equaled to zero). While climate projections for temperature are more certain than for precipitation, there is a high level of certainty that precipitation in the future will increasingly fall as rain instead of snow due to warmer conditions. Projections vary on whether California will receive less or more precipitation on average, but there is high certainty that what precipitation we receive will increasingly be delivered in less frequent but more powerful storms. This change in precipitation is not best captured in average percent change and this is not the ideal metric for measuring precipitation change as a result of climate change. Although the data in the table does not indicate that facilities will be impacted by climate change, DWR understands there will be changes in the year-to-year frequency and intensity of California's precipitation. Precipitation change will directly impact the operations of the SWP and water delivery, which is why DWR looks more deeply at precipitation resulting in hydraulic changes in its CAP III.

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.

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 designed to capture and store winter and spring runoff to reduce streamflows that cause flooding, and then deliver the water during the drier summer and fall months when it is needed for water supply.

DWR prepared the 2022 Update to the <u>Central Valley Flood Protection Plan</u> (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.

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.

Planning Narrative on 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, and the Conservation Strategy (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 prosed based on identified risks and vulnerabilities.

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

- 1. Improving communication and transparency about the vulnerabilities of the SWP from climate changes within the bi-annual Delivery Capability Report for the SWP (<u>https://water.ca.gov/Library/Modeling-and-Analysis/Central-Valley-models-and-tools/CalSim-3/DCR2021</u>).
- 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. (Appendix I).
- 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 (<u>https://water.ca.gov/deltaconveyance</u>), California Aqueduct Subsidence Project (<u>https://water.ca.gov/Programs/Engineering-And-</u> <u>Construction/Subsidence</u>), Forecast Informed Reservoir Operations at Oroville Reservoir (<u>https://water.ca.gov/News/Blog/2023/Jan-</u> <u>23/Californias-Forecast-Informed-Reservoir-Operations-Are-Key-to-</u> <u>Managing-Floods-and-Water-Supplies</u>), and Enhanced SWP Asset Management.

Assessing Risk from Sea-Level Rise

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. DWR's Delta and Suisun Marsh facilities 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.

Facility Name	Tide Chart Region	2050 Water Level (ft)	Exposed in 2050? (y/n)	2100 Water Level (ft)	Exposed at 2100? (y/n)
CLIFTON CT. FOREBAY — CONTRA COSTA COUNTY	3 feet above	+0.75	No (unless breaches occur along Old River)	+2.1	No (unless breaches occur)
SUISUN MARSH — SOLANO COUNTY	3 feet below to 8 feet above (protected by levees)	+0.75	Yes (portions)	+2.1	Yes (portions)
CA AQUEDUCT — CONTRA COSTA COUNTY	0 to 10 feet above; Pumping Station is at 50 feet above	+0.75	No (unless breaches occur along Old River)	+2.1	No (unless breaches occur)
WEST DELTA FACILITIES — SOUTH SACRAMENTO COUNTY	Sherman Island is 10 to 25 feet below (protected by levees)	+0.75	No (unless breaches occur)	+2.1	No (unless breaches occur)
NORTH DELTA FACILITIES — SACRAMENTO COUNTY	McCormack Williamson is 0 to 3 feet below (protected by levees)	+0.75	Yes (if McCormack Williamson Tract is breached)	+2.1	Yes (if McCormack Williamson Tract is breached)
DUTCH SLOUGH TIDAL MARSH	6 feet below to 6 feet above	+0.75	Yes (portions where levees removed)	+2.1	Yes (portions where levees removed)
NORTH DELTA FACILITIES — SOLANO COUNTY	3 feet below	+0.75	Yes (if Prospect Island is breached at Miner Slough)	+2.1	Yes (if Prospect Island is breached at Miner Slough)

Table	1.6: All	Facilities	at Risk	c from	Rising	Sea L	.evels
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Facility Name	Tide Chart Region	2050 Water Level (ft)	Exposed in 2050? (y/n)	2100 Water Level (ft)	Exposed at 2100? (y/n)
MITIGATION - CONTRA COSTA COUNTY	0 (at sea level)	+0.75	Yes (portions where levees removed)	+2.1	Yes (portions where levees removed)

Note: Projections are based on a median confidence model (SSP3-7.0) from NASA for the Port Chicago water gauge as predicted in the 6th Assessment Report (accessed at <u>https://sealevel.nasa.gov/ipcc-ar6-sea-level-projection-tool</u>).

Reporting Narrative on Sea-Level Rise Impacts

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.

Clifton Court Forebay and the first sections of the California Aqueduct are located in the Delta. Sea-level rise will increase the salinity of water in the Delta, requiring more outflow to dilute the brackish Delta water and increased Delta salinity, requiring extra Delta outflow to dilute more brackish Delta water to meet environmental standards of the SWP. The extra Delta outflow is provided at the expense of Delta exports, with less water being sent through the California Aqueduct to water users south of the Delta.

Planning Narrative of 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, move, and store water to make the most of big, but infrequent, storm events. The Final EIR for this project was released in December 2023.

Assessing Risk from Wildfire

DWR's 2021 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 (see Tables 1.7 and 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.

SWP Operations

The sensitivity of SWP operations to changes in wildfire regime in the watershed is difficult to assess. Wildfires can change several properties of a watershed and can have short-term and long-term effects on the hydrology of the watershed depending on their severity and intensity (Gould, et al., 2016). In general, the conditions of the watershed existing after the occurrence of a wildfire tend to result in increased inflows and contaminant loadings to receiving water bodies (Ice, Neary, & Adams, 2004). Authors of the Fire Analysis/Structure Risk Assessment suggested that existing protocols for fieldwork and maintenance activities may need to be modified to create adaptive capacity to wildfire vulnerability to staff (routes to work are closed because of fire, they lose their homes, etc.). Adaptation strategies could be developed to reduce risks of increasing wildfire at the higher risk facilities, with suggestions to use meadow restoration, controlled burns, and forest thinning.

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 not funding immediately allocated to replanting and restore vegetation after a devastating fire. In response, DWR is developing a new land stewardship program where recovery from catastrophic events will be considered and 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 fireaware, 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.

Facility Name	Fire Hazard Severity Zone Designation (low, medium, high, very high)
Vista Del Lago Visitors Center	Very High
Vaquero Water Treatment Plant (No Water)	Very High
Oso Civil Maintenance and Mobile Equipment (No Electricity)	Very High
ANTELOPE VALLEY RES — PLUMAS CO.	Very High
CA AQUEDUCT — LOS ANGELES COUNTY	Very High
CA AQUEDUCT — SAN BERNARDINO COUNTY	Very High
CA AQUEDUCT — RIVERSIDE COUNTY	Very High
GRIZZLY CREEK — PLUMAS COUNTY	Very High
ENVIRONMENTAL — LOS ANGELES COUNTY	Very High
PYRAMID LAKE DEVELOPMENT	Very High

Table 1.7: Top 5–10 Facilities Most at Risk to Current Wildfire Threats by Fire Hazard Severity Zone

Facility Name	Acres Burned (1961–1990)	Acres Burned (2031–2060)	Acres Burned (2070–2099)
TRINITY RIVER SEDIMENT REMOVAL	10.3	15.2	29.5
Antelope Valley RES — Plumas County	14.1	18.5	22.8
Cedar Springs Dam Maintenance Station	9.3	13.7	14.6
CEDAR SPRINGS RES — SAN BERNARDINO COUNTY	9.3	13.7	14.6
Beckwourth Subcenter	10.8	13.8	15.1
Grizzly Creek — Plumas County	10.8	13.8	15.1
CA AQUEDUCT — RIVERSIDE COUNTY	6.2	11.1	8.8

Table 1.8: Top 5–10 Facilities that will be Most Impacted by Projected Changes in Wildfire by Acres Burned

Reporting Narrative on Wildfire Risks

The facilities listed in Table 1.8 will experience the most relative projected change in wildfire in 2070-2099 per data acquired from CalAdapt. The facilities are centered in the northern region of the state and San Bernardino-Riverside area. These areas have seen some of the most devastating fires in the last 10 years. Unsurprisinally, the facilities in these areas would be most at risk of wildfire. 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, water control or conveyance structure, and a river enhancement project. Therefore, impacts to these facilities from a wildfire differs. The Cedar Springs maintenance building and station will likely perish in a devastating fire and DWR will be forced to reconstruct. Maintenance staff reporting to these facilities would also be impacted. Minimal impacts would be expected on water control or conveyance structures because they are made of concrete and contain water; however, debris from wildfires, and from resulting wet-season flood debris, will impact water storage and conveyance procedures (see Note). Similarly, the Trinity River Sediment Removal project would be minimally impacted because of its location within a waterway, but any construction equipment left on site would likely be destroyed.

Note: Fifty-seven percent of the Upper Feather River watershed that supplies water to Lake Oroville, a primary reservoir of the SWP, has been burned by wildfire over the past four years. The burn scar is anticipated to generate more woody material that will ultimately enter Lake Oroville over time where it can negatively impact public safety for boaters, radial gate operations, and Hyatt Powerplant operations. The significant burn scars in the watershed have offered opportunities for scientific study. Currently, DWR's Dam Safety Services is discussing the development of longitudinal studies to enable future modeling of sediment inflows from burn areas.

DWR continues 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 the use of 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.

Planning Narrative of Wildfire Risk Mitigation Plan

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. 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 naturebased solution to lessen the intensity and devastation of wildfire. Meadows are understood 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.

Understanding Climate Risk to Planned Facilities

In April 2015, the Governor issued EO B-30-15, establishing greenhouse gas reduction targets and specifying steps for consideration of climate impacts. The EO requires all State agencies to consider the impacts of climate change in all planning and investment activities.

Written in 2012 and updated in 2020 to be consistent with SB100 and EO-B-55-18 mandates and goals, DWR prepared the Climate Action Plan Phase I: Greenhouse Gas Emissions Reduction Plan (GGERP). DWR reached its near-term goal of reducing its emissions to 50 percent below 1990 emissions level by 2020, five years earlier than projected, and received a Climate Leadership Award for this accomplishment in 2018. DWR's mid-term goal is to reduce emissions to at least 60 percent below the 1990 level, and the long-term goal is supplying 100 percent of electricity with zero carbon resources and achieving carbon neutrality. An updated GGERP is planned for 2024 to describe goals for the department to meet carbon neutrality by 2035.

Table 1.9 describes the DWR Climate Action Plans that ensure climate change is integrated into the department's planning process.

Climate Risk Assessment	Date	Description
Climate Action Plan:	2012	Describes how DWR will help mitigate the
Phase I Greenhouse	and	future impacts of climate change by
Gas Emissions	updated	reducing the GHG emissions from its
Reduction Plan	in 2020	activities.
Climate Action Plan:		DWR's framework and guidance for
Phase II Climate	2019	consistent incorporation of analysis for
Change Analysis	2010	climate change impacts in its project and
Guidance		program planning.

Table 1.9: Climate Risk Assessment Plans

Climate Risk Assessment	Date	Description
Climate Action Plan: Phase III Vulnerability Assessment and Adaptation Plan	2019 and 2020	Evaluates and quantifies the vulnerabilities of DWR's assets and activities. The Adaptation Plan prioritizes DWR resiliency efforts to protect the assets in the Vulnerability Assessment.

The Vulnerability Assessment 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.

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. Appendix I contains a summary of the WRM No. 75 guidance.

WRM No. 75 requires project managers to complete a Climate Change Screening Analysis document early in the project development phase to assess whether climate change analysis is needed for the project or activity. The document translates the scientific principles outlined in the "IPCC Expert Meeting on Assessing and Combining Multi Model Climate Projections" into analytical considerations that project managers can use to inform their decision processes for selecting an approach for the climate change analysis. An internal workgroup receives the completed screening document and provides support for carrying out climate change analysis for those projects that require it. This process ensures that new DWR facilities and projects are developed under the consideration of climate change and meet high standards for quality, scientific rigor, and consistency.

Understanding the Potential Impacts of Facilities on 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 Planning and Research.

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.

Facility Name	CalEnviroScreen Score	Is it located in a disadvantaged community? Yes/No
Southern Region Office	90–100%	Yes
San Luis Field Division Headquarters	70–80%	Yes
Sacramento Maintenance Yard	90–100%	Yes
Lost Hills Operations and Maintenance Subcenter	80–90%	Yes
Romero Overlook	80–90%	Yes

 Table 1.10: Facilities Located in Disadvantaged Communities

Facility Name	CalEnviroScreen Score	ls it located in a disadvantaged community? Yes/No
Coalinga Operations and Maintenance Subcenter	70–80%	Yes
Sacramento Maintenance Yard	90–100%	Yes
THERMALITO ANNEX	80–90%	Yes
West Sacramento Storage Yard	90–100%	Yes
CA AQUEDUCT-STANISLAUS COUNTY	70–80%	Yes
CA AQUEDUCT-KERN COUNTY	80–90%	Yes
CA AQUEDUCT-MERCED COUNTY	80–90%	Yes
CA AQUEDUCT-KINGS COUNTY	90–100%	Yes
LOS BANOS GRANDES RESERVOIR- MERCED COUNTY	80–90%	Yes
DELTA PERIPHERAL CANAL- SACRAMENTO	90–100%	Yes

Planning Narrative for Facilities in Disadvantaged Communities

The facilities described in Table 1.9 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 department's funding planning.

New Facilities within Disadvantaged Communities and Urban Heat Islands

The SWP is one of the most critical water suppliers across California, with almost 27 million Californians and 750,000 acres of farmland relying on the system. The infrastructure must be efficiently maintained to avoid interruptions of water delivery and impacts to thousands of Californians. One concerning threat to the system is subsidence in the San Joaquin Valley. The elevation gradient within the conveyance structures is used to move water, and changes to this profile from subsidence has caused operational difficulties and decreases in the flow capacity of the system.

To correct this issue, the Conveyance Subsidence Program (CSP) is restoring two State and two federal canal segments that have significant capacity loss due to land subsidence. As this program works to restore the loss of capacity of these canals, the areas served will have direct economic benefit from the construction activities. Projects like these often result in local construction jobs. Repairing and improving aging or damaged infrastructure should prevent supply losses and ensure safe and reliable drinking water for communities that lack it in Southern California. The lack of capacity for these segments seriously hampered the State and federal canals' ability to move excess water from the numerous winter storms this year. The location of this program in a disadvantaged community is shown in Table 1.11.

DWR recognizes that underserved communities often face disproportionately high flood risk. To begin to address this inequity, the 2022 Central Valley Flood Protection Plan (CVFPP) Update identifies the need for new partnerships between the State and vulnerable communities to ensure future flood management strategies promote equity across all Central Valley communities. DWR and the CVFPB seek to advance equity in flood management, increase collaboration with vulnerable communities, and support alignment of State efforts to help vulnerable communities prepare for, respond to, cope with, and recover from flood events.

Facility Name	Located in a Disadvantaged Community (yes/no)	Located in an urban heat island (yes/no)
California Aqueduct	Yes	Νο
San Luis Reservoir	Yes	Νο
Flood Risk Reduction Projects (various) and Systemwide Improvements under CVFPP	Yes	Νο

Table 1.11: New Facilities and Disadvantaged Communities and Urban Heat Islands

Integrating Climate Change into Department Funding Programs

Governor Brown's 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).

Name of Plan	Have you integrated climate?	If no, when will it be integrated?
Asset Management Program framework modeled on ISO 55000 standard (ongoing)	Yes	N/A
Business Case Evaluation Tool for O&M Asset Management (2022)	Yes	N/A
State Water Project Risk Management Program (2023, DRAFT)	Yes	N/A
State Water Project Climate Action Coordination (ongoing)	Yes	N/A

Table 1.12: Integration of Climate Change into Department Funding Programs

Reporting Narrative for Integrating Climate Change into Department Planning Process

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 the banner of Asset Management. Under SWP's O&M Division, DWR's Asset Management (AM) staff is 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 which 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.

Business Case Evaluation: Since 2022, each major SWP investment is considered using the Business Case Evaluation Tool. Under the Business Case Evaluation Tool, DWR first analyzes the status quo and then analyzes several alternatives using lifecycle cost estimates and information from a risk assessment. The final selected alternative is written into a justification for management approval.

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. Activities include provide reliable data input to planning and operations models that reflect current and future climate conditions that can be used to estimate, forecast, and plan for current and future hydrologic conditions and SWP delivery reliability, investigate and respond to evolving climate change impacts and challenges including wildfire and increased aridity, develop and evaluate climate adaptation strategies for the SWP.

Flood Risk Reduction Projects

The CVFPP is the State of California's strategic blueprint for Central Valley flood risk management. The 2022 CVFPP Update focuses on the increasing flood risk brought on by climate change and the need to act with renewed urgency and purpose before the next large flood event occurs in the Central Valley.

Salton Sea Long Range Plan

In the recently released Salton Sea Long Range Plan (2022), climate change effects on the hydrology of the Salton Sea were examined using two methodologies. The first method analyzed the climate change impacts on Colorado River inflows to the Imperial Valley. The second method examined climate change impacts on evapotranspiration, which affects water consumption for agriculture and thus the residual flows to the Salton Sea. The restoration scenarios presented by DWR considered the ongoing long-term drought in the west, the possible effect of climate change on evapotranspiration in the Imperial Valley, possible reductions of flows from Mexico, and several other factors.

Planning Narrative for 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.

The 2022 CVFPP Update was informed by new data about the impacts of a changing climate in the Central Valley and includes projections of climate change impacts on ecological conditions that are influenced by or can affect flood management. The CVFPP Conservation Strategy's, "Appendix H: Climate Change Adaptation for the CVFPP Conservation Strategy Update" used the modeling data in the CVFPP to estimate the impacts of climate change on ecological processes, habitats, and stressors to target species and described adaptation and management strategies based on the identified risks and vulnerabilities. The next update of the CVRRPP and its Conservation Strategy will be in 2027.

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 lifecycle in an era that demands innovative solutions. DWR must act boldly to adapt and modernize our 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.

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." 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 between 2020 and the middle of 2023. 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.

Name of Plan	Does this plan consider impacts on vulnerable populations? Yes/No	Does this plan include coordination with local and regional agencies?	Does this plan prioritize natural and green infrastructure? Yes/No
		Yes/No	
Central Valley Flood Protection Plan 2022 Update and Conservation Strategy 2022 Update (with CVFPB, 2022)	Yes	Yes	Yes
California Water Plan "Update 2023" (planning sessions in 2021 and 2022, and released as a draft for comments in October 2023)	Yes	Yes	Yes
Drought Contingency Plan (2021)	Yes	Yes	No
Salton Sea Management Program / Salton Sea Long Range Plan (2022)	Yes	Yes	Yes

Table 1.33: Community Engagement and Planning Processes

Reporting Narrative for 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 as an attachment their communication plan which outlines 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 new 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.

The Salton Sea Management Program (SSMP) prepared a Long-Range Plan (LRP) to comply with State Water Board Revised Order WR 2002-0013 (Order). The goal of the LRP is to protect or improve air quality, water quality, and wildlife habitat to prevent or reduce health and environmental consequences anticipated from the long-term recession of the Salton Sea. Meeting these objectives should be accomplished in a way that is acceptable to the region by being consistent with Tribal, local, State, and federal policy and initiatives. The lead planner for the Salton Sea planning effort is matrixed into the Executive Division of DWR.

Planning Narrative for Community Engagement and Planning Processes

DWR's Strategic Plan was updated in 2023 and encourages DWR to design projects with nature-based solutions, so green infrastructure is likely to become more prominent than in the past. Since the Strategic Plan forms the foundation for future plans produced (or co-produced) by DWR, future planning documents will detail and amplify these actions.

DWR's Division of Multibenefit Initiatives will continue to follow the "Engineering with Nature" discussions at the federal level, and provide technical assistance to local levee districts for design of nature-based solutions. By 2025, DWR aspires to develop a multi-division land stewardship program that contributes to various State land use objectives, including "30x30" sponsored by the CNRA and "Natural and Working Lands" which were both in recent legislation, Senate Bill (SB) 337 and Assembly Bill (AB) 1757 respectively.

Climate Change Implementation Planning in Funding Programs

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. Between 2022–2023, the State saw historic budget surpluses that have been allocated to DWR for grant programs. Table 1.14 lists the funding programs within DWR and their climate change implementation planning.

Table1.14: Climate (Change Implementation	n Planning in Department Fu	nding
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
Delta Levees Special Flood Control Projects 2023 Project Solicitation Package for Multi-Benefit Projects	Yes, climate change was intentionally incorporated in guidelines and scoring criteria.	Not applicable	No but the Social Vulnerability to Climate Change in the Delta study from Delta Adapts was included as an appendix in the PSP for applicants to consider.	No but eligible applicants for the funding are Levee Maintaining Agencies (LMAs or Local Agency) responsible for maintaining a Project or Non-Project levee in the Primary Zone

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
				of the Delta or a Non- Project levee in the Secondary Zone of the Delta.
Water Storage Investment Program (Prop 1, Ch 8, CA Water Commission)	WSIP has regulation incorporating Climate Change, within the quantification of benefits and impacts and uncertainty analysis.	Regulations are effective as of March 7, 2017.	The Program does not specifically call out or define vulnerable populations in relation to project. State Water Board's Water Quality Priorities include a priority to provide water for basic human needs.	Yes
Water Use Efficiency Grants	No, but new guidelines are in development per AB 1668.	Yes, but date is uncertain.	DWR's Grant committee "FAIR" develops standard language to be included in all funding program guidelines. These need to be developed.	Yes

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
Sustainable Groundwater Planning Grant Program	Yes. CA code of Regulations, Title 23, Division 2, Chapter 1.5, requires all Plans to include a climate change scenario evaluation.	Not applicable	Yes. Ten percent of funding is reserved for severely disadvantaged communities and SDAC Projects are prioritized for funding.	Yes
Proposition 1 Integrated Regional Water Management Round 2, Cycle 1 and 2	Yes. Climate change is incorporated in the 2022 IRWM Guidelines.	Not applicable	Yes. Providing funding for vulnerable communities is a statewide priority.	Yes
San Joaquin Fish Population Enhancement Program	Yes. Climate change was included in the scoring criteria as consideration of natural features that would enhance climate resiliency.	Not applicable	No	No
Urban Streams Restoration Program	Yes. Climate change was included in the scoring criteria as consideration of natural features that would	Not applicable	Yes, a minimum of \$2 million was set aside to fund projects that serve disadvantaged communities. No funding match is	Yes. Two applicants are required for an application, including one local public

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
	enhance climate resiliency.		required for applicants serving a disadvantaged community.	agency, Tribe, or nonprofit organization and one local community group.
Riverine Stewardship Program	Yes, eligible projects include habitat enhancement that benefit aquatic species and habitat to adapt to climate change.	Not applicable	No	No, but public- private partnerships are identified as funding priorities.
Small Community Drought Relief Program	No	No, funding was in response to the 2021 drought and utilized General Fund monies.	Not directly but the funding is intended for small communities to cope with drought which may indirectly benefit vulnerable communities.	No
County Drought Resilience Planning Assistance Program	No	No, the grant only provides funding for counties to develop a County	No but the two funding options are provided, a noncompetitive grant and direct technical assistance.	No but it is assumed the county would work together in developmen t of the plan

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
		Drought Resilience Plan and a County Drought and Water Shortage Task Force, in compliance with SB 552.		and task force.
Urban Community Drought Relief Grant Program	Yes, projects that specifically reduce climate change vulnerabilities and make a quantified contribution to the measurable goals of 2022 California's Water Supply Strategy, are eligible to receive prioritized funding.	Not applicable	Underrepresented Community Funding is available to projects providing at least 50% of the primary benefit directly to an underrepresented community or Tribe.	No
2021 Urban and Multibenefit Drought Relief Program	No	This one-time funding opportunity from the Budget Act of 2021 for DWR to deliver grants for interim and immediate	Yes, at least \$50 million will be made available to support underrepresented communities and Tribes.	No

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
		drought relief.		
Landflex Grants	Yes, the eligibility requirements ask for applicants to demonstrate the project contributes to addressing the risks in the region to water supply and water infrastructure arising from climate change.	Not applicable	Grantees are required to utilize mapping tools to ensure that investments benefit vulnerable communities in their basins and determine specific drinking water benefits to vulnerable communities.	Local government agencies work directly with farmers in critically over drafted basins to provide financial incentives to farmers who limit agricultural water use.
Instream Flow Water Purchase Program	No	Yes, but date is uncertain.	No, only to the extent that a factor in evaluating proposals is that local and regional interests, including disadvantaged communities be considered.	The State encourages partnerships with public entities or nonprofits when feasible.
Statewide Flood Emergency Response Grant, Round 3	No	Yes, but date is uncertain.	No	Guidelines encourage local governments to work closely with

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
				their local districts in the developmen t of their flood emergency plans.
Delta Flood Emergency Response Grant – Round 3	No, the climate change questions in the guidelines are optional and do not affect scoring.	Yes	No, the grant is only available to applicants representing the legal Delta.	No
Water Desalination Grant Program Continuous Application Process – CAP5	Projects that meet goals in implementation of the State Climate Change Adaptation Strategies, especially GHG reduction, will receive positive consideration in scoring.	Not applicable	DWR offered technical/grant writing assistance for disadvantaged communities. Projects that directly benefited disadvantaged communities received positive consideration in scoring. Funding Match may be suspended or reduced for a project that is serving a disadvantaged community.	Scoring criteria includes whether the applicant has a well- developed and implemente d outreach to other agencies.

Reporting Narrative for Climate Change Implementation Planning in Funding Programs

DWR has included climate consideration in grants and other funding programs for many years. This includes direct grants, proposition funding, and local assistance programs. DWR also prepared the Alignment Analysis of Climate Change Considerations Across DWR Activities in 2021 to examine the consistency in the consideration of climate change among DWR programs and inform recommendations for improved alignment.

Planning Narrative for Climate Change Implementation Planning in Funding Programs

Climate change integration has been achieved in multiple grants and funding programs. Expanding climate change consideration in more grants and funding programs requires consistent rollout of language to ensure transparency. The expansion of climate consideration in more grants is a potential in future solicitations and is being considered within the DWR Climate Change Program.

Measuring and Tracking Progress

Reporting Narrative on Measuring and Tracking Progress

Changing climate conditions necessitate 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).
- Processes stages (i.e., understanding, planning, and managing) to guide adaptive management.

DWR uses these 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 will examine the full suite of its adaptation activities at least every two years. The next DWR Climate Adaptation Plan Update is due to be released in 2024. 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 H).

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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).



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 does not have the 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.

One of the three major fuel providers for the State was no longer selling renewable or biodiesel after November 2, 2020. The bulk fuel purchases from 2020 are in the table for comparison (Table 2.1). New bulk fuel contracting in 2023 should continue to allow renewable diesel to be available at DWR's fuel stations.

Year	Year Diesel (Gallons)		Renewable Diesel (Gallons)
2020	40,533	766,561	199,288
2021	1,873	388,803 (bulk) and 224,881 (for fleet cars from private sellers)	269,351
2022	FUEL TYPE NOT DELIVERED	231,311 (bulk) and 294,318 (for fleet cars from private sellers)	203,248

Table 2.1: Total Fuel Purchased in 2021 and 2022

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

For the three (3) Battery Electric Vehicles, DWR employees are both charging at State buildings and accessing private charging stations using State-issued credit cards. The credit card charges for these three vehicles totaled \$2,218 (averaging \$739 per year for each vehicle) with \$463 of this amount attributed to Tesla Supercharging. The amount spent to purchase fuel at private gas stations for 350 internal combustion engine vehicles that were issued a WEX card was \$1,579,776 (averaging \$4,513 per year for each vehicle).

Reporting Narrative on Fuel Type Selections

DWR's Procurement Manual (June 2023 Update) specifies that DWR vehicles and equipment are to be refueled at DWR fueling stations located within in the O&M Field Divisions and at Division of Flood Management (DFM) Maintenance Yards. DWR purchases fuel in bulk to supply State vehicles and/or other Stateowned mobile equipment. Bulk fuel is purchased utilizing 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's Fuel Credit Card.

The Department is pursuing Battery-Electric Vehicles to replace its fossil-fuel vehicles and has no plans for hydrogen fuel use at this time.

Rightsizing the 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.

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.

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. 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.

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 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.

Implementation Status

Reporting Narrative on Telematics Implementation Status

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. While a large majority of our fleet has telematics, final installs and date collection are on hold awaiting the current installation procedure approval from CARB.

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 lightduty pool vehicles, the majority of which are stored at the four Region Offices or in Sacramento-area garages. All the pool vehicles are in locations with EV charging stations. There are 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 2022 DWR only has 69 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 7.5 million miles per year in both 2021 and 2022 (see Table 2.2).

Table 2.2: Total Miles Traveled

Year	2017	2018	2019	2020	2021	2022
Amount Driven	9,274,112	9,290,400	No Data	No Data	8,071,042	7,699,411

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 is a steady decline to DWR's mile per gallon (Table 2.3).

Table 2.3: Miles per Gallon

Year	2017	2018	2019	2020	2021	2022
MPG	19.6	20.1	24.3	22.9	23.0	23.5
Average						

Reporting Narrative on 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 2022, DWR's average MPG was 23.5, an increase of 6.5 MPG (38 percent higher; Table 2.3). Most of this MPG increase is due to the use of ZEV vehicles, discussed in the following section.

Planning Narrative on Fleet Fuel Use, Miles Travelled, and Fleet Size

In 2010, DWR published a Director's memo with several Sustainability Targets, all of which have been reached. With the formation of a Sustainability Workgroup in 2024, DWR anticipates releasing new goals, which may include targets which result in fleet emission reductions.

Composition of Light Duty Vehicle Fleet

DWR depends heavily on 5-passenger SUV (see Graph 2.2).





Light Duty Take-Home Vehicle Fleet Status

DWR supported 17 take-home vanpool vehicles in the period of 2021 and 2022 (see Table 2.4).

∀ehicle Type	Sedans	LD Pickup or Trucks	MD/HD Pickup or Truck	LD Van	MD/HD Van	SUV
Totals	None	None	None	None	17 as part of vanpools	None

Table 2.4: "Take Home" Vehicles in Department Fleet

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

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.

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 (we own 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.

Graph 2.3: Composition of Medium and Heavy-Duty Vehicle Fleet Subject to the ZEV-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 2.5 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 non-ZEV light duty trucks. 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 2.6). However, in response to Budget Letter 23-27 "Current Year Expenditure Freeze" issued on December 12, 2023, all incomplete fleet purchases are paused, and we are unable to estimate the number of vehicles in future years.

Table 2.5: Light Duty Vehicles in Department Fleet Currently Eligible for Replacement

# of Vehicles eligible for	Sedans	LD	LD	SUVs, 5 pass-	SUVs, 7 pass-	SUVs, 8 pass-	Total
replacement		vans	Pickups	engers	engers	engers	
Totals	10	2	81	93	0	0	191

ZEV Category	21/22	22/23	23/24	24/25	25/26
Battery Electric Vehicle (BEV)	3	20	50	60	65
Plug-in Hybrid Vehicle (PHEV)	0	5	0	0	0
Fuel Cell Vehicle	0	0	0	0	0
Percent of total purchases	35%	40%	100%	100%	100%
Required ZEV Percentage	35%	40%	45%	50%	55%
Total number of ZEVs in Fleet*	59	62	Estimated	Estimated	Estimated

Table 2.6: Plan for Light Duty ZEV Additions to the Department Fleet

Reporting 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. Recently four Teslas were purchased for DWR pool and distributed to four locations. In addition, several Volts and Bolts were also added to the pool for the Sacramento Headquarters (leased from DGS) and the Fresno Regional Office (at a building that is leased from a private party).

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.

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 Integrating ZEVs into Take-Home Vehicles

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.

Medium-Heavy-Duty ZEV Adoption

The Department's fleet is dominated by heavy-duty pickups and light duty pickups which are used for the mission critical purposes described above. Many of DWR's heavy-duty pickups are utility or service trucks equipped with special tools and devices specific to DWR's fieldwork. As of July 2023, new BEV and plug-in Hybrid medium-duty and heavy-duty vehicles are available on State contracts which will accelerate DWR's rate of adoption.

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

There are over 60 trucks and vans eligible for replacement (see Table 2.7). In 2021, there were 87 eligible. In the reporting period a ZEV truck (the Ford Lightening) became available on a State contract. However, all of DWR's contracted trucks were cancelled due to supply issues at Ford. In both FY 21/22 and 22/23 there were 8 utility-body trucks purchased and all of them were fossil-fuel vehicles because of the lack of any ZEV option. 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 2025 (Table 2.8).

Table 2.7: 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	16	0	0	40	10	66

Table Header Format	21/22	22/23	23/24	24/25	25/26
Battery Electric Vehicle (BEV)	0	0	0	1	1
Plug-in Hybrid Vehicle (PHEV)	0	0	0	1	1
Fuel Cell Vehicle	0	0	0	0	0
Percent of total purchases	0%	0%	0%	10%	10%
Total number of ZEVs in Fleet	0	0	0	2	4

Table 2.8: Planned Medium/Heavy Duty ZEV Additions to the Department Fleet

Reporting Narrative for 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.

Note: As a pilot project, DWR will track the replacement of an ICE light-duty truck used for field monitoring trips that is expecting a replacement with a BEV in 2025. There are several logistical hurdles to overcome with this replacement. For example, the location where this vehicle will be stored is under a private lease that DGS just negotiated, and no Level 3 charger was negotiated for installation. The lack of large-capacity charging stations will make charging from empty to full battery a real challenge for this truck owner. DGS Office of Sustainability staff calculated it will take up to 27 hours to charge from an empty to full battery when using the existing Level 2 chargers at this location. While new private infrastructure could be used, there is currently only a single Level 3 charge station in the city where this truck is located, and it is located a 15-minute drive from the office. How staff tackle and overcome these logistical challenges should give us important insight as we increase the number of ZEVs in our fleet.

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 Management O&M centers. 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.



Reporting Narrative on Parking Facilities

Given the nature of the Department's fleet operations and the length of stay for visitors and employees, we have determined that it is appropriate that the installed chargers be a Level 2, 7200 watt, 240-volt charging station (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% 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.

Phase I: Pilot Project

Phase I work added parking areas for EV use in Oroville Field Division in 2015. The Phase 1 work was performed internally by SWP O&M staff and includes six charging stations at Hyatt Power Plant and six charging stations at Oroville Field Division that charge at Level 2 capacity.

Phase II: O&M Center Charging Stations

Phase II focused on providing charging stations to the O&M centers at Delta Field Division, San Luis Field Division, and San Joaquin Field Division to support the initial transition of a portion of SWP's O&M's fleet to ZEVs. All of these charging stations support Level 2 charging. The charging stations have been commissioned at Delta Field Division, and commissioning of the charging stations at the remaining locations is projected to be completed by January 2024.

A summary of the Phase II charging station planned at various SWP Field Division locations is shown below:

- Delta Field Division 10 stations
- San Luis O&M Center 16 stations
- Coalinga O&M Center (San Luis Field Division) 6 stations
- Lost Hills O&M Center (San Joaquin Field Division) 6 stations
- San Joaquin O&M Center 12 stations

Planning Narrative for EVSE

As funds become available, the SWP will continue to add chargers beyond the Phase I and II projects. Phase III work will provide at least one charging station to all O&M facilities that support the SWP (see Table 2.9). The project is anticipated to be completed by 2025 with up to 153 charging stations at 39 sites across all five SWP Field Divisions. Phase III is being performed with Design-Build contracting that will optimize the charger locations and type based on the needs of our growing ZEV fleet. This phase will also provide a mix of Level 2 and Level 3 charging stations to meet the needs of the fleet based on vehicle usage. By the time the project is complete, every O&M site will have at least one EV charging station. A summary of the charging stations planned at various SWP Field Division locations is shown below:

- · Oroville Field Division: 5 sites, 20 stations
- · Delta Field Division: 9 sites, 26 stations
- San Luis Field Division: 5 sites, 17 stations
- San Joaquin Field Division: 9 sites, 34 stations
- Southern Field Division: 17 sites, 56 stations

Table 2.9: Status of EV Charging Projects

Facility Name	Total Parking Spaces	Existing L1 Charging Ports (2023)	Existing L2 Charging Ports (2023)	Existing L3 Charging Ports (2023)	Total Charging Ports (2023)	EV Charging Ports Needed by 2026
Oroville Operations and Maintenance Center	175	0	12	0	0	9
Lost Hills Operations and Maintenance Subcenter	50	0	0	0	0	3
Romero Overlook	70	0	0	0	0	4
Coalinga Operations and Maintenance Subcenter	50	0	0	0	0	3
Cedar Springs Dam Maintenance Station	25	0	0	0	0	1
Vista Del Lago Visitors Center	135	0	0	0	0	7
Sacramento Maintenance Yard	75	0	0	0	0	4
Sutter Maintenance Yard	35	0	0	0	0	2
North Bay Maintenance Center	15	0	0	0	0	1
Water Quality Test Building	10	0	0	0	0	1
Lake Oroville Visitors Center (No Water)	85	0	0	0	0	4
Thermalito Annex	50	0	0	0	0	3
Southern California Operations and Maintenance Center	95	0	0	0	0	5

Facility Name	Total Parking Spaces	Existing L1 Charging Ports (2023)	Existing L2 Charging Ports (2023)	Existing L3 Charging Ports (2023)	Total Charging Ports (2023)	EV Charging Ports Needed by 2026
Vaquero Water Treatment Plant	10	0	0	0	0	1
Delta Operations and Maintenance Center	225	0	10	0	10	21
San Joaquin Operations and Maintenance Center	155	0	0	0	0	8
Monument Hill Boat Launch	55	0	0	0	0	3
Coating Facility	10	0	0	0	0	1
Tehachapi East Afterbay Maintenance Center	5	0	0	0	0	0
West Sacramento Storage Yard	10	0	0	0	0	1
Oso Civil Maintenance and Mobile Equipment	25	0	0	0	0	1
San Luis Operations and Maintenance Subcenter	80	0	0	0	0	4
Beckwourth Subcenter	10	0	0	0	0	1
Pearblossom O&M Subcenter	33	0	0	0	0	2
Water Operations - Pearblossom	10	0	0	0	0	1
Total	1,498	0	22	0	10	85

EV Charging Site Assessments

Reporting on 2022 Facility Site and Infrastructure Assessments

NO EV CHARGING ASSESSMENTS COMPLETED (see Table 2.10).

Table 2.10: 2022 EV Charging Infrastructure Site Assessments Conducted

Fac	ility Name	L1 EVSE Project Assessments	L2 EVSE Project Assessments	L3 EVSE Project Assessments	Entity that Conducted the Site Assessment
NO EV CHARGING ASSESSMENTS COMPLETED					

Planning Narrative on EVSE Construction Plan

DWR has determined it will need electrical system upgrades at several SWP Field Divisions. At least 50 of its Level 2 chargers (shown in Table 2.9) will need electrical upgrades. 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

The Phase II and Phase III contractors must provide Operations and Maintenance manuals to DWR. The actual charging towers and ports have not arrived from DGS, but the manufacturers on the State contract are also asked to provide manuals. Schedulers for the SWP Field Divisions field staff are likely to include tasks related to the charging tower and ports once they are officially installed. Outside contractors are rarely used for O&M tasks within the secure boundaries of the SWP Field Divisions. Under the Division of Operations and Maintenance, standardized Maintenance Plans are being written for each of the SWP Field Divisions, and they are scheduled for completion in 2024.

Public EV Charging Policies

To ensure the successful deployment of battery-electric and plug-in hybrid electric vehicles, the California Air Resources Board (CARB) is working to make electric vehicle (EV) Charging easier for everyone. This means that when a driver needs to use a public EV charger, all locations can be found through mapping tools, all the costs associated with charging and parking are posted, a membership to use the station is not required, and drivers can easily pay with common forms of payment (credit cards or phone payment apps). DWR will continue to monitor the progress made by CARB with other providers and is receptive to presentations by CARB but is unlikely to play a role as a service provider to the public.

Reporting Narrative on Public EV Charging Policies

A few of DWR's privately-leased buildings have public chargers that can be used by the public. These locations are not inside mapping programs and are in discrete locations, and as such tend to be used only by employees. None of the DWR-owned buildings offer public EV charging.

Planning Narrative on Public EV Charging Policies

DWR will continue to build out parking spaces capable of EV-charging equipment for its own fleet. Public charging is not a priority. DWR will begin to create a policy on public charging, but only once we have completed all fleet installations.

Employee EV Charging Policies

NO POLICIES

Fleet EV Charging Policies

NO POLICIES

Hydrogen Fueling Infrastructure

Planning Narrative for Hydrogen Fueling Infrastructure

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 mission is to manage sustainably 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 34 water storage facilities, reservoirs, and lakes; 20 hydroelectric pumping plants; four hydroelectric pumping-generating plants; five hydroelectric power generating plants; and approximately 700 miles of aqueducts, canals, and pipelines.

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 (twenty-six facilities totaling ninety-six structures and 577,730 sq. ft.) 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.

Department Energy Use

Table 3.1 shows the total retail energy consumption at the twenty-six SWP and Division of Flood Management O&M facilities for the years 2021 and 2022. 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 2022 electricity usage has gone up significantly, while the natural gas usage

has gone down. The overall retail energy consumption has increased by 29 percent from the baseline year, primarily due to increased O&M activities at the SWP facilities. The energy use is higher than the base year because the base year is not adjusted for the additional facilities reported in 2023. A reduction of natural gas usage is a positive indicator toward reducing 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.

Purchased Energy	2003 Baseline Quantity	Unit of Measure	2021 Quantity	2022 Quantity	% Qty. Change 2003–22
Electricity	3,284,131	kWh	5,891,492	6,069,939	85%
Less EV Charging	Unknown	kWh	N/A	N/A	N/A
Natural Gas	103,413	Therms	65,265	70,431	-32%
TOTALS	21,546,754	kBtu Site	26,628,311	27,753,711	29 %

Table 3.1 Total Purchased Energy

Table 3.2 shows the top ten retail energy consuming facilities in 2022. These ten facilities consumed 88 percent of the total site energy while accounting for 87 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. However, there is some general correlation between the size of the facility and energy consumption, as seen in Table 3.2.

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 energy efficiency upgrade projects at all its facilities, which will reduce the energy consumption and improve the energy use intensity (EUI) of the facilities.

Table	3.2	Facilities	with	Largest	Energy	Use
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Building Name	Floor Area (ft²)	Site Energy (kBTU)	Source Energy (kBTU)	Source EUI (kBTU/ft²-yr)
San Joaquin Operations and Maintenance Center (Uses Electricity Purchased from Wholesale Market)	81,429	4,552,998	11,975,828	147
Oroville Operations and Maintenance Center	55,820	4,511,854	9,725,413	174
Delta Operations and Maintenance Center (Uses Electricity Purchased from Wholesale Market)	64,720	4,401,335	10,371,455	160
Sacramento Maintenance Yard	47,823	3,326,243	7,494,394	157
San Luis Operations and Maintenance Subcenter (Uses Electricity Purchased from Wholesale Market)	47,300	1,977,527	6,229,210	132
Oso Civil Maintenance and Mobile Equipment (Uses Electricity Purchased from Wholesale Market)	19,800	1,453,570	4,578,746	231
Lost Hills Operations and Maintenance Subcenter	37,600	1,448,765	3,682,814	98
Coalinga Operations and Maintenance Subcenter	13,700	1,005,754	3,168,124	231
Pearblossom O&M Subcenter — OLD (Uses Electricity Purchased from Wholesale Market)	36,800	999,467	3,148,321	86
Southern California Operations and Maintenance Center	45,100	868,430	2,715,530	60
Total for Buildings in this Table	450,092	24,545,942	63,089,834	140
Total for all Department Buildings	577,730	27,753,711	72,915,445	126
Percent of Totals	78%	88%	87%	N/A

General Challenges for DWR

DWR's buildings range in age from "old" to "very old," with most of the buildings having been constructed in the 1950s and 1960s. These aging buildings create significant challenges in meeting the EUI targets and Governor's Zero Net Energy (ZNE) goals because energy use reduction is limited due to old and inefficient building envelopes. 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-tosuit leases beginning design after 10/23/2017 to be ZNE.
- 2025 50 percent of total existing building area will be ZNE.

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. DWR is preparing an energy efficiency (EE) implementation plan to improve the EUI of DWR-owned buildings and facilities.

In 2023, DWR executed a Master Service Agreement (MSA) with PG&E to provide water and energy efficiency assessment of the SWP facilities and Division of Flood Management O&M centers. The objective of this agreement is two-fold: to reduce the Department-wide overall retail energy consumption at its facilities and improve the EUI of the facilities to meet the ZNE target EUIs, which is the requirement for buildings to qualify for ZNE. This initiative is an example of the Department's commitment to meet the ZNE target found within EO B-18-12.

As shown in Table 3.3, DWR currently has nine facilities that are ZNE compliant. These facilities constitute 21 percent of DWR's total building square footage. Another two facilities are within 15 percent of the ZNE target EUI, which make up an additional 9 percent of the total building area. DWR plans to make additional buildings ZNE ready by 2025 to meet the ZNE target within EO B-18-12. DWR has and continues to take measures toward increasing the ZNE compliant building square footage.

Beginning in early 2025, DWR will be the primary tenant at DGS's Gregory Bateson Building in Sacramento. When the building opens after renovation it will be ZNE once DGS receives the SMUD SolarShare renewable allocation.

DWR has installed a 9.5 megawatt (MW) solar generation plant at its Pearblossom O&M Center. 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.

Status of ZNE Buildings	Number of Buildings	Floor Area (ft²)	% of Building Area
Buildings Completed and Verified	9	99,796	21%
Building in Design or Under Construction	0	0	0%
Building Proposed for Before 2025 (but not yet in design) Additional Exist. Bldg. Area within 15% of ZNE target EUI and have EE projects planned	5	<u>286,869</u> 52,923	50% 9%
Totals for ZNE Buildings by 2025	16	439,588	80%
Totals for All Department Buildings by 2025	26	577,730	100%
% ZNE by 2025	62%	76%	80%

Table 3.3 Zero Net Energy Buildings

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 2016, DWR built a 24,000 square feet Leadership in Energy and Environmental Design (LEED) Platinum-certified building at the SWP Pearblossom O&M Center. 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.

New Buildings Exceeding Title 24 by 15%	Number of Buildings	Floor Area (ft²)
Completed Since July 2012	1	24,000
Under Design or Construction	0	0
Proposed Before 2025	0	0

Table 3.4: New Building Construction Exceeding Title 24 by 15 percent

For future new construction and 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.

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 Management O&M centers 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 Field Division (OFD) 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 the SWP Oroville Field Division. 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 157 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 visitor centers have an average EUI score of 63 kBtu per square foot compared with the State's average to the square foot compared with the State score of 63 kBtu per square foot compared with the State's average target of 62 for public entertainment building types.

DWR's visitor centers are learning centers for the public and utilize interactive exhibits and theater rooms for explaining how the SWP works. When omitting Thermalito as an outlier, DWR's remaining O&M facilities have an average EUI score of 128 kBtu per square foot compared to the State's average target of 45 for maintenance yards.

DWR O&M yards are a mixture of offices, shops, and warehouses that were constructed in the 1950s and 1960s when the current-time energy efficiency standards did not exist. Additionally, these buildings 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 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, machineries, industrial lighting, and industrial power tools.

Year	Floor Area (square feet)	Total Source kBTU Consumption	Department Ave. Source EUI (Source kBtu/square feet)
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
% Change 2003 to 2022	3%	-19%	-21%

	Table	3.5:	Department-Wide	Energy	Trend
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Table 3.3 shows the Department-wide source energy trend over the past ten years and compares it against the 2003 baseline year. 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 (CallSO) 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 Sub Center (new), Pearblossom O&M Sub Center (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 2021 and 2022 are 70,434,506 kBtu and 72,915,445 kBtu respectively.

Energy Savings Projects

From 2015 to 2018, DWR implemented energy savings projects at some of its SWP and Division of Flood Management O&M centers that enabled DWR to meet the EO mandate for energy efficiency. DWR is currently focused on meeting the ZNE mandate of the EO, which requires 50 percent of the existing building area to be ZNE. DWR's current focus also includes reducing the overall energy usage at all of these facilities.

This includes working with the electric utilities to perform detailed assessments of buildings and facilities, their energy usages, and implementing EE-upgrade projects to reduce the overall energy consumption and reduce the EUI of buildings. For example, currently, DWR is working with PG&E under the recently executed Master Service Agreement mentioned earlier, to conduct Investment Grade Audits (IGA) for all of its facilities with the goal of implementing EE upgrade projects at these facilities to reduce the overall energy consumption and corresponding EUIs. This will require upgrading the existing energy-consuming equipment to higher-efficiency equipment. In particular, the PG&E audits will identify and recommend 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 DWR to implement those ECMs.

Year Funded	Estimated Energy Savings (kBTU/yr)	Floor Area Retrofit (sq. ft.)	Percent of Department Floor Area
2021	0	0	0%
2022	0	0	0%
Total	0	0	0%

Table 3.6: Summary of Energy Savings Projects 2021-2022

Planning for Energy Savings Projects

DWR didn't implement any ECM during 2021 and 2022. Energy assessment during the years 2023 and 2024 will determine potential ECM that will be implemented later in the years following the assessment.

Energy Audits/Surveys Completed or In-Progress

Audits through our MSA with PG&E are underway (see Table 3.7). These audits will form the basis for planning, but we did not have any results during this reporting period.

Year	Total Department Floor Area (sq. ft.)	Energy Surveys Underway (sq. ft.) Level 1	Energy Surveys Underway (sq. ft.) level 2	Percent of Department Floor Area level 1	Percent of Department Floor Area level 2
2015	577,730	89,013	89,013	15%	15%
2016	577,730	78,389	89,669	14%	16%
2017	577,730	32,900	800	6%	0.1%
2018	577,730	22,446	0	4%	0%
2019	577,730	0	0	0%	0%
2020	577,730	0	0	0%	0%
2021	577,730	0	0	0%	0%
2022	577,730	0	0	0%	0%
2023	577,730	0	554,354	0%	96%

Table 3.7: Energy Audits/Surveys Completed or In-Progress

Demand Response (DR)

Participating in DR Utility Programs

Executive Order B-18-12 requires that all State departments participate in available demand response programs and obtain financial incentives 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.

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 3.8 summarizes DWR's participation in DR programs.

DR Program Participation	Number of Buildings	Estimated Available Energy Reduction (kW)
Number of Buildings		
Participating in 2021	6	21
Number of Buildings		
Participating in 2022	0	0
Planned Number of Buildings		
That Will Participate in 2023	0	0
Total Number of Department Buildings	96	0
2022 Department Buildings Participating		
(Percent)	6 %	21 kW

Table 3.8: Demand Response (DR) Program Participation

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.

Renewable Energy Purchase Agreements since 2021 Roadmap

In January 2021, DWR executed a 20-year power purchase agreement with Sanborn Solar 1B, LLC (Terra-Glen), to construct, operate, and maintain a 36 MW Sanborn Solar Facility in Kern County. In November 2022, the facility began generating approximately 105,000 MWh of energy annually for the SWP.

A 9.5 MW solar plant was installed in 2015 at Pearblossom, which is in SWP's Southern Field Division. This project was installed through a 20-year power purchase agreement 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.

In 2018, DWR executed a PPA with Sacramento Municipal Utility District (SMUD) for the purchase of 11,004 MWh per year of solar energy and the associated RECs.

Division of Flood Management is starting design discussions to add solar panels over parking areas at their Sacramento Maintenance Yard. They have completed many of the electrical upgrades necessary to allow a connection to those panels. All underground conduits have already been installed. No estimate of power generation is available at this time.

Status	Number of Sites	Capacity (kW)	Estimated Annual Power Generation (kWh)	Percent of Total Annual DWR Power Use
On-Site Renewables				
in Operation or Construction	1	9,500	27,400,000	337%
On-Site Renewables				
Planned	0	0	0	0%
On-Site Renewables Totals	1	9,500	27,400,000	337%
Department-Wide Total				
Energy Use (kWh equivalent)			0	
Off-Site Renewable Totals	1	SMUD	11,004,000	135%

Table 3.9: On-Site and Off-Site Renewable Energy

Status	Number of Sites	Capacity (kW)	Estimated Annual Power Generation (kWh)	Percent of Total Annual DWR Power Use
Off-Site Renewables				
Planned	0	0	0	
Off-Site Renewables				
Combined Current &		—		
Planned	1		11,004,000	135%
Current Combined On-Site				
and Off-Site Renewable				
Energy	1	9,500	38,404,000	472%
Additional Planned On-Site				
and Off-Site Renewables	0	0	0	0%

DWR's Renewable Energy Procurement Plan

DWR's renewable energy procurement plan (REPP) is designed to help achieve our long-term GHG emission reduction goals by incrementally adding renewable generation into the SWP power portfolio. DWR intends to add increasing amounts of renewable energy from a variety of sources, including solar, hydroelectric, and other renewable resources. The Department will continue to monitor emission trends and will modify the procurement schedule of renewable energy as necessary to meet near- and long-term goals.

SWP's REPP is being updated to meet the State's clean energy goals and to meet the emissions reduction strategy of the Greenhouse Gas Emissions Reduction Plan (GGERP) as defined in DWR's <u>Climate Action Plan</u>. Table 3.10 shows the renewable energy projects that have been procured by DWR thus far.

		Estimated Annual		
Power Plant	Capacity	Generation		
& Fuel Type	(MW)	(MWh)	Term	Effective Dates
				December 2014
RE Camelot				through December
(Solar)	45	124,000	20 years	2034
				December 2016
Solverde 1				through December
(Solar)	85	230,000	20 years	2036
				December 2016
Pearblossom				through December
(Solar)	9.5	27,400	20 years	2036
EdSan 1B				
Group1				November 2022
Sanborn				through December
(Solar)	36	105,000	20 years	2042
				September 2017
Hoover				through
(Small Hydro)	3	6,500	50 years	September 2067
Totals	178.5	492,900	N/A	N/A

Table 3.10: Renewable Energy Procurement Plan (REPP)

The SWP REPP contracts include:

Solar

Through a 20-year power purchase agreement with RE Camelot, executed in February 2013, DWR purchased 100 percent of the energy produced from a 45 MW solar generating plant in Kern County. Over the life of the contract, this solar powerplant is expected to produce approximately 124,000 MWh of energy per year. The facility reached commercial operation in December 2014.

In November 2015, DWR executed a 20-year power purchase agreement with sPower for its 85 MW Solverde 1 Solar Facility, located 10 miles west of Lancaster, adjacent to a portion of the east branch of the California Aqueduct. Solverde 1 will provide 230,000 MWh per year of solar energy. Solverde 1 achieved commercial operation status in December 2016.

In October 2015, DWR executed a 20-year power purchase agreement with Solar Star California XLIV, LLC, to construct and operate a 9.5 MW Pearblossom Solar Facility on DWR's land adjacent to the Pearblossom Pumping Plant. This facility achieved commercial operation in December 2016 and will provide 27,400 MWh per year of solar energy.

In January 2021, a 20-year power purchase agreement with Sanborn Solar 1B, LLC (Terra-Gen) was executed for a 36 MW Sanborn Solar Project in Kern County. The project is planned to be operational by the end of 2022 and will provide 105,000 MWh of solar energy on average per year.

Small Hydro

In 2016 an Electric Service Contract and associated Implementation Agreement was executed with the United States Department of Energy — Western Area Power Administration (WAPA) and the United States Department of Interior — Bureau of Reclamation (USBR) for a 50-year term for the purchase of 3 MW of hydro energy and associated capacity. Under this agreement, DWR will receive approximately 6,550 MWh of annual hydro-generation beginning from October 1, 2017, until September 30, 2067.

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 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

DWR has many buildings which are too old to have an automated building control system. DWR constructed a new building in 2015 at Pearblossom O&M Center that is a LEED Platinum certified and has a building controls system.

Table 3.11: 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

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.

Energy Reduction Strategies — Best Management Practices (BMPs)

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:

- 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 to slow down and use less electricity to operate.
- 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 STARrated 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 — WATER EFFICIENCY AND CONSERVATION

Department Mission and Water Use

This chapter demonstrates the progress that the California Department of Water Resources (DWR) is making toward meeting Executive Order (EO) B-18-12, EO B-29-15, and EO N-10-21 goals. This chapter identifies accomplishments, ongoing efforts, and outstanding challenges in water efficiency and conservation.

DWR's biggest challenge is adapting to California's extreme variability in annual precipitation. For example, from 2012 to 2015, California had the four driest consecutive years of statewide precipitation on record. By 2015, California had a record low statewide mountain snowpack average of five percent. The following water year (October 1, 2016–September 30, 2017) surpassed the wettest year on record (1982–1983) in the Sacramento River and San Joaquin River watersheds and fell short of setting a record in the Tulare Basin (set in 1968–1969). Uncertainty in annual precipitation from one year to the next demonstrates the need for DWR to be prepared for a flood or drought year.

With more than 700 miles of water storage and delivery infrastructure, serving more than 27 million people, the SWP is a backbone lifeline for Californians who depend on it for water for daily needs, recreation, commerce, and for future generations. Because of the SWP's critical importance, it has been identified as an essential function of DWR as the owner and operator of the facilities that connect the people of California to their water supply.

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 is developing a rulemaking package to establish an amended Model Water Efficient Landscape Ordinance (MWELO) for the January 2023 to December 2025 time-period (see Chapter 6).

Reporting on Total Purchased Water

The SWP consists geographically of five Field Divisions throughout the state, with its headquarters located in Sacramento. DWR also operates visitor centers and leases privately owned buildings. Thus, there are a number of water providers as a result.

Although the EO B-18-12 requires monitoring 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 4.1 summarizes the total amount of water used by the SWP facilities, but the cost value reflects only 10 facilities that receive utility bills. In 2022, DWR consumed about 15.7 million gallons of potable water and paid approximately \$52,068 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.

Purchased Water	2021 Quantity	2022 Quantity	2021 Cost (\$/yr.)	2022Cost (\$/ yr.)
Potable	17,487,200	15,720,300	\$58,231	\$52,068
Recycled Water	0	0	0	0

Table 4.1: Total Purchased Water

Reporting on Properties with Largest Purchased Water Use per Capita.

Table 4.2 summarizes five DWR-owned facilities that consumed the most amount of water during 2022, which are all SWP's O&M Centers. DWR's Field Divisions' have O&M Centers which 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 capital 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.

Building Name	Area (ft2)	# of Building Occupants	Total 2022 Gallons	Gallons per Capita
Pearblossom O&M				
Subcenter - NEW	24,000	65	4,814,000	/4,062
Pearblossom O&M			/	
Subcenter - OLD	36,800	65	1,774,200	27,295
Oroville Operations and	55 000	100	1 400 700	14 007
	33,620	100	1,022,700	10,22/
Southern California	45.100	20	1 420 000	47 / 07
Maintenance Center	45,100	30	1,430,900	47,677
Lost Hills Operations and				
Maintenance	37,600	37	1,273,700	34,424
Subcenter				
Total for Buildings in This Table	199,320	297	10,915,500	36,753
Total for All Department				
Buildings	577,730	827	15,720,300	19,009
% of Totals	35%	36	69%	1 93 %

Table 4 2. Pro	perties with	Purchased L	araest Water	Use Per Co	nita
10010 4.2.110		I UICHUSEU L	uigesi wulei	03616100	pilu

Note: Irrigation water use is not known due to lack of submetering for separate measurements.

Reporting on Properties with Largest Landscape Area Using Purchased Water

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, DWR facilities have nearly 570,000 square feet of landscaping surface area, 84 percent of which is located at its five Field Division O&M centers, and nearly 50 percent of this landscaping surface area is turf grass.

Table 4.3 summarizes the top five facilities with the largest landscape area, which include four of the Field Division O&M centers and the Sacramento Maintenance Yard, which is also a maintenance facility for DWR's Flood Division.

As shown, the San Joaquin Field Division (SJFD) O&M Center has the largest landscaped area, totaling 133,800 square feet.

Building Name	Landscape Area (ft2)
San Joaquin Operations & Maintenance Center	133,800
Delta Operations & Maintenance Center	116,619
Oroville Operations & Maintenance Center	113,115
Sacramento Maintenance Yard	83,805
Lost Hills Operations & Maintenance Subcenter	44,600
Total Landscaping area for Buildings in This Table	491,939
Total Landscaping for All Department Buildings	565,999
% of Totals that is large landscape	87%

Table 4.3: Properties with Largest Landscape Area Using Purchased Water

Reporting on the Department's Purchased Water Use Trends from 2010 to Present

Table 4.4 compares the 2022 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.

Year	Total Occupancy /year	Total Amount Used (Gallons/year)	Per capita Gallons per person per day
Baseline Year 2010	500	19,719,700	108
2013	575	14,579,400	69
2018	700	14,839,300	58
2019	725	14,445,500	55
2020	750	15,706,300	57
2021	775	17,487,200	62
2022	827	15,720,300	52
2024 Goal	877	13,362,255	42

Table 4.4: Department Wide Purchased Water Use Trends

Reporting Narrative on Purchased Water Use Trends from 2010 to Present

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.

Reporting on Total Purchased Water Reductions from 2010 to Present

Table 4.5 contains the water reductions achieved by DWR in 2021 and 2022. We did not reach the 25 percent goal in either year but did reach the 15 percent goal in 2022.

Purchased Water Use	2021 Totals (Gallons)	2022 Totals (Gallons)
2010 Baseline totals (Gallons)	19,719,700	19,719,700
Actual Gallons	17,487,200	15,720,300
+ or - Gallons Compared to Baseline Year	-2,232,500	-3,999,400
Department-Wide Reduction as a % from 2010 baseline	-11%	-20%

Table 4.5: Total Purchased Water Reductions Achieved in Gallons

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 4.6 and Table 4.7, 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. DWR is planning to have a complete inventory of all the water fixtures by 2025.

Reporting on Building Indoor Water Fixtures and Water Using Appliances Needs

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.

Field Office Facility	Toilets	Urinals	Faucet	Shower heads
Oroville Field Division	13	8	18	4
Delta Field Division	17	9	28	8
San Luis Field Division	19	12	30	9
San Joaquin Field Division	61	25	90	18
Southern Field Division	100	46	145	36
Division of Flood Management	36	24	60	18

Table 4.6: Building Indoor Water Fixtures and Water Using Appliances NeedsInventories Summary

Note 1 — DWR does not have clothes washers, garbage disposals, nor pre-rinse valves, so these are not included in Table 4.6

Note 2 — Only a summary of water fixtures for each SWP Field Division was available for this reporting period.

Planning Narrative for Indoor Building Water Fixtures and Water Using Appliances Needs

DWR'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 use.

Reporting on Current Indoor Water Efficiency Projects 2020–Present

DWR does not have any current water efficiency projects for the reporting period (see Table 4.7a).

Table 4.7: Summary of Current Indoor Water Efficiency Projects Completed or I	n
Progress (2020–Present)	

Year	Water Saved (Gallons/yr.)	Number of Indoor Water Efficiency Projects Completed	Cost Savings per Year
2020	0	0	\$ O
2021	0	0	\$0
2022	0	0	\$ O

Planning for Future Indoor Water Efficiency for the Next 5 Years — Building Priority Projects

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 (see Table 4.7b).

Table 4.7b: Building Indoor Water Efficiency	y Priority Projects for the Next 5 Years
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Building Name	Type of Project	Est Water Savings	Est. Start Date
Oroville Field Division	Audit in progress	N/A	2023
Delta Field Division	Audit in progress	N/A	2023
San Luis Field Division	Audit in progress	N/A	2023
San Joaquin Field Division	Audit in progress	N/A	2023
Southern Field Division	Audit in progress	N/A	2023
Division of Flood Management	Audit in progress	N/A	2023

Planning Narrative for Future Indoor Water Efficiency — Building Priority Projects

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

Planning Narrative on General Water Management BMP

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

Planning Narrative on Leak Detection and Repair BMP

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 energy efficient equipment.

Planning Narrative on Kitchen Water Conservation BMPs, Fixtures

NO COMMERCIAL KITCHENS.

Planning Narrative on Laundry Facilities Water Conservation BMPS

NO LAUNDRY FACILITIES.

Department Total Non-Purchased Water

Reporting on Total Non-purchased 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 (Beckworth Subcenter and Oso Civil O&M Yard) and one of the Division of Flood Management facility (Sutter O&M) 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.

Year	Groundwater Basin(s) Name	Number of Domestic or Irrigation Wells	Ground- water 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
2021	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
2022	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

Table 4.8: Department-Wide Non-purchased Water Use

Reporting Narrative for Non-purchased Water Use Trends

NO TRENDS AVAILABLE.

Planning Narrative for Non-purchased Water Unavailability.

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 <u>California's Groundwater Live</u>). 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 the water throughout the state.

We are a founding member of the Water-Energy Nexus (WEN) Registry (a nonprofit). 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 2021 we had reduced it to 0.19.

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 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 2035, it will be zero-carbon water. Energy Intensity (EI) is a measure of the amount of energy required per unit of production. El 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 El of water varies greatly depending on geography and water source. El 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 El's of desalinated and recycled water see California Water Plan Update 2013 Volume 3, Resource Management Strategies 10 and 12.

Reporting on Boilers

NO BOILERS (see Tables 4.9 and 4.10).

Boiler Water Use	Year 2021	Year 2022
Amount of Water Used for Makeup (Gallons)	NO FACILITIES	NO FACILITIES
Amount of Water Currently Reused. (Gallons)	N/A	N/A
Remaining additional water suitable for other purposes (Gallons)	N/A	N/A
Totals for all Facilities	NO FACILITIES	NO FACILITIES

Table 4.9: Annual Amount of Boiler Makeup Water Used

Table 4.10: Summary of Boilers Needs Inventory

Number of meters to purchase and install	Water Treatment	Other
Totals	NO FACILITIES	NO FACILITIES

Reporting on Cooling Towers

NO COOLING TOWERS (see Tables 4.11 and 4.12).

Table 4.11: Cooling Tower Water Use

Cooling Tower Water Use	Year 2021	Year 2022
Amount of Water Used for Make-up (Gallons)	NO FACILITIES	NO FACILITIES
Totals for all Facilities	NO FACILITIES	NO FACILITIES

NO BOILERS OR COOLING SYSTEMS (see Table 4.12)

Equipment Needed	Equipment Totals for all Facilities		
Meters	NO FACILITIES		
Water Treatment	NO FACILITIES		
Other	NO FACILITIES		

Table 4.12: Summary of Cooling System Needs Inventory

Table 4.13: Summary of Efficiency Projects for Boilers and Cooling Systems

Year	Water Saved (Gallons/yr.)	Number of Completed Projects	Number of Projects in Progress
2020	NO FACILTIIES	NO FACILITIES	NO FACILITIES
2021	NO FACILTIIES	NO FACILITIES	NO FACILITIES
2022	NO FACILTIIES	NO FACILITIES	NO FACILITIES

Department Outdoor Water Use:

Reporting on Outdoor Irrigation Hardware Inventory

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 4.14).

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 2025 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 4.14: Summar	v of Outdoor	Irriaation Hardware	Needs Inventory
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Irrigation Hardware Type	Total Hardware Needed
Separate meters or sub-meters	UNKNOWN
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 hydro-zones	UNKNOWN
New valves	UNKNOWN
Filter assemblies	UNKNOWN
Drip irrigation emitters	UNKNOWN
Booster pumps	UNKNOWN
Rotary nozzles or other high efficiency nozzles	UNKNOWN

At Sutter Maintenance Yard, the facility landscaping has been adapted to be water conscience, and most of the lawns were replaced with rockscaping and native drought tolerant plants.

Planning Narrative for Outdoor Irrigation Hardware Needs

Currently DWR is preparing a roadmap 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. Monitoring and tracking irrigation water separately from domestic and process water use will require additional submeter projects. As landscape maintenance contracts are renewed in each of the forthcoming three-year cycles, contract language will be incorporated requiring the vendor to replace, track, and maintain the irrigation system with new updated high efficiency soil moisture 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.

Reporting on Outdoor Irrigation Hardware Water Efficiency Projects

Landscaping hardware BMPs include:

• Install check valves and swing joints and replace nozzles as needed.

- Install faucet timers for hose or hand irrigation.
- Install shut-off nozzles or quick-couplers for all hoses.

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 energy efficient equipment and tools.

Table 4.15: Summary of Outdoor Hardware Water Efficiency Projects Completed2020–Present or In Progress

Year	Water Saved	Completed Hardware	Hardware Water Efficiency
Funded	(Gallons/yr.)	Water Efficiency Projects	Projects in Progress
2020	0	NO PROJECTS	NO PROJECTS
2021	0	NO PROJECTS	NO PROJECTS
2022	0	NO PROJECTS	NO PROJECTS

Planning Narrative for Irrigation Hardware Water Efficiency Projects

NO PLANS

Planning Narrative on Irrigation Hardware Maintenance BMPS

Prior to 2025, SWP O&M Filed Divisions and DFM Maintenance Yards will develop BMPs for use and maintenance of irrigation systems with either a DWR landscape architect or landscape consultant specializing in water efficient irrigation systems.

Reporting on Living Landscape Inventory

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. SWP's San Luis Field Division installed a drip system in 2014, saving over 17,000 gallons of water annually. Twenty-thousand square feet of landscaping was replaced in compliance with the Model Water Efficient Landscape Ordinance (MWELO) and another 1,100 square feet were replaced with climate-appropriate plantings. In 2019, part of the landscape irrigation-control system at Lost Hills O&M Subcenter was upgraded and sprinkler heads were replaced with high efficiency components.

Facilities with Landscap e >500 sq. ft.	Total Turf (sq. ft.)	Number Of Historic Sites or Memor- ials	MWELO Land- scape Area (sq. ft.)	Climate Appropriate Landscape Area (sq. ft.)	Irrigation Source is Ground- water (Yes or No)	Irrigation Source is Surface Water (Yes or No)
Delta Operations and Maintenan ce Center	17,000	1	0	12,000	No	Yes
San Luis Operations and Maintenan ce Subcenter	25,000	0	22,000	1,100	No	Yes

Table 114 All Eacilities With S	500 am	ft of Living	Iandeean	Inventory	
TUDIE 4.10. All FUCIIIIES WITH	< 200 sq		j Lunuscupe	= mvemory	

Reporting on Living Landscape Upgrades for the Next 5 Years

NO UPGRADES PLANNED

Planning Narrative on Living Landscape Upgrades for the Next 5 Years

NO PLANS

Planning Narrative for Remaining non MWELO Compliant Living Landscape Upgrades

DWR has six facilities with large landscapes totaling nearly 535,000 square feet. Water budgets for these facilities have not been calculated nor do these facilities have any personnel who are EPA WaterSense (or equivalent) certified. DWR plans to establish a water budget and certify staff as part of its efforts to conserve landscape water use.

Reporting on Living Landscape Water Efficiency Projects 2020 — Present

NO PROJECTS SINCE 2019.

Table 4.17: Summary of Completed Living	Landscaping	Water Efficiend	cy Projects
Since 2019			

Year Funded	Est Annual Water Savings (Gallons)	Sum of MWELO Landscape installed (sq. ft.)	Sum of Climate Appropriate Landscape Installed (sq. ft.)
2020	NO PROJECTS	NO PROJECTS	NO PROJECTS
2021	NO PROJECTS	NO PROJECTS	NO PROJECTS
2022	NO PROJECTS	NO PROJECTS	NO PROJECTS

Planning Narrative on Living Landscape BMPs

Landscaping is usually a function of building design and age and is designed to complement a building's appearance. Landscaping is also installed to build safety and security. DWR does not alter landscaping except when diseased plantings are removed. Typically, plants are replaced with the same species, regardless of climate appropriateness. This makes implementing drought protocols and water efficiency measures difficult.

Most DWR buildings are over 50 years old and reflect the landscaping practices of the time they were constructed. DWR's challenge is to transition these landscapes to newer water efficiency norms in a cost-effective manner.

DWR plans to accomplish the following BMPs:

- Prioritize and assign value to plants within a landscape.
- During drought or other water shortages, give trees and large shrubs the highest priority for survival.
- Water trees and shrubs as needed.
- Refresh mulch as needed. All bare soil must be covered with a minimum of 3 inches of mulch.
- Adjust irrigation schedules for seasonal changes.
- Test irrigation systems monthly to check for leaks, misalignments, and other malfunctions. Repair faulty fixtures immediately with correct parts.
- Water early in the morning or in the evening when wind and evaporation are lowest.

- Prevent runoff. Ensure sprinklers are directing water to only landscape areas, avoiding hardscapes such as parking lots, sidewalks, or other paved areas.
- Utilize Water Use Classifications of Landscape Species (WUCOLS) to find plant water use requirements and only water landscapes according to the plant water needs.
- Install plant species native to the climate zone.
- Recycle and reuse water onsite.
- Incorporate plantings for pollinators.
- When planting new areas or replacing existing plants, add compost to the soil (entire planting areas, not just planting holes) at a rate of 4 cubic yards per 1000 square feet to a depth of 6 inches unless contradicted by a soil test.
- Fix leaks immediately.

Applying these BMPs and transitioning to water efficient landscaping requires expertise, time, and realistic budgets. DWR has the resources for training staff, but funding is an ongoing challenge.

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

The SWP San Joaquin O&M center contains the largest landscaped area, with 133,800 square feet of total landscaping on-site (see Table 4.18), and they likely use around 4.3 million gallons a year to irrigate. The six buildings identified with Large Landscapes account for 95 percent of the total square footage for all of the Department-owned facilities. However, these facilities lack any personnel who are United States Environmental Protection Agency (EPA) WaterSense (or equivalent) certified. A preliminary water budget for each site in Table 4.18 is based on the local climate (Eto) and assumes the sites are almost all grass and the irrigation system may not be very efficient. DWR will need to pursue landscaping changes to match an evapotranspiration adjustment factor (ETAF) of 0.8, which is considered more sustainable. The current assumption is ETAF is equal to 1.0 at all six facilities. Creating more precise water budgets and getting certified staff are a priority for water efficiency on these landscapes.

Name of Facility Sites/Locations with > 20,000 sq. ft. of Landscaping	Landscape Area per Facility	Water Budget per Facility (gallons per year)	EPA WaterSense or Irrigation Association Certified Staff per Facility
San Joaquin Operations and Maintenance Center	133,800	4,347,162	0
Delta Operation and Maintenance Center	116,619	349,739	0
Oroville Operations and Maintenance Center	113,115	3,611,762	0
Sacramento Maintenance Yard	83,805	2,696,845	0
San Luis Operations Center	42,960	1,331,760	0
Lost Hills Operations and Maintenance Center	32,700	1,157,580	0

Table 4.18: Large Landscape Inventory and Water Budget Requirements

Reporting and Planning on Achieving Large Living Landscape Requirements

NO PLAN

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 7).

Reporting on Buildings in Critically Overdrafted Groundwater Basins

Tables 4.19 and 4.20 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.

Building Name	Basin Name (Subbasin Number)	Amount of water Used 2021 (Gallons)	Amount of water Used 2022 (Gallons)
Delta-San Luis Field Division Office, ME shop, O'Neil Forebay	Delta-Mendota (5-022.07)	259,600	260,300
Delta – Romero Visitor Center	Delta-Mendota (5-022.07)	786,400	786,400
Southern – Lost Hills O&M Center	San Joaquin Valley — Kern County (5-022.14)	2,314,000	1,430,900
South Central Region Office	San Joaquin Valley — Kings (5-022.08)	NO DATA	NO DATA

Table 4.19: Buildings in Designated Critically Overdrafted Groundwater Basins

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 4.20), but few if any of the SWP Field Offices are connected.

Building Name	Name of Water Supplier with Urban Water Shortage Contingency Plans	Year of Publication or Update
South Central Region Office	City of Fresno	2020
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	2020

Table 4.20: Buildings with Urban Water Shortage Contingency Plans

Note: This is a list of privately leased buildings which are connected to urban water suppliers, this table does not include DWR-owned buildings since they are mostly in rural communities.

Planning Narrative for Urban Water Shortage Contingency Plans

NO PLANS

Reporting Narrative for Department's Contingency Plan

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 they were the most needed to protect spawning by salmon. Water quality in the Delta was also continuously monitored during the emergency.

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 should be released in 2024. In 2024, the Sustainability Coordinator and Drought Coordinator will prepare a plan to allow for continuity of operations if there is an emergency 50% 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 predrought 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.

CHAPTER 5 — SUSTAINABLE OPERATIONS

Greenhouse Gas Emissions

State agencies are directed 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 State Water Project Energy Roadmap (2023) covers the Department's commitment to reach zero emissions power portfolio by 2035. Due to SB 1020, DWR is currently planning 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 5.1 and Graph 5.1 detail DWR's GHG emissions beginning in 2010, the mandated baseline year to the latest verified reporting in 2021. In addition to emissions associated with retail energy use described in Chapter 3, Table 5.1 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 description of Table 5.1:

- Natural Gas includes Scope 1 natural gas for DWR and RG4.
- Vehicles include Scope 1 mobile diesel, mobile gasoline, mobile bulk gasoline, mobile combustion-CNG, and renewable diesel.
- Purchased Electricity includes Scope 2 retail and pump load.
- Miscellaneous emission includes Scope 1 emission from CO2 cylinders, propane, refrigerants, stationary diesel, SF6, acetylene, RG4 coal burned, RG4 fugitive emission, RG4 diesel, RG4 fire pump, and RG4 emergency generator.

Emissions Source	Natural Gas	Vehicles	Purchased Electricity	Misc.	Total
2010 Baseline	604	12,050	1,626,730	40,707	1,679,742
2011	624	15,401	1,573,357	2,695	1,592,077
2012	466	12,445	1,843,674	8,350	1,864,935
2013	485	14,933	1,070,930	3,608	1,089,956
2014	323	13,134	329,159	4,262	346,878
2015	348	11,804	437,681	2,017	451,850
2016	397	8,517	575,589	1,145	585,648
2017	412	13,183	838,669	4,055	856,319
2018	309	11,485	510,597	1,944	524,335
2019	511	8,903	405,859	972	416,245
2020	417	10,488	156,998	2,198	170,101
2021	402	7,575	258,925	1,319	269,398
2022	379	8,490	12,237	6,039	22.225
Percent Change since Baseline	-37%	-27%	-99%	-85%	-98%

Table 5.1: GHG Emissions since 2010 (Metric Tons)





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 5 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 Management 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 as a result of an energy audit. In 2023, the yard is upgrading its electrical and is nearing completion.

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 Center. 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 visitor centers. For example, DWR incorporated solar carports in SWP Southern Field Division's O&M Center 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) to replace energy from thermal and unspecified sources with renewable energy. The REPP is being updated in 2023 to achieve new GHG emissions reduction targets set forth by legislation. Based on the average loads and resources from 2002 to 2021, DWR will gradually increase the annual amount of renewable energy purchased in each year so that total operations emission of the SWP is zero by 2035.

Actual procurement may occur in larger or smaller tranches and may not exactly follow the timing indicated in the REPP because of market availability and the level of resources needed to meet GHG emissions reduction goals. DWR will monitor emissions trends and modify the schedule for procurement of renewable energy as necessary to meet its mid-term and long-term goals.

Since implementation of its REPP, DWR has executed contracts to procure renewable energy from multiple sources, including solar, hydroelectric, geothermal, and landfill gas. By the end of 2018, DWR has already met its 2020 REPP target, which was set in the 2012 Plan.

Strategy 4. Fuel Efficient Vehicles and Strategy 5 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 6. Biofuels

Chapter 2 details biofuel use since 2020. One-hundred percent of DWR's diesel fuel in 2022 was renewable diesel, more than the 83 percent purchased in the 2021 Roadmap. 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 350 staff.

Carbon Inventory Worksheet

DWR did not prepare a carbon inventory worksheet covering details from its facilities for this Roadmap update. DWR is planning to be carbon neutral by 2035 and electrification is one of the goals for achieving carbon neutrality. DWR has a lot of stationary equipment that uses fossil fuel and their operation results in GHG emissions. DWR is currently doing condition assessment of its facilities. In addition to energy and water use reduction, collecting details of the equipment that

creates GHG emissions is an important part of this condition assessment. In the 2025 update, DWR will include its carbon inventory.

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 5.2).

Table 5.2: New Building Construction since July 1, 2012

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

Planning Narrative of Table 5.2: 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.

LEED for Existing Buildings Operations and Maintenance

All State buildings over 50,000 square feet were required to complete LEED-Engineering Bill of Materials (EBOM) certification by December 31, 2015, and meet an Energy Star rating of 75 to the maximum cost-effective extent. DWR does not have any buildings that meet these criteria. However, DWR is planning to make its buildings Zero Net Energy by conducting energy audits and analyzing and implementing energy conservation measures.

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 Buildings over 50,000 sq. ft. that have achieved LEED EBOM
0	0	0

Planning Narrative for Table 5.3 Large Building LEED Certification

No individual DWR buildings are over 50,000 sq. ft. and we are not required to pursue LEED-EBOM certification.

Indoor Environmental Quality (IEQ)

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.

Daylighting in New Construction

The last building constructed by DWR was at its SWP Pearblossom O&M Center, 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 CALGreen Tier 1 Indoor Environmental Quality Measures

NO PLANS

Planning 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).

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.

Planning Narrative for Compliance with Furnishing Standards

DWR purchases all furnishings from CALPIA through its purchasing contracts. There are occasions where DGS grants an exemption when the item is not available through CALPIA.

Planning Narrative on Using Green Seal Cleaning Products

Cleaning products purchased through DWR's Business Services Office specify Green Seal products. However, not all DWR locations purchase cleaning supplies through the Business Services Office. In some locations, procurement of janitorial services and cleaning products occurs through janitorial services contracts. In 2018, DWR instituted both a policy and a purchasing procedure for its five SWP Field Division offices that Green Seal products are to be used at all DWR locations.

Privately-Leased Buildings

A 2023 survey was sent out to privately-leased building maintenance staff or cleaning contractors based on the template provided in the Facility Data Sheets from DGS. At the newly leased (2022) South Central Region Office, the respondent indicated cleaning products were Green Seal Certified and that the vacuums in use were Carpet and Rug Institute Certified. Both cleaning products and vacuums were also confirmed at an additional three leased locations: Industrial Boulevard (West Sacramento), Gateway Oaks (Sacramento) and Joint Operations Center (JOC) Annex (Sacramento). Vacuums were not confirmed, but Green Seal Certified cleaning products were confirmed by vendors at these four locations: Southern Field Office (Glendale), River Park Drive (Sacramento), JOC (Sacramento), and Data Center (Rancho Cordova). There were two vendors or contractors which did not provide answers: Training Center (Sacramento) and Trevor Avenue (Lancaster).

Planning Narrative for Cleaning Procedures — Various Standards

Cleaning procedures in the five SWP Field Divisions vary and are dependent on the buyer's knowledge. DWR Executive and Business Services will work with Field Division and Flood Operations staff to develop updated standard Cleaning Procedures by 2025.

SWP Oroville Field Division

At the Oroville Field Division, a preliminary inspection of vacuum cleaners found some have the Green Seal. Currently, all of the surveyed vacuums are fully functional. Entryway maintenance meets CALGreen Section A5.504.5.1.

A contract is in place with G&K Services (Contract #4600011717), and on a weekly basis entryway mats are removed and replaced with clean/washed mats. The Oroville Field Division currently has two contracts with the Work Training Center (Contract #4600012011 and Contract #4600012012) which cover janitorial services at the O&M Yard (460 Glen Drive) and the other facilities throughout the Field Division. These contracts specify the frequency of cleaning, which most often is daily, and at a minimum occurs five times per week.

Southern Field Division

The Southern Field Division currently has a contract for janitorial services. The current contract does not specify Green Seal compliant procedures. The next time this contract is renewed, Green Seal cleaning procedures will be included as part of the requirements. Currently, the cleaning procedures meet Title 8 Section 3362. Southern Field Division has multiple cleaning contracts due to its large geographical area. The contracts require the use of cleaning products and equipment that meet all State, federal, county, and municipality requirements.

Delta Field Division

For cleaning, Delta Field Division has two contracts, Arc San Joaquin and JLK Enterprises Inc. Both cleaning contracts require the use of cleaning products and equipment that meet all State, federal, county, and municipality requirements.

San Joaquin Field Division

Delta Field Division has two cleaning contracts; one for secured pumping plants and another for the remaining, less secure, O&M facilities The contracts require the use of cleaning products and equipment that meet all State, federal, county, and municipality requirements.

San Luis Field Division

Delta Field Division has two cleaning contracts: one for secured pumping plants and another for the remaining, less secure, O&M facilities. The contracts require the use of cleaning products and equipment that meet all State, federal, county, and municipality requirements.

Division of Flood Maintenance

The current vacuum cleaners at the Division of Flood Maintenance do not have the Carpet and Rug Institute Seal of Approval. The Division will specify that future vacuum cleaners have the Seal of Approval. Most entryways are maintained per CALGreen Section A5.504.5.1. The Division will survey entryways and install CALGreen compliant entryways.

Planning Narrative for HVAC Operations

NO PROCESS IN PLACE

Planning Narrative for HVAC Inspection Requirements

A Maintenance Plan is a structured and documented set of detailed information explaining when and how inspections, maintenance, or testing are to be performed. Recently, the Division of O&M established standardized templates for their Maintenance Plans covering the inspection and maintenance of over 1,000 different types of equipment at SWP facilities. Annually, their team meets to review staff workload and assign lead authors for new or modified plans. The team is considering writing Maintenance Plans for a wide variety of equipment inside of DWR's switchyards, pumping plants, dams, and office buildings. Because the workload is tremendous, these teams must prioritize Maintenance Plans based on their expert judgement.

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). At this time, only a Maintenance Plan for the HVAC Systems (Fan, 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 que. Until then, SWP Field Divisions are working from Preventative Maintenance Plans.

Integrated Pest Management (IPM)

Reporting on IPM plans

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.

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 a 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.

Some of DWR's practices fall under structural pest control methods involving buildings. Some of the structural practices include:

- Conducting a check of the exterior and interior of buildings to de-web and clean approximately once a month or as needed.
- Sealing any obvious holes, cracks, or openings where pests could enter with mesh or wire screen.
- Performing regular cleanings of facilities to provide a sanitary environment to discourage pests.
- When absolutely needed mouse/rat bait (Talon G rodenticide bait pack, mini pellets) and sticky board traps are placed in facilities and checked regularly by CPM staff.

Table 5.4: Integrated Pest Management Contracts

Pest Control Contractor Name	IPM Specified (Y/N)	Contract Renewal Date
Take Care Termite (Flood Management)	Parallel Specification	10/31/2023
Advanced Integrated Pest Management (Oroville Field Division)	Parallel Specification	10/31/2025

Planning Narrative for Pest Control 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.

Fossil Fuel Landscaping Equipment Replacement with Low Emitting Landscaping Equipment

Planning 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.

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.

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.

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.

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 Management

Sutter Maintenance Yard staff replaced all fossil fuel landscape equipment for their building facilities with battery powered equipment. They are in the process of replacing small equipment such as fossil fuel chainsaws, concrete saws, and generators with battery operated units for offsite levee repair activities. Other levee repair equipment, such as soil compactors, are only available as fossil fuel powered.

Sacramento Maintenance Yard has contracted out landscape services for work around the building facilities. When the current contract does not include specific language for use of battery or electric equipment, new language will be incorporated into future contracts that will require the use of only non-fossil fuel equipment. As with Sutter Maintenance Yard, Sacramento Maintenance Yard is in the process of replacing levee repair equipment when possible.

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

Staff in DWR-owned facilities showed exemplary waste and recycling efforts for 2021 and 2022, exceeding the requirements with a 96 percent reduction in 2020. Part of this achievement can be attributed to DWR's "dumpster" award, given annually to a Division of DWR that has the highest waste reduction percentage, along with other forms of recognition that help keep employees interested and engaged in waste reduction efforts. However, a significant reduction was a result of the Covid19 pandemic and lower occupancy rates at DWR facilities.

In buildings owned by DGS or a private lessor, DWR staff work closely with the lessor and/or building managers to obtain internal receptacles and signage for the disposal of food, paper, and trash, and to coordinate the collection of data

for annual reporting. DWR continues to seek out methods to increase awareness in waste reduction by educating employees to use the proper receptacles and consider placing gently used items in the "Green Pastures" room for re-use. Staff requesting the purchase of furniture must check the DGS and DWR surplus storage. DWR is required to check with State surplus prior to any new purchases.

Planning Narrative on Designated Waste and Recycle Coordinator and Program Basics

NO PLANS

SARC Report

DWR disposal in 2020 was the lowest ever at 0.50 pound per capita (see our 2021 Roadmap). Amounts in 2021 and 2022 show per capita waste is back to pre-COVID levels hovering around 2 to 8 pounds per capita (see Table 5.5).

Table 5.5: State Agency Reporting Center (SARC) Report on Total Waste per Capita

Per Capita Disposal Rate	2021	2022	Total Waste 2021	Total Waste 2022	% Change from 2021/2022
8.30	8.57	2.15	5,983.82	1,600.01	75%
Ibs./capita	Ibs./capita	Ibs./capita	tons	tons	reduction

Reporting Narrative on SARC Report on Total Waste per Capita

With the assumption that 55 percent of employees are in the office, and a workforce of 4,082, DWR had a 75 percent reduction in per capita waste between 2021 and 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 SARC Report on Total Waste per Capita

NO PLANS

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. California's Department of Resources Recycling and Recovery (CalRecycle) administers the State's recycling and waste management programs.

Reporting 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 Stateowned 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 Recycling Program and Practices

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.

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 DGSowned 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 2023 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 Field Division (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 Center, SWP Delta O&M Center, and Sutter Maintenance Center.

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.

Reporting on Edible Food Recovery Program and Food Service Items Program

DWR does not operate cafeterias nor participate in the production of food (see Tables 5.6 and 5.7).

Table 5.6: Edible Food Recovery Program Element	ts
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Building Name	Cafeteria <u>≻</u> <u>5,000</u> Square Feet (Enter sq. ft.)	Cafeteria +250 Seats (Enter actual number of seats)	Was Cafeteria Open in 2022?	Food Recovery Agreement Yes, No or Unknown
NO EDIBLE FOOD RI	ECOVERY PROGR	AM REQUIRED		

Table 5.7: 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
	CES		

Hazardous Waste Materials

Reporting on Hazardous Waste Materials

The Division of Business Services, Facilities and Property Branch, uses a DGSapproved 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 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 5.8 shows the amount of hazardous waste materials removed in 2022 from State-owned facilities, such as the SWP O&M Centers and the Division of Flood

Management O&M center. 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.

Department -Wide Hazardous Material Name	Department Total Hazardous Material Amount (lbs.)
Used Oil/Antifreeze	85,620
Paint	2,700
Other (Stripping products, Oil Filters, Paint	20,160
Thinner, etc.)	

Table 5.8: Hazardous Waste Materials

Reporting Narrative for 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).

DWR performs Annual Safety Inspections at the five SWP Field Division O&M Centers. 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 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 Hazardous Waste Materials

DWR will continue to update each 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.

Universal Waste

Reporting on Department-Wide Universal Waste Materials

Each of the SWP field divisions has 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 division O&M Centers. 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.

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

Table 5.9: Reporting on Department- Wide Universal Waste Materials

Planning Narrative for 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

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. For the 2021/2022 and 2022/2023 Fiscal Years, DWR put an estimated \$21,500 in office supplies back into circulation as a result of the Green Pastures room program.

At the start of Fiscal Year 2021/2022, as part of the move from the California Natural Resource Agency (CNRA) Headquarters at 1416 9th Street in Sacramento to the new CNRA HQ Building at 715 P Street in Sacramento, DWR coordinated a complete collection of office supplies for re-use, recycle, or donation. Here are the figures from that effort:

- DWR donated an estimated value of \$16,330 (approximately 75 boxes) of items that we could no longer use or simply had too many of. This included items such as adding machines, lanyards, and 3-hole punches.
- DWR sent back 22 carts of supplies back to our warehouse which saved approximately \$76,53. This included items such as envelopes (all sizes), labels, post-it notes, surge protectors, and various grades of tape.
- DWR sorted unneeded business materials and recycled approximately 174 cubic yards so they did not go into a landfill. Approximately 30 percent were binders, 30 percent were metal items, and 25 percent were plastic items. The last 15 percent were mixed-use items (wood and some plastic).
- DWR received 892 unused toners and copy machine parts, at an approximate value of \$60,247. We plan to circulate these items.

Planning Narrative on Department-Wide Material Exchange

The Green Pastures room will continue to be available to staff. No large office moves are planned in the coming years.

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

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.

Reporting Narrative for Employee Waste and Recycle Training and Education

DWR does not do an annual review of our signage or our education and training of employees on proper waste and recycling actions.

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.

Environmentally Preferred Purchasing (EPP)

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 everchanging 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 Sections12200-122217, 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.

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.

Planning Narrative for Measure and Report Progress on EPP Spend

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

Good or Service	2022 Total Spend (\$)	2022 Percent EPP Spend (%)	EPP Target (%)
Paper Products	\$355,050.76	74.25%	75%
Plastic Products	\$227,8790.89	73.02%	75%

Table 5.10: Goods and Services Categories with the Greatest Potential to Green

EPP BMPs

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 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).

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.

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.

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.

Remanufactured toner cartridges (available from PIA, Statewide contract ID/Number: 1-19-75-60):

• Toner cartridges use mandatory contract 1-19-75-60.

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.
- Incorporate EPP criteria in the goods and services the State buys.
- Embed sustainability roles and responsibilities into purchasing procedures.

- 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.
- Continue to participate in the Sustainable Purchasing Leadership Council (SPLC) SPLC BENCHMARK Cohort Program benchmarks.

Reporting on EPP Training and Outreach

DWR plans to improve its procurement of recycled content goods. Plans include re-educating buyers in DWR's Division of Operations and Maintenance (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 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.

DWR'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.

DWR is researching ways to include more specialty staff dedicated to EPP. One outcome was to update duty statements for IT procurement staff to include compliance with EPP. The total number of employees assigned as buyers now numbers 61.

CalHR Classification	Total Number of Staff	EPP Basic Training Completion	Percent Trained	2023 EPP Training Goal
Associate Governmental Program Analyst	27	0	NO BUYERS COMPLETED TRAINING IN 2022	100%
Associate Information Systems Analyst (Specialist)	2	0	NO BUYERS COMPLETED TRAINING IN 2022	100%
Business Service Officer I (Specialist)	2	0	NO BUYERS COMPLETED TRAINING IN 2022	100%
Business Services Assistant (Specialist)	1	0	NO BUYERS COMPLETED TRAINING IN 2022	100%
Staff Services Analyst (General)	19	0	NO BUYERS COMPLETED TRAINING IN 2022	100%
Staff Services Manager I	6	0	NO BUYERS COMPLETED TRAINING IN 2022	100%
Staff Services Manager II (Manager)	2	0	NO BUYERS COMPLETED TRAINING IN 2022	100%

Table 5.11: 2022 EPP Basic Training Completions

Table 5.12: 2022 EPP Intermediate Training Completions at Department of Water Resources

Classification	Total number of staff	EPP Intermediate Training Completions	Percent Trained	2023 EPP Training Goal (%)
No Data	No Data	0	NO BUYERS COMPLETED TRAINING IN 2022	0% Intermediate is not required

Table 5.13: 2022 EPP Executive Training Completions for Executive Members at Department of Water Resources

Executive Member	Title	Date Completed
No Data	No Data	N/A

Reporting Narrative on EPP Training and Education

DWR developed a guidance manual for DWR's Buy Recycled Program. All training for DWR's buyers includes how to find EPP products and how to determine Post-Consumer Recycled Content (PCRC) of the products purchased as well as how to record that information in the Department's purchase order. DWR reviews and updates all Purchasing Services guidelines and materials to ensure that they are current.

DWR has zero buyers with additional training and certifications beyond the basic CalPCA EPP training course. We promote the continual education of buyers as they are promoted to higher levels of responsibility.

Planning Narrative on EPP Training and Education

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 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

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.

Table 5.14: State Agency Buy Recycled Campaign (SABRC) FY 21/22Performance

Product Category	SABRC Reportable Dollars	SABRC Compliant Dollars	% SABRC Compliant
Antifreeze	\$9,644	\$7,261	75.30 %
Compost and Mulch	\$58,192	\$6,940	11.93 %
Glass Products	\$161,710	\$121,845	75.35 %
Lubricating Oils	\$56,5821	\$262,818	46.45 %
Paint	\$211,868	\$53,984	25.48 %
Paper Products	\$355,050	\$263,636	74.25 %
Plastic Products	\$2,278,790	\$1,663,927	73.02 %
Printing and Writing Paper	\$131,612	\$100,159	76.10 %
Metal Products	\$25,459,990	\$25,298,257	99.36 %
Tire Derived Products	\$59,440	\$53,431	89.89 %
Tires	\$381,081	\$84,997	22.30 %

Planning Narrative for 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 Department of General Services 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

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.

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 visitor 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 4 in southern California.

Smart Location Score for New Leases after January 1, 2020

DGS negotiated leases for three buildings which has housed DWR staff since 2020. The CRUISE requests for these leases contained other specific items making a high score unlikely. T

	Smart Location
Facility name	Calculator Score
N Laverne Ave (Fresno)	19
River Park Dr. (Sacramento)	15
Gold Center Dr. (Sacramento)	9
Average	14.3
Baseline	23.4
% change from Baseline	-61%

Table 5.15: Smart Location Score for New Leases after January 1, 2020

Planning Narrative Instructions for Smart Location Score after January 1, 2020

DWR has new privately leased buildings which have a lower average score than the buildings used for a "baseline." Each of these three locations 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.

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 5.16 are those with higher staffing levels but are in locations with less than 20 points on the Smart Location scoring chart.

Table 5.16: Current (non-expired) Leases Prior to 2020 — Lowest Smart Location Score

Facility name	Smart Location Calculator Score
Gateway Oaks (Sacramento)	15
JOC Annex (Sacramento)	14
JOC (Sacramento)	10
Howe Ave. (Sacramento)	8
Industrial Boulevard (West Sacramento)	6
N Market Boulevard (Sacramento)	6

CHAPTER 6 — 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 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.

Budget Process

The Department operates on an annual budget of around \$4 billion, which represents about 12 percent of the California Natural Resources Budget. About \$1.5 billion of our funding is from the State fund centers (general fund and general obligation bonds) and approximately \$1.2 billion is from water contractors for implementation of the State Water Project (see the text box below). The Department's Fund Center budget reflects planned costs authorized by the Governor's budget. These planned costs are for expenses related to operating or managing a specific program. Expenses may include, but are not limited to, operating expenses and equipment, contracts, labor, consulting services, real property, and large purchases such as equipment, materials, and specialized training.

The Funds Management Section creates all Fund Centers/Functional Areas for appropriated funds. The Master Data and Cost Analysis Section creates all Fund Center/Functional Areas for State Water Project (SWP) continually appropriated funds. A SWP continually appropriated Fund Center can have multiple Functional Areas; all other Fund Centers can have only one corresponding Functional Area. Once established, the Fund Center normally remains the same across fiscal years for most funds, with General Obligation Bond Funds and Capital Outlay Funds being the exceptions.

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. Division/Office/Region Managers set priorities, reassign resources as necessary, and ensure 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.

The State Water Project plans operation and maintenance and capital projects annually and projects the costs. The projected costs are included in the annual bills sent to SWP Contractors.

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 Opportunities

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 (1) and San Luis Canal (2), which are managed by the State Water Project (SWP). Initial funding from the 2022 Budget Act will be used to support feasibility studies and design for these parts of the water delivery system and to support the Central Valley Project components which are the federal compliments to the SWP. SWP is also lobbying at the federal level (USBR and Congress) to secure funding for all four segments that are experiencing subsidence impacts (two are State owned, and two are federal owned). The total project is expected to cost \$2.5 billion with \$288 million (12.2 percent) and \$582 million (24.8 percent) dedicated to California Aqueduct and San Luis Canal. The current funding split is 1/3 federal, 1/3 State, and 1/3 local.

Facility Name	Project	Funding Source	Est. Begin Date	Est. Completion Date
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
All SWP Operational Facilities	Enhanced SWP Asset Management	SWP Capital Outlay	2021	ongoing
New – Proposed Asset	Delta Conveyance Project	SWP Capital Outlay	2028	2040

Table 6.1: Climate Change Priority Projects

Funding Opportunities for ZEVs and EV Infrastructure

DWR's Division of Operations and Maintenance has worked with the DGS Office of Sustainability Transportation Unit to install new EV charging infrastructure at a few DWR-owned facilities. 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.

The SWP's Division of Operations and Maintenance'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). There are 22 Level 2 charging stations that have been installed to date at the Delta and Oroville Field Divisions, although a few more are still being planned. An additional 193 Level 2 and 3 charging stations are planned throughout all five Field Divisions at 39 sites. The technology and requirements for heavy equipment is still in early development. 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.

Facility Name	Project	Funding Source	Est. Begin Date	Est. Completion Date
Oroville Operations and Maintenance Center	EVSE — Level 1 and 2*	SWP Capital Outlay	2022	2026
Delta Operations and Maintenance Center	EVSE — Level 1 and 2	SWP Capital Outlay	2022	2026
San Joaquin Operations and Maintenance Center	EVSE — Level 1 and 2	SWP Capital Outlay	2024	2026
Pearblossom O&M Subcenter — NEW	EVSE — Level 1 and 2	SWP Capital Outlay	2024	2026
Southern California Operations and Maintenance Center	EVSE — Level 1 and 2	SWP Captial Outlay	2024	2026

Table 6.2: EV Priority Projects

* Level 1 would have 110V and Level 2 are 220V locations.

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 is developing an energy- and water-efficiency improvement plan designed to meet the various legislative and executive mandates (see above). This plan and its estimated costs will be presented to DWR Executive managers for approval and implementation. Once approved, DWR's Division of Operations and Maintenance will include this improvement plan into their 5-year capital improvement plan.

Table 6.3: Building Energy Conservation	n and Efficiency Priority Projects
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Building Name	Project	Funding Source	Est. Begin Date	Est. Completion Date
NO PRIORITIES —				
AUDITS ARE				
ONGOING				

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 Department of General Services (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 is in development to determine which assets need to be replaced at SWP facilities (see Chapter 4). The conversion to drought tolerant plants in SWP's Southern Field Division has already occurred. Conversion to drought tolerant plants in other SWP field divisions is being considered, but no location is planned nor designed.

Building Name	Project	Funding Source	Est. Begin Date	Est. Completion Date
NO PRIORITIES — AUDITS ARE				

Table 6.4: Water Conservation and Efficiency Priority Projects

Funding Opportunities for Sustainable Operations

A comprehensive list of gas-fired furnaces and boilers is in development using SWP funds to determine which assets need to be replaced. This effort supports the goal of electrifying State buildings with the objective of reducing emissions and achieving ZNE per SB 1203 (see Chapter 3).

The replacement of gas-powered landscaping equipment is not a project SWP is currently pursuing, as the landscaping work is all performed by outside contractors. As such work is performed by outside contractors the change to electric powered landscaping equipment will need to be taken into account during the next round of specification/scope of work drafting for the next landscaping contract. This requirement puts a cost pressure on SWP and may impact reliability of service given many of the locations are rural. This requirement may also impact the ability of small business owners and Disabled Veteran Business Enterprise to win the bids for such contractors given the high initial cost for such electrical equipment.

Table 6.5: Sustainable Operations Priorities

Building Name	Project	Funding Source	Est. Begin Date	Est. Completion Date
All Locations — Inventory of gas-fired furnaces and boilers	Need Special Equipment	SWP Operations Fund	2023	2025

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. Lifecycle 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 Operations and Maintenance reissued 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 and some 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 Operations and Maintenance 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 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.

Using free software tools, DWR could begin to take climate change into account in planning and investment decisions and employ whole-building lifecycle 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 to secure the Type III environmental product declaration (EPD) for these common construction materials. An EPD is a thirdparty 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. Most of SWP's construction documents are stored in COSMOS, which has a module named Secretariat as a centralized ERM. 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 7 — PUBLIC EDUCATION AND OUTREACH

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 EO 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 State Water Project 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.

The COVID-19 pandemic and the resulting school closures, transition to virtual learning, emphasis on English/Language Arts and Mathematics, and cancellations of large gatherings led to significant changes to the program in 2020, including the cessation of in-person outreach, reduction in teacher professional learning institutes, and a steep decline in requests for education materials.

The COVID-19 disruptions continued throughout the first half of 2021 as many students continued to learn at home or through hybrid attendance. While most students returned to school fulltime by the start of the 2021–22 school year, outreach events were fewer than in previous years, and many teachers focused primarily on addressing learning loss and reintegrating students into full-time classrooms. 2022 saw more in-person events, although the aftereffects of the pandemic lingered, including decreased student engagement and teacher bandwidth.

School Events and Educator Outreach

DWR has traditionally attended approximately a dozen district-wide events per year. In fall 2021, the San Joaquin County Farm Bureau resumed its AgVenture events. During the 2021–22 school year, the DWR Water Education Specialist

events in Manteca, Lodi, and Tracy, where they spoke with approximately 500 3rd graders about the water footprint of foods and ways to conserve water. DWR attended AgVenture again during the 2022/23 school year, educating approximately 800 students at events in Manteca, Lodi, Stockton, and Tracy.

Other events attended by DWR staff include, but are not limited to, the Nor Cal Science Festival (April 2022), West Basin's Water Harvest Festival (virtual, 2021; inperson, 2022), Orange County Children's Water Education Festival (March 2023), and the California Association of Science Educators (CASE) and California Association of Black Educators Conferences (October 2023). Through these events DWR provided education on local water supplies, threats from climate change, the role of the State Water Project in augmenting local water resources, and the importance of water conservation. In May 2023, DWR scientists attended State Scientists Day where they discussed their work on climate change, salmon management, and ecosystem restoration with 4th to 6th grade students. DWR also participated in the Center for Land-Based Learning's Caring for Our Watersheds Contest by presenting to participating teachers about climate change (2022) and judging student proposals (2022 and 2023).

Figure 7.1 — Water Education Specialist Kathy Schulz speaks to students at the DWR table at an AgVenture event (2022)



Photo available at DWR's Pixel Site (<u>https://pixel-ca-</u> <u>dwr.photoshelter.com/galleries/C0000XG72oa_CHVA/G00003aTQ99_sUUs/Stude</u> <u>nt-outreach</u>)

The Developing Environmental Literacy, Taking Action (DELTA) program resumed in December 2022. This program provides middle school students in Rio Vista the opportunity to learn about the ecology and management of the Sacramento– San Joaquin River Delta (Delta) from Interagency Ecological Program (IEP) scientists. These scientists partner with the DWR Water Education Specialist to provide hands-on learning and career information to over 200 6th, 7th, and 8th graders per year.

The growth of online learning tools such as Zoom during the pandemic allowed the Water Education Specialist to reach students in geographic areas not previously accessible, and water education presentations were scheduled with over a half-dozen classes in Ventura County, Contra Costa County, and elsewhere in 2021 and 2022 In 2022, the Water Education Specialist also met with approximately 250 Plumas County 6th graders as they completed their year-long Feather River Watercourse Curriculum with the Plumas to Pacific field trip.

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 <u>Education page</u> on the DWR website or educators can receive them at outreach events.

In 2021, DWR provided approximately 50,000 materials to educators throughout California, reflecting a return to normal levels of distribution following the sharp drop-off in 2020. In 2022, DWR provided approximately 20,000 materials to educators throughout California. This decline is attributed to the digitization of many materials in recent years, driven by the pandemic-driven increase in online teaching resources. In response to the growing movement toward online learning, DWR acquired a Nearpod (TM) license in the fall of 2023, which will allow it to place resources online.

Water Wednesdays

In spring 2020, DWR launched Water Wednesday, a 30-minute live stream presentation and Q&A session with Department scientists. Water Wednesdays continued in 2021 from January through May and again from September through November. In addition to addressing water topics, seven Water Wednesday presentations focused on careers in the water resources field. With most students back in school and people returning to their workplaces, the program was put on hiatus at the end of 2021.

Professional Development for Teachers

DWR partners with numerous public and private partners to provide professional development opportunities for K-12 educators. In the summer of 2021, DWR hosted two multi-day teacher institutes (California Water Institute) in partnership with Solano Resource Conservation District (RCD) and California State University,

Chico. These four-day institutes involved K-12 educators learning about their local watersheds and their ties to the State Water Project, becoming certified to use the Project WET curriculum, and completing a project with their students. In 2022 and 2023, these workshops expanded to a 3rd location through a partnership with the Galt Joint Union Elementary School District and Cosumnes River Preserve.

In the fall of 2021 and 2022, a three-day workshop was held in partnership with the San Joaquin County Office of Education, with a focus on the Delta and State Water Project.

In January 2022, DWR, the California Environmental Education Foundation (CEEF), and local partners in the LA Basin offered an online version of the Best Practices in Environmental Education and Stewardship teacher workshop. This workshop was offered again in 2023.

DWR also hosted numerous one-day thematic Project WET workshops. DWR's climate change team funded and presented at over a half-a-dozen workshops throughout the state in 2022 and 2023. DWR and local water agencies, mostly in Southern California, also partnered to host Save Our Water/Water Conservation focused workshops in the spring of 2022.

In 2023, DWR received a FEMA grant to provide floodplain focused Project WET workshops; the first two were held in the Yolo Bypass and Cosumnes River Preserve in May of 2023.

Collaboration and Partnerships

DWR's School Education Program continued to collaborate with other water educators throughout the state. In 2021, the Water Education Specialist collaborated with the following:

- 1. Water Education Foundation.
- 2. Water Education Committee (WEC).
- 3. California Environmental Education Interagency Network Committee (CEEIN).
- 4. National Network for Ocean and Climate Change Interpretation Governing Council (NNOCCI).
- 5. MWD Water Educators Network.
- 6. San Joaquin County Community Partners for Environmental Literacy.
- 7. San Joaquin County Office of Environmental Literacy Community of Practice.

- 8. Central Coast Environmental Literacy Partners.
- 9. California Regional Environmental Education Community (CREEC) Network.

DWR continued to maintain an active leadership role with the Water Education Committee (WEC) in 2021. The group met monthly through the spring and then switched to bi-monthly for the second half of the year. Weekly emails were sent to WEC members alerting them to webinars and other professional development opportunities, as well as important updates, particularly as the drought progressed.

In 2022 and 2023, WEC had bi-monthly virtual meetings. The DWR Education Specialist coordinated a two-day, in-person meeting in Sacramento in July of 2022. Weekly emails were sent to WEC members alerting them to webinars and other professional development opportunities, as well as important updates. An in-person WEC meeting was hosted in July of 2023 in collaboration with West Basin Municipal Water District and Metropolitan Water District.

The Water Education Specialist continued to participate in CEEIN and NNOCCI meetings and joined regional environmental literacy working groups steered by various County Offices of Education. These groups allowed DWR to ensure that water education remained a core component of K-12 environmental literacy and promote its resources to a wide range of educators.

While most of our education efforts are focused on K-12 levels, DWR's education specialist also provides adult education, for example, through the California Naturalist Program. After a brief hiatus in 2020, the program resumed in 2021 and continued through 2022 and 2023.

Targeted Community Outreach

In 2021, PAO continued to educate the public about water, water conservation, and the SWP primarily through virtual events because of the COVID-19 pandemic. In 2022 and 2023, PAO continued this course of public education; however, as the pandemic wound down, in-person events increased, and PAO participated in many.

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.

DWR visitor centers were closed to the public in mid-March 2020 because of the COVID-19 pandemic; however, two locations, Vista del Lago and the Lake Oroville Visitor Center, began partially reopening in 2021. The Romero Overlook Visitor Center remained closed in 2021.

A number of visitor centers' exhibit updates were completed in 2021, including new outdoor panels at the Lake Oroville Visitor Center. These panels interpreted a bald eagle's nest which had to be removed near Glen Pond. Currently, the PAO exhibit team is working on updating the emptied lobby area with new temporary exhibits on chinook salmon.

In 2022, Romero Overlook Visitor Center benefited from an installation of an immersive visitor-directed theater menu and 4k theater experience — this includes a detached exhibit demonstrating the history of California's hydropower and an interactive data display. The theater benefited from many updates including an interactive movie menu, a 4K projector, and full-screen movies. The PAO Exhibits Team installed a roadrunner children's exhibit at Romero Overlook Visitors Center.

Vista del Lago received the Superhero Climate Challenge Interactive display which was previously at Romero Visitor Center. Lake Oroville Visitor Center received a new Pufferfish interactive globe, with a large backdrop of the new Oroville Spillway.

Lake Oroville received a new outdoor Bosch 360 camera along with a new joystick controller after the previous unit was removed upon the departure of Parks and Recreation. The new joystick controller was provided by Oroville's Field Division and required fitting into the lobby exhibit by the Exhibits Team in early 2023.

The visitor centers continued their partial reopenings in 2022, and hours of operation increased after mainly being closed in 2020 and 2021 due to the pandemic. In addition to staffing the visitor centers and interacting with guests, DWR Guides led over 100 school and public tours. Combined visitation to the centers reached over 115,00 people. Guides provided and staffed educational tables at the Salmon Festival in Oroville and the Poppy Festival in Lancaster.

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.

In 2021, most outreach events remained canceled due to the COVID-19 pandemic; however, the PAO outreach team participated in the Oroville Salmon Festival.

In 2022, the PAO outreach team attended a marked increase in events as the pandemic wound down. These events included the Sacramento County and State Fairs and the Oroville Salmon Festival. At each of these events, team members educated booth visitors about the role of the SWP in California delivery, water safety, conservation, and native plants.

In 2023, the PAO outreach team again hosted a booth at the Sacramento County and California State Fairs, respectively. As they did in 2022, the outreach team educated booth visitors about the role of the SWP in California delivery, water safety, conservation, and native plants. The team also introduced a new engagement activity at both fairs — a craft that allowed booth visitors to make a tissue-paper California poppy, which served as a souvenir that celebrates California's most recognizable native plant.

The outreach team also participated in the California Natural Resources Agency's (CNRA) inaugural Earth Day celebration located at CNRA headquarters in downtown Sacramento. At this event, the outreach team educated the public in attendance about the water footprint of the foods they choose and shared water safety tips and materials.

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. Created by the California Silver Jackets Program, a joint effort by the U.S. Army Corps of Engineers and DWR, CFPW provides participating agencies with messaging, graphics, and social media templates created and distributed by the Public Affairs Office and Division of Flood Management. DWR also supports events in communities across the state to promote flood preparedness, such as Sacramento County's annual High-Water Jamboree.

Water Safety Education and Outreach

DWR's Water Safety program is designed to encourage safe and responsible water recreation at locations along the State Water Project. 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.

Aquatic Adventure Camps allow children to learn skills such as swimming, CPR, rescue breathing, Jr. lifeguard skills, first aid, boating skills, various health-related safety knowledge (sun exposure, dehydration, etc.), and more. While the camps were canceled the summer of 2020 due to the COVID-19 pandemic, two were held in 2021 in cooperation with the City of Pittsburgh, reaching 50 children. In 2022 and 2023, East Bay Regional Parks joined with the City of Pittsburgh to offer a total of six camps reaching an average of 140 youth each year.

DWR also partners with the C.A.S.T for Kids Foundation to provide outdoor fishing experiences for children with disabilities.

Museum of Science and Curiosity (MOSAC) Partnership

The California Department of Water Resources (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. Figure 7.2 — MOSAC exhibit on California's Water Challenge (2021)



Photo available at DWR's Pixel Site (<u>https://pixel-ca-</u> <u>dwr.photoshelter.com/galleries/C0000XG720a_CHVA/G00009UnGNKjKFVE/Muse</u> <u>um-exhibits</u>)

DWR entered into a 15-year sponsorship agreement with MOSAC in 2014. The goal of the museum is to serve as a regional epicenter for STEM education and to encourage students from K-12 to colleges and universities to enter careers in STEM.

In Spring of 2023, DWR initiated a furtherance of our partnership with SMUD to host 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. These field trips began in 2023, with the first one taking place on April 22nd in conjunction with Earth Day. We also hosted one more in late June and are hoping to make these quarterly events if SMUD is on board.

To summarize, the groups' members meet at a rally point and are provided breakfast by SMUD and a chance to meet each other. They are then transported to the museum where they get to explore various exhibits, take in a planetarium show, and are provided a tailored experience. DWR scientists and several partners host tables throughout the museum where kids can interact with them and learn about what they do. They are exposed to environmental and cultural science, salmon life cycles, Tribal water stories, and water safety and conservation. To amplify DWR's partnership with SMUD and the incredible experience these field trips offer attendees, DWR leveraged several channels, both owned and earned. DWR was able to secure local media coverage (KCRA 3) at the June event. Additionally, the social media teams from both DWR and SMUD generated photo and video content and posted it to their respective social media platforms.

The nonprofits DWR has worked with so far at these events include Urban Advocates & Achievers, Cottage Housing, the Sacramento Children's Receiving Home, Movement 4 Life, Improve Your Tomorrow, Volunteers of America NorCal, the Salvation Army, Alliance for Education Solutions, BEST Program, and Wellspring Women's Center.

Save Our Water Campaign

The outreach team also coordinated a Save Our Water presence at a number of events throughout the state in 2022 and 2023. In accordance with the mission of this statewide water conservation program, outreach team members shared information including water efficient landscaping, native plant seeds, indoor and outdoor conservation tip flyers, and social media resources.



Figure 7.3 — Save Our Water campaign at San Diego County Fair

Photo available at DWR's Pixel Site (<u>https://pixel-ca-</u> <u>dwr.photoshelter.com/galleries/C0000LpBrhjEF4q0/G0000Nn6YoRdjOHw/Save-</u> <u>Our-Water</u>)

DWR, in partnership with the Office of Strategic Planning and Community Engagement, enhanced the campaign across California to continue to help educate water users that "conservation is a way of life." The campaign focused on conserving water year-round and transforming yards to native and waterwise plants for long-term water conservation. DWR serves as the campaign's subject matter experts.

This information was shared at dozens of events, including a number of fairs throughout the state, home and garden shows, farmers' markets, music festivals, Sac Republic FC soccer matches and River Cats baseball games, the First Partner's Farm to School event, community garden gatherings, cultural commemorative events, and various water-centered events.

Finally, the outreach team hosted a table in the exhibit hall at the Association of California Water Agencies (ACWA) biannual conferences.

In late 2022, the oversight of Save Our Water campaign was taken on by the Office of Community Partnerships & Strategic Communications (OCPSC), a part of the Governor's Office of Planning & Research. DWR continues to serve the campaign as subject matter experts and attends industry conferences on behalf of the campaign, including the aforementioned ACWA conferences and California Water Efficiency Partnership (CAL WEP) events.

Sustainability in Operations at Department

Earth Day and America Recycles Day are times to celebrate at DWR. Staff are encouraged to attend local events and to initiate internal discussions. For example, many DWR employees participated in the Earth Day events in the lobby of the Natural Resources Building in downtown Sacramento.

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 7.1 describes a few of the technical guidance documents that DWR staff supply and publish for California's decision makers.

Table 7.1 Guidance Published to Inform Decision-Makers about SustainableDevelopment 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
Summary Report to the California Department of Water Resources Providing Recommendations for Updating the Model Water Efficient Landscaping Ordinance (MWELO) (2019)	City and county water agencies who enforce MWELO	Every 3 years, synchronized with the triennial update process of CalGreen.	Water supply water efficiency	Planners can incorporate standardized water budget definitions into General Plans.
Recommendations for In-Lieu Technologies for Dedicated Irrigation Meters for Commercial, Industrial, and Institutional Outdoor Irrigation Water Use Performance Measures (2022)	Commercial, Industrial, and Institutional water users in the state	None, a single report	Water supply, water metering	Large higher education campuses will be able to monitor water use, predict outcomes, and adopt new water management practices to improve
Recommendations for Urban Wholesale Distribution Systems Water-Loss Auditing Reporting (2020)	Urban wholesale water distributors	None, a single report	Water supply	State Water Board would adopt guidelines based on DWR's recommended approaches

Name of Plan (year)	Intended Audience	Update Interval(s)	Critical Resources Covered	Example(s) of a typical use
Urban Water Management Guidebook 2020 (2021)	Urban wholesale water distributors	As needed in response to changes in law	Water supply	Retail urban users can consult these instructions when filling out verification and compliance forms
California's Groundwater – Update 2020 (Bulletin 118) (2020)	Water distributors	Every 5 years	Water Supply	Reference used by researchers or planners to define the boundary of any groundwater basin in California and summary descriptions
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

*- All data is July 2019 through June 2023.

Water Efficiency

The 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. For the past few years, DWR and the California Water Commission have been developing the rulemaking package to establish an amended Model Water Efficient Landscape Ordinance (MWELO) for January 2023 to December 2025. The current package is an administrative update and has broad support. 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).

In terms of demonstration projects, DWR used the MWELO and the "Save Our Water" campaign (see above) to demonstrate low water-use plantings. The Water-Wise landscaping exhibit presents ways to reduce outdoor water use through water-wise landscaping. The exhibit contains garden beds with California native species and low water use plants, displays a systematic guide to replacing lawns with water-efficient landscaping, and gives information on lawn replacement rebate programs.

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 2019 and the end of 2021 include: Groundwater Sustainability Agency Forum (March 2019), SGMA Workshop (January 2020), Joint DWR-State Water Borad General SGMA Webinar (February 2021), resources for SGMA Implementation (October 2021). Events held between January 2022 and June 2023 include Groundwater Sustainability Agency Forums (November 2022, April 2023, November 2023) and Airborne Electromagnetic (AEM) Survey Education Days (March and April 2022).

DWR launched the <u>Be Well Prepared</u> Program and <u>Website</u> (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) (<u>English</u>, <u>Spanish</u>, <u>Hmong</u>)
- Understanding Groundwater A Guide for Well Users (September) (English, Spanish, Hmong
- Who to Contact Resources for Well Owners (September) (English, Spanish, Hmong

DWR has emphasized the importance of engagement with Tribal governments during the SGMA planning process. DWR has broadly distributed materials to provide guidance to GSAs with their outreach/engagement and public noticing practices involving Tribal governments (January 2018) and supported a Technical Advisory Committee.

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 will help inform State water policy and advance issues of equity, access, and incorporation of Tribal Ecological Knowledge in the California Water Plan Update 2023 (which will be finalized in early 2024).

As a process and event driven by Tribal perspectives and Tribal members, the Summit represents a collaborative effort to address the diverse needs and issues related to water by California Tribes and Tribal organizations and State and federal government. As such, it represents an exercise in government-togovernment engagement in water planning.

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 7.2 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:

• Surface water storage.

- Groundwater supplies and dry domestic well susceptibility within groundwater basins.
- 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 7.2) and provides community members with links to contacts who provide immediate assistance with private wells.

DWR also shares data using in-person events. For example, in October 2022, DWR sponsored a *Drought to Flood Symposium* centered on the impacts of climate change extremes in California. The symposium featured speaker presentations and panel discussions about how to build climate change resiliency in water resources and flood management.

Figure 7.4 — Speakers at the Drought to Flood Symposium (2022)



Photo from Pixel, DWR's free photo website (<u>https://pixel-ca-</u> <u>dwr.photoshelter.com/galleries/C0000xzpuji9HpV8/G00004JKCuT79HMs/Drought</u> <u>-to-Flood-Symposium</u>)

Table 7.2 Department-Collected Data Published and Interpreted to InformDecision-Makers and Community Members

Name of Data Portal	Intended Audiences	Resource(s) Covered	Partners
California Statewide Groundwater Elevation Monitoring (CASGEM) Public Portal	Local and regional planners	Groundwater levels, trends in data from wells	U.S. Geological Service; Local monitoring agencies
California's Groundwater Live	Community, Reporters	Groundwater levels, trends in data from wells	U.S. Geological Service; State Water Resources Control Board; and local agencies
County Drought Advisory Explorer Tool	County Drought Advisory Groups	Domestic wells, water suppliers,	None
California Data Exchange Center (CDEC) - State and Federal Water Reservoir Levels and Trends	Community, Reporters	Current and past water levels which supply our potable water to communities and agriculture	U.S. Bureau of Reclamation
Water Use Efficiency Data Portal	Community, Reporters, Legislature	Water supply, water demand, water shortage, agricultural use	State Water Resources Control Board
California Dam Breach Inundation Maps	State and local emergency response staff, land use planners, landowners, insurance companies	Risk of inundation from possible dam failures	None

Name of Data	Intended	Resource(s)	Partners
Portal	Audiences	Covered	
Best Available Maps (BAM)	State and local emergency response staff, land use planners, landowners, insurance companies	Displaying 100- and 200-year floodplains for Central Valley	Central Valley Flood Protection Board; Federal Emergency Management Agency
Dry Well Susceptibility Tool and "Be Well Prepared"	Landowners	Map layers displaying groundwater well trends, tips on well maintenance, and resources for private well owners	None
Flood Emergency Response Information Exchange (FERIX)	State and local emergency response staff	Real time data and decision support tools to inform decisions during flood events	U.S. 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 7.5), 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.
- Extreme Weather Deputies (Environmental Justice Group), whose focus is to protect frontline communities and build resilience to flood and drought scenarios. The objectives of this group are to identify frontline communities, build meaningful relationships with frontline communities, and support long-term resiliency.
- 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 7.5 — 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 7.3 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.

Project	Processes used	Acknowledgments	Listing of signed
Name -		and endorsements	agreements
West Sacramento Flood Control Project – with Flood Projects Branch at DWR	Public meetings; discussions with nearby housing developers	Was given a "Platinum" award from the Institute for Sustainable Infrastructure (2020)	Signed MOU between City of West Sacramento and CVFPB with the federal partner, USACE
Your Delta, Your Voice	Survey in multiple languages	None at this time	None at this time
DWR Director Karla Nemeth and Staff Visits Allensworth, CA post flooding (March – December 2023)	Direct contact with community leaders	None at this time	None at this time

Table 7.3 Example Public Engagement to Improve Designs

*- All data is January 2021 through June 2023

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 C — ACRONYMS

AB	Assembly Bill
ADR	Automated Demand Response
AMB	Asset Management Branch (at DGS)
BMP	Best management practices
CA	California
CALGREEN	California Green Building Code (Title 24, Part 11)
CEC	California Energy Commission
DGS	Department of General Services
DWR	Department of Water Resources
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)
FMD	Facilities Management Division (a division at DGS)
GCM	Global circulation model
GHG	Greenhouse gas
GHGe	Greenhouse gas emissions
GSP	Groundwater Sustainability Plan
IEQ	Indoor environmental quality
JOC	Joint Operations Center

kBTU	Thousand British thermal units (unit of energy)
LCM	The Landscape Coefficient Method
LEED	Leadership in Energy and Environmental Design
MAWA	Maximum applied water allowance
MM	Management Memo
MWELO	Model Water Efficient Landscape Ordinance
OBAS	Office of Business and Acquisition Services (at DGS)
OBF	On-bill financing
OFAM	Office of Fleet and Asset Management (at DGS)
OS	Office of Sustainability (at DGS)
PMDB	Project Management and Development Branch (at DGS)
PPA	Power purchase agreement
PUE	Power usage effectiveness
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
SWP	State Water Project
VA	Vulnerability Assessment
WMC	Water management coordinator
VHSP(s)	Vehicle home storage permits
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.
- **Back flow 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.

- **Critical overdraft** 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:
 - Provisioning services are the products obtained from ecosystems, such as food, fresh water, wood, fiber, genetic resources, and medicines.
 - 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.
 - Habitat services provide living places for all species and maintain the viability of gene pools.
 - Cultural services include non-material benefits such as spiritual enrichment, intellectual development, recreation, and aesthetic values.
- **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 percent 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.
- Lifecycle 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.
- Make Up 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 2015. MWELO applies to all State agencies' landscaping.
- Mulch Mulch is 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. The 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 its 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 same temperature and pressure.
- 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 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 irrigation system performance.

- Water-energy nexus Water and energy are often managed separately despite the important links between the two. Twelve percent of California's energy use is related to water use with nearly 10 percent being used at 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 percent for droughts lasting up to three years.
- WUCOLS Water Use Classification of Landscape Species. WUCOLS are used to help determine water budgets and irrigation schedules. Use this link to access the necessary information for your landscaping needs. <u>WUCOLS Plant Search</u> <u>Database (ucdavis.edu)</u>

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

Vanessa Velasco, Matthew Bates, Elissa Lynn, Dennis Bonfantine, Lori Clamurro-Chew

Integrating Climate Change into Department Planning and Funding Programs Vanessa Velasco, Scott Hunt, Natasha Nelson

Measuring and Tracking Progress Vanessa Velasco, Andrew Schwarz

Carbon Removal

Michelle Jesperson

Zero Emission Vehicles

Incorporating ZEVs Into the Department Fleet

Robert Neves, Ann Bradell

Telematics

Robert Neves, Ann Bradell

Public Safety Exemption

N/A

Outside Funding Sources for ZEV Infrastructure

Hong Lin, Miriam Kaplan

Hydrogen Fueling Infrastructure

N/A

Comprehensive Facility Site and Infrastructure Assessments Jorge Quintero, Julio Gomez

EVSE Construction Plan

Jorge Quintero, Julio Gomez

EVSE Operation

Jorge Quintero, Julio Gomez

Energy

Zero Net Energy (ZNE)

Ram Verma, Golam Kibrya

New Construction Exceeds Title 24 by 15%

Dave Otto

Reduce Grid-Based Energy Purchased by 20% by 2018

Ram Verma, Golam Kibrya

Server Room Energy Use

Sarb Takhar

Demand Response

Ram Verma, Golam Kibrya

Renewable Energy

Ram Verma, Golam Kibrya, Randolph Hszieh

Monitoring-Based Commissioning (MBCx)

Ram Verma, Golam Kibrya

Financing

Hong Lin, Miriam Kaplan

Water Efficiency and Conservation

Indoor Water Efficiency Projects In Progress First initiative

Ram Verma, Golam Kibrya, Larrry Yu

Boilers and Cooling Systems Projects In Progress Ram Verma, Golam Kibrya

Landscaping Hardware Water Efficiency Projects In Progress N/A

Living Landscaping Water Efficiency Projects In Progress Ram Verma, Golam Kibrya, Julie Saare-Edmonds

Buildings with Urban Water Shortage Contingency Plans In Progress Natasha Nelson

Green Operations

Greenhouse Gas Emissions

Gerold Mateo, Ram Verma

Building Design and Construction

Dave Otto

LEED for Existing Buildings Operations and Maintenance

Dave Otto

Indoor Environmental Quality

Dave Otto, Terry Randolph

Integrated Pest Management

Natasha Nelson

Waste Management and Recycling

Jackie Robinson, staff at SWP Field Divisions, Facility and Property Branch within the Division of Business Services, Alisa Doxey

Environmentally Preferable Purchasing

Sharmane Daniels

Location Efficiency Alisa Doxey, Terry Randolph, Susan Lemmon

Education and Outreach

Education and Training Julie Prayter, Bryan Byrd, Kathy Schulz, Mary Fahey, Natasha Nelson

Guidance and Data Sharing

Natasha Nelson

Advancing Equity and Social Justice

Ebenezer Ampah, Bianca Sievers

Public Engagement

Natasha Nelson

APPENDIX F — SUSTAINABILITY STATUTORY REQUIREMENTS. EXECUTIVE ORDERS AND MANAGEMENT MEMOS REFERENCES

The following executive orders, Management Memos, legislative actions, resources, and guidance documents provide the sustainability criteria, requirements, and targets tracked and reported herein.

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.

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:

- **<u>SAM Chapter 1800</u>**: Energy and Sustainability.
- MM14-02: Water Efficiency and Conservation.
- <u>MM 14-05</u>: Indoor Environmental Quality: New, Renovated, And Existing Buildings.
- MM 14-09: Energy Efficiency in Data Centers and Server Rooms.
- MM 15-03: Minimum Fuel Economy Standards Policy.
- <u>MM 15-04</u>: Energy Use Reduction for New, Existing, and Leased Buildings.
- <u>MM 15-06</u>: State Buildings and Grounds Maintenance and Operation.
- <u>MM 15-07</u>: Diesel, Biodiesel, and Renewable Hydrocarbon Diesel Bulk Fuel Purchases.
- <u>MM 16-07</u>: Zero-Emission Vehicle Purchasing and EVSE Infrastructure Requirements.

Recent Legislative Actions

Several pieces of legislation were signed in 2015-16 that codified several elements of the executive orders, or provided further requirements included in the policies. These include the following:

- <u>Assembly Bill (AB) 1482 (Gordon, 2015)</u>: 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.)
- <u>Senate Bill (SB) 246 (Wieckowski, 2015)</u>: 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.)
- <u>AB 2800 (Quirk, 2016)</u>: 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.)

Other Legislative Actions

- Assembly Bill (AB) 4: Passed in 1989. The State Agency Buy Recycled Campaign (SABRC) statutes are in Public Contract Code Section <u>12153</u>-<u>12217</u>. 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.
- <u>AB 32 Scoping Plan:</u> 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 2015.
- <u>AB 2583 (Blumenfield 2012)</u> Public Resources Code §25722.8: This statute requires reducing consumption of petroleum products by the State fleet compared to a 2003 baseline. Mandates a 10 percent reduction or displacement by Jan. 1, 2012, and a 20 percent reduction or displacement by Jan. 1, 2020.

- <u>AB 75</u> Implement an integrated waste management program and achieve 50 percent disposal reduction target. State agencies report annually on waste management program.
- <u>SB 1106</u> Have at least one designated waste management coordinator. Report annually on how your designated waste and recycling coordinator meets the requirement.
- <u>AB 2812</u> Provide adequate receptacles, signage, education, staffing, and arrange for recycling services. Report annually on how each of these is being implemented.
- <u>AB 341</u> Implement mandatory commercial recycling program (if the threshold is met). Report annually on recycling program.
- <u>AB 1826</u> Implement mandatory commercial organics recycling program (if the threshold is met). Report annually on organics recycling program.
- <u>SB 1383</u> Fifty 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.
- <u>SB 1335</u> requires food service facilities located in a State-owned facility, a concessionaire on State-owned property, or under contract to dispense prepared food using reusable, recyclable, or compostable food service packaging.

Action Plan

• 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.

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:

- <u>Safeguarding California</u>: The State's climate adaptation strategy organized by sector. Each sector identifies risks from climate change and actions to reduce those risks.
- <u>Safeguarding California Implementation Action Plans</u>: 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.
- <u>Planning and Investing for a Resilient California</u>: 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.
- <u>California's Climate Change Assessments</u>: 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 <u>Cal-Adapt</u>, an online data visualization and access tool.
- <u>Water Use Reduction Guidelines and Criteria</u>: 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 submeters to the extent possible and economically feasible.

• <u>Strategic Growth Council (SGC) Resolution on Location Efficiency</u>: 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.

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APPENDIX H — SUSTAINABILITY THROUGH CARBON REMOVAL AND EMISSION REDUCTIONS

Governor Newsom signed AB 1757 (C. Garcia and Rivas) into law. The new law requires State agencies to set targets for natural carbon removal and emissions reductions on natural and working lands, based on earlier legislation (AB 2649, C. Garcia). AB 1757 will catalyze natural carbon sequestration in California by:

- Requiring the California Natural Resources Agency and Air Resources Board (CARB) to establish ambitious targets for sequestration on natural and working lands for 2030, 2038, and 2045.
- Ensuring that natural sequestration projects have rigorous measurement and verification.
- Establishing an expert committee including researchers, farmers, and Tribal and environmental justice representatives to advise State agencies on modeling and implementation.

A recent report from The Climate Center (Gilchrist, 2020) found that California's working and urban lands alone have the potential to sequester up to 103 million metric tons of past climate pollution from the atmosphere per year. Adding sequestration on natural lands and waters, as AB 1757 does, further increases the potential for scalable, cost-effective solutions. 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.

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's Climate Action Plan encourages DWR to maximize opportunities for carbon sequestration in habitat restoration projects and land management activities to support climate mitigation.

Research by DWR and other institutions (Drexler 2011; Deverel et al 2017) has shown that restoring managed freshwater wetlands in peat soils that are flooded during most of the year reverses subsidence, sequesters carbon, and reduces greenhouse gas emissions (GHG). Research and monitoring for restored managed wetland projects on DWR-owned islands in the Delta determined an average carbon sequestration rate of -10 mtCO2e per acre per year for growing tules when compared to GHG emission rates from pre-restoration conditions. DWR has also conducted research on growing rice on peat soils, showing that while rice does not reverse or sequester carbon, it greatly reduces high rates of greenhouse gas emissions when compared to more traditional agricultural activities. Data analyzed from eddy covariance towers and static gas chambers located near the rice fields on Twitchell Island, averaged over the period 2009 to 2016, estimated emissions at approximately +2.75 mtCO2e per acre per year.

To date, DWR has constructed approximately 2,645 acres of wetlands and 588 acres of rice fields on the DWR-owned portions of Sherman and Twitchell Islands in the Delta. Using the rates above for growing tules and growing rice as compared to emissions rates resulting from traditional agricultural activities, it is estimated that DWR lands on Sherman and Twitchell Islands sequester an estimated 29,000 mtCO2e of GHG per year as compared emission rates from more traditional agriculture land use activities.

Tidal wetlands also sequester carbon and provide greenhouse gas emission reduction benefits. In some tidal wetland systems, this benefit may be greater than managed freshwater wetlands because saline conditions can limit the production of other greenhouse gas emissions in nutrient cycling processes, like methane. Rates of carbon sequestration for all wetland types can vary based on pre-restoration conditions, climate variability, and other factors that affect plant growth (Villa et al 2018).

DWR has constructed several tidal wetland restoration projects in the Delta and Suisun Marsh from the period 2015 to 2022, resulting in approximately 6,000 acres of restored tidal wetlands. The California Climate Investments Land Restoration Benefits Calculator Tool (<u>https://ww2.arb.ca.gov/sites/default/files/auctionproceeds/landrestore QM 18-19 revised final.pdf</u>) has been used to estimate the potential greenhouse gas emissions reductions for restored tidal wetlands, with an output as metric tons of CO2 equivalent. Using this tool, it is estimated that the tidal wetland acres DWR has restored between the years 2015 to 2022 could be sequestering carbon at a rate of approximately 13,000 mtCO2e of GHG emissions reduction per year. However, the results from this tool cannot be used for actual annual emission reporting purposes. Currently DWR has monitoring instruments, such as eddy covariance towers, in place at the Dutch Slough Tidal Restoration project (see Figures H.1 and H.2); most other tidal wetland restoration sites do not have data collection instrumentation available to verify actual carbon sequestration rates. Figure H.1 — Eddy Covariance Tower image



Eddy covariance towers continuously measure gas exchange between the land surface (soil and vegetation) and the atmosphere. It is a common instrument used to monitor greenhouse gas movement.

Figure H.2 — Plantings at Dutch Slough Restoration Project, near Oakley California (2022)



Photo from Pixel, DWR's free photo website (<u>https://pixel-ca-</u> <u>dwr.photoshelter.com/galleries/C0000ECHdF6vvoag/G0000h6bWpqwEsQU/Envi</u> <u>ronment</u>) References:

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APPENDIX I — WATER RESOURCES MEMORANDUM 75: DWR POLICY ON CLIMATE CHANGE ANALYSIS GUIDANCE

CAP Phase II: Climate Change Climate Analysis Guidance obligates Department project managers to: (1) evaluate the potential for climate changes to pose risks to their activities, (2) determine the appropriate level of analysis needed, and (3) identify the available data, tools, and resources to complete the necessary analysis. At the least, Department project managers are required to conduct Step 1 of the CAP Phase II process for all Department projects and activities that involve planning, designing, building, operating, maintaining, or investing in State infrastructure. Department project managers must conduct Step 2 of the CAP Phase II process if a project or activity meets review criteria in Step 1.

- Step 1: Department project managers assess the necessity of conducting a climate change analysis and off-ramp projects that are not sensitive or vulnerable to climate change. Step 1 includes completion and submission of the Department's online Climate Change Screening Analysis Form and Climate Change Vulnerability Checklist for Department Activities (if applicable) to efficiently screen a project's level of exposure and sensitivity to climate changes.
- Step 2: Department project managers determine the most appropriate data, tools, and approach to use for climate change analysis, preserving flexibility while ensuring quality, adequacy, and consistency. Step 2 is intended for Department managers who have determined the project has some level of risk based on Step 1 and now require a deeper analysis of those risks. Step 2 provides a list of considerations managers should evaluate to understand the different types of analyses that are appropriate, potential tools and data that would be necessary, and constraints on analytical approaches or data that may apply to their projects.

All projects will start with Step 1 to ensure that the effort expended to evaluate climate risks is proportional to the project's climate sensitivity. Projects utilizing the Department's project management framework should incorporate climate change as part of the project documentation. Projects that are determined to have relatively low climate risks in Step 1 do not need to proceed to Step 2 and can proceed with traditional risk management and decision-making approaches. Projects that are determined to have appreciable climate risks in Step 1 will move on to Step 2 to determine what specific approach best suits the needs of the project.