Sustainability Roadmap 2022–2023

California State Teachers' Retirement System (CalSTRS)

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

November 1, 2023

California State Teachers Retirement System

Gavin Newsom, Governor

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CALSTRS ROADMAP

Sustainability Road Map 2022–2023

California State Teachers' Retirement System

Heather Conway
Primary Author

Christopher Porter
Facilities Operations Manager

Jeff Isham
Director of Facilities Management

Melissa Norcia
Chief Administrative Officer

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EXECUTIVE SUMMARY

The California State Teachers' Retirement System was established by law in 1913 to provide retirement benefits to California's public-school educators from prekindergarten through community college. Today, CalSTRS is the largest educator-only pension fund in the world, and the second largest pension fund in the U.S. The market value of the CalSTRS investment portfolio was approximately $307.9 billion as of September 30, 2023.

CalSTRS mission: Securing the financial future and sustaining the trust of California's educators.

CalSTRS administers a hybrid retirement system consisting of a traditional defined benefit plan (Defined Benefit Program), cash balance plans (Defined Benefit Supplement Program and Cash Balance Benefit Program) and a voluntary defined contribution plan (CalSTRS Pension2) for California's public school educators, prekindergarten to community college. We also provide disability and survivor benefits. CalSTRS is governed by the Teachers' Retirement Law, which is a part of the California Education Code.

To increase members' understanding of their benefits and their shared role in securing their financial futures, we offer benefits planning services, including self-service resources, workshops, videos and publications specific to key career stages. We also offer a speakers' bureau for our stakeholder groups.

CalSTRS headquarters building is a 409,000 square-foot building in West Sacramento, which was designed and constructed with sustainability in mind. After it opened in 2009, the headquarters building achieved Leadership in Energy and Environmental Design (LEED) New Construction Gold certification for features such as: the under-floor air distribution system, daylight and motion-sensor lighting systems and an energy efficient building facade design. Subsequently the headquarters building has achieved the LEED Operation and Maintenance Platinum certification in 2011, 2015 and 2020. Most recently our building received the WELL Health/Safety rating that focuses on occupant health.

One of the main challenges for our headquarters building has been water usage. Since the building was designed relatively recently, it started from a place of water efficiency. It has therefor been challenging to meet the 20% reduction in water usage required by Executive Order B-18-12 while also increasing our building occupancy. In addition to the building's efficient water fixtures, we continue to educate building occupants about efficient water usage and encourage them to report leaks. Landscaping staff and property

managers also regularly check that the landscape irrigation is operating properly and that there are no leaks.

CalSTRS is adding to its building portfolio with a new building, currently under construction, next to the existing headquarters building. The headquarters expansion project is scheduled to open in early 2024 and will be a showcase for sustainable office buildings in the area. The headquarters expansion will be approximately 266,500 square feet of office as well as community space. To finance this expansion, CalSTRS issued its first tax-exempt green bonds in 2019, which were certified as meeting the robust Climate Bond Initiative standard and oversold in 20 minutes, demonstrating their high demand. The goal for the new tower is to meet Zero Net Energy (ZNE) standards and achieve LEED Platinum for New Construction, Living Building Challenge, and WELL Building Standard certifications. This expansion will include an activated pedestrian plaza with public amenities such as a café, child care center, and assembly space.

Climate Change Adaptation

CalSTRS understands the importance of climate change adaptation. From facilities operations all the way up to the Investment Portfolio, we have taken steps to research and plan for a changing climate.

Before the start of construction on the headquarters expansion project, planning and development staff assessed the risk that a changing climate posed to the project (for instance, sea level rise or increasing daily temperatures). The impact that this infrastructure project will have on the surrounding community and the impacts on individuals and community resilience (for instance, heat island impacts) were also considered. CalSTRS takes the necessary steps to integrate climate considerations in planning and investment through:

- Pledge to achieve net zero greenhouse gas emissions across the CalSTRS Investment Portfolio by 2050, or sooner.
- Producing an annual sustainability report based on Global Reporting Initiative G4 Guidelines.
- Following LEED requirements and standards for employee occupied facilities.
- Developing sustainability policies for purchasing, waste management, technology and others.
- Engaging and educating employees.

With climate change, temperatures are expected to increase both at the high and low ends and the risk of floods is expected to increase. As a result, facilities will experience higher maximum and increased minimum temperatures. CalSTRS

is prepared to deal with these events, reduce the impact of changing temperatures on facility performance and uphold occupant health and well-being by the following actions:

- Continuing to protect habitat and biodiversity at headquarters by caring for native plants and other species included in our landscape, restrict the onset of invasive species, and mitigate harmful runoff.
- Maintaining business continuity plans in response to emergencies.
- Researching alternative energy and water sources.
- Upholding sustainability policies.
- Striving for a zero net energy facility with accompanying sustainable systems for resiliency, as applicable.
- Employing additional strategies to reduce the impact of changing precipitation cycles, including rainwater capture and other natural infrastructures to minimize flooding.

Certain populations are more susceptible to the effects of changing climate conditions. CalSTRS donates used audio-visual equipment, office supplies, computers, and computer accessories to charities for reuse. CalSTRS recognizes that our headquarters facility is in an historically disadvantaged community. Employees hold food drives each year to donate to local community food banks.

Zero-Emission Vehicles (ZEV)

Although CalSTRS does not have a large fleet of vehicles, we have been mindful to make purchases that meet all state sustainability requirements. We also keep an eye toward future needs, such as EV charging infrastructure.

CalSTRS' vehicle fleet is used for transporting board members to and from Sacramento International Airport and hotel locations. Fleet vehicles are also used for regular activities such as transporting staff for messenger duties, business trips, meetings and visits to member service centers and county offices of education.

CalSTRS has reduced its reliance on fossil fuels and exceeded Executive Order B-16-12 with the addition of a zero emission electric vehicle as well as a hybrid vehicle. The use of the electric vehicle negates greenhouse gas emissions in staff business travel.

CalSTRS fleet vehicle count by class consists of one sedan, one SUV, one truck and one van. When CalSTRS prepares to retire a fleet vehicle, staff will select from ZEV's available through state contracts. New and developing technologies

allow CalSTRS to reduce its carbon footprint and act as an environmental steward.

In addition, CalSTRS encourages visitors and employees to participate in the use of ZEV's by providing sixteen electric vehicle charging stations in our headquarters parking garage. At the time of installation, infrastructure was set in place to support the expansion of these stations, allowing an additional thirty EV charging stations to be installed at headquarters as needed and identified through site assessments.

Energy

Energy savings is a top priority for CalSTRS operations. Not only is there potential for financial savings, but we are also always looking for ways to meet or exceed state mandates on energy use. CalSTRS uses many tools to help manage energy consumption.

Policies are in place to support energy savings at headquarters. Lights and equipment are turned off at the end of each workday with programmed shut downs of all non-emergency equipment at 6:00 p.m. Technology devices that are not in use for a certain amount of time automatically switch to energy-saving mode. In addition, all computers, copiers and printers, and kitchen appliances are required to be either ENERGY STAR ® or Electronic Product Environmental Assessment Tool (EPEAT) rated devices. CalSTRS has a strict after-hours Heating, Ventilation and Air Conditioning (HVAC) Policy that requires a set number of staff working within the building to receive heating and/or cooling during any after-hours timeframe.

HVAC and lighting controls are managed through the building management system with override controls given by in-house engineering staff. In addition, parking garage, common areas and meeting rooms are controlled by occupancy sensors to eliminate energy waste. Several energy efficiency improvement projects have been completed on these systems which include LED lighting retrofits, server room cold aisle containment improvements and virtualization of server room equipment.

CalSTRS has furthered its energy reduction by participating in PG&E's Demand Response Program. Since 2017, CalSTRS has adjusted temperature settings and airflow to reduce energy use at our headquarters facility during times of peak energy demand. Starting in 2022, we have also leveraged telework during the higher energy emergency alert levels. These actions have served to benefit California's power supply in times of significant load on utility resources.

CalSTRS continues to decrease its energy consumption at headquarters thanks to employee engagement, energy efficiency projects and a diligent building engineering staff. The headquarters expansion project, currently in construction, is being designed with the goal of being Zero Net Energy.

Water Efficiency and Conservation

Water is an extremely precious and limited resource in the state of California. As a state agency, CalSTRS does its best to conserve both domestic and landscape water. Technology, education and maintenance are some of the strategies we use for water conservation.

CalSTRS continually improves upon its water conservation practices through water efficiency projects. Equipment upgrades since initial construction include the installation of low-flow faucet aerators in all restrooms and employee kitchen sinks as well as native plant landscaping combined with ongoing drip irrigation.

Water meters at CalSTRS headquarters measure and track monthly building water consumption and landscape irrigation. Sub-meters provide insight into water use related to our onsite café, domestic water, cooling tower and irrigation system. Water consumption reports are analyzed by a dedicated facilities environmental coordinator and onsite building engineers.

In addition to low-flow fixtures, employee engagement and education help reduce our domestic water use. The Green Rangers, an employee volunteer group, played a significant role in engaging employees in water saving habits before the COVID-19 pandemic. This volunteer group spearheaded the education around water savings using dishwashers—available on every floor with a common employee kitchen area—as opposed to handwashing. Water saving statistics are provided through common area signage and mandatory new employee onboarding sessions. Visual leak detection tasks performed by janitorial staff inform onsite engineers of any plumbing issues and assist in the conservation of water at headquarters as well.

CalSTRS' engineering team takes diligent care in maintaining mechanical systems. A regular cleaning schedule is executed to keep systems free of debris and to ensure optimal conductivity of heat transfer. Increasing cycles of concentration improves efficiency in the cooling tower and reduces the water demand required for blowdown and make-up water. Blowdown is the intentional periodic removal of water from the cooling tower to maintain the solids content of tower water within certain limits as determined by manufacture specifications and is periodically checked and adjusted accordingly.

Green Operations

Greenhouse Gas Emissions

Green operations are at the heart of how we work in and maintain our building. From reporting our greenhouse gas emissions, to healthy indoor air, to green purchasing, sustainability permeates all facets of our operations.

In 2005, CalSTRS began reporting the headquarter facility's greenhouse gas emissions to The Climate Registry, a North American nonprofit organization that assists organizations in measuring, verifying and reporting the carbon in their operations so they can manage and reduce it. Emissions are reported every spring for the prior calendar year. Reported emissions include all indirect business-related emissions such as electricity and natural gas purchases for building operations, fleet vehicles and business travel. A Green Lodging Directory system is used so staff can choose sustainable hotels and modes of travel. The successful result of these and other efforts is that CalSTRS reduced emissions by more than 40% from the 2010 baseline. That exceeds the mandate set forth in Executive Order B-18-12 of reducing greenhouse gas emissions by 20% by 2020.

CalSTRS values reduction in carbon emissions and increased use of renewable energy to decrease carbon emissions. When electricity is generated, either from a renewable or non-renewable power plant, the energy added to power grids is indistinguishable. To make the distinction, renewable energy certificates (RECs) are used to track renewable electricity from the point of generation to a consumer. Each REC represents the environmental benefits of 1MWh of renewable energy generation. These certificates may be sold and traded. In 2016, CalSTRS began purchasing RECs to support windfarm projects in the western United States. The purchase of renewable energy helps to advance the development of global clean energy choices, while simultaneously contributing to reduce emissions, improve air quality and shift towards a carbon-free economy.

Indoor Environmental Quality

One of the many ways CalSTRS helps reduce the environmental impacts of its operations is through a high-performance cleaning program. The goal is to reduce building occupant and maintenance personnel exposure to potentially hazardous chemical, biological and particulate contaminants. By implementing, managing and auditing cleaning procedures and processes we minimize the adverse effects on air quality, human health, building finishes, building systems and the environment.

The products used in general cleaning, hard floor care and carpet care must be effective and meet health and sustainability criteria demanded by today's ever-changing business climate. These products include, but are not limited to, general purpose, bathroom, glass, and carpet/upholstery cleaners, hand soaps, degreasing compounds, floor strippers and floor finishers. Additionally, the products related to disposable janitorial paper products and trash liners meet customer performance requirements and sustainability requirements for post-consumer and total recovered content. Training is an important element of any janitorial maintenance plan and includes detailed direction on the proper use of these products while stressing the importance of occupant and janitorial personnel safety. In 2018 and 2020, the CalSTRS janitorial staff completed the 15-week Green Janitor Education Program. The green education program trains janitors in cleaning and sustainability topics including energy and water conservation, waste management and the LEED certification process. Although the Green Janitor Education Program is well on its way to establishing a new industry standard in the Los Angeles area with more than 1,000 janitors certified, the class at CalSTRS was the first of its kind in Sacramento. More recently, as a response to COVID, members of the janitorial staff completed the Infectious Disease Certification Program to adapt cleaning and maintenance practices to rapidly evolving health and safety measures.

Working closely with suppliers ensures that the tools and equipment in use are appropriate and effective for the task and still meet current sustainability requirements related to particulate capture, water/chemical efficiency, operator ergonomics and safeguards that mitigate potential building damage.

HVAC (Heating, Ventilation and Air Conditioning) Operation

To ensure maximum efficiency and quality performance, the in-house building engineering team carries out a preventive maintenance plan in which records are kept and adjustments are made as necessary. Most preventative maintenance activities are initiated as work orders from the building management system. HVAC standards follow the California Code of Regulations, Title 8, Section 5142 under the Department of Industrial Relations: HVAC systems to provide minimum building ventilation. As a response to COVID, HVAC filters were upgraded to MERV 15 and continue to be replaced every six months.

Environmentally Preferable Purchasing

CalSTRS is committed to reducing the environmental impact of the goods and services we purchase. Purchasing data is collected for ongoing LEED certification and SABRC reporting and is monitored by the facilities environmental coordinator. Environmentally preferable purchasing is compiled using purchasing data collected from multiple business units in addition to staff managing onsite café operations. This information is reported to executive level staff and shared within the organization to encourage further sustainable behaviors and support ongoing sustainability goals.

Training and educational opportunities are integrated into quarterly procurement meetings for both requisitioners and purchasing agents. Financial and environmental benefits of purchasing supplies made from sustainable materials are highlighted in these trainings and the demand for new resources are reduced by reusing existing supplies through our office supply reuse program.

CalSTRS takes a holistic approach to purchasing and achieved the TRUE Zero Waste Certification in 2018 and most recently in 2022. This achievement was made possible through planning and enacting standards and guidelines for building operations, waste diversion and sustainable procurement.

CalSTRS' Commitments

CalSTRS is proactive in reducing our carbon footprint and environmental impact. We continue our commitment to sustainability and as a result have achieved and maintained LEED Platinum certification for Operations and Maintenance in an existing building for our headquarters.

We believe climate change is one of the greatest threats to our future, with undeniable links to business and financial investments. In September 2021, the Teachers' Retirement Board pledged to achieve net zero greenhouse gas emissions across the CalSTRS Investment Portfolio by 2050, or sooner. In August 2022, the board approved a package of investment actions to enhance our efforts to achieve a net zero investment portfolio, address climate change and support the retirement security of California's public educators. This included a decision to set an interim goal to reduce emissions from the portfolio by 50% by 2030.

CalSTRS will continue our efforts to meet or exceed the sustainability requirements set forth by the State of California. We remain committed to exploring opportunities that integrate more advanced conservation strategies into our facilities operations.

Cassandra Lichnock

Chief Executive Officer

CHAPTER 1 – CLIMATE CHANGE

CalSTRS Mission and Climate Change Adaptation

CalSTRS' mission: Securing the financial future and sustaining the trust of California's educators. As it relates to climate change, CalSTRS' mission includes protecting our facilities from the most extreme effects of climate change so that we can continue our important work. There are financial costs associated with adapting our facilities to climate change. Installing water capture and solar infrastructure are just two examples.

This chapter will go into detail about the different impacts of climate change on CalSTRS' facilities and how we are planning to meet these challenges.

Climate Change Risks to Facilities

Climate Change Risk Process:

The California State Teachers' Retirement System (CalSTRS) has one existing facility, CalSTRS Headquarters (100 Waterfront Place) in West Sacramento, across the Sacramento River from downtown Sacramento. The headquarters building is 409,000 square feet of office space and was built in 2009 to be energy and water efficient. By operating the building in a sustainable and efficient way, the headquarters building is well suited for absorbing some of the effects of climate change, such as increased cooling degree days and hazardous air quality days caused by wildfires.

Located next to the Sacramento River, flooding is a possibility in the future. However, CalSTRS maintains a business resumption center at a separate physical location to temporarily house staff required to support critical business processes during a disaster. It also has backup infrastructure that allows for the restoration of critical information technology systems in the event the headquarters building is unavailable. And, as was proven by the response to the COVID-19 pandemic, CalSTRS has a highly adaptable workforce that can transition quickly to working remotely if the headquarters building is impacted by flooding or another emergency.

CalSTRS is adding to its building portfolio with the addition of the headquarters expansion project currently under construction. Before embarking on the headquarters expansion project, an approximate 266,000 square foot office building adjacent to the current headquarters building, planning and development staff assessed the risk that a changing climate posed to the

project (for instance, sea level rise or increasing daily temperatures). The impact that this infrastructure project might have on the surrounding community and the impacts on individual and community resilience (for instance, heat island impacts) were also considered. The headquarters expansion building is aiming to achieve zero net energy (ZNE) as well as LEED–New Construction certification at the Platinum level and a Living Building Challenge certification. The new building will also feature an activated pedestrian plaza with a coffee bar, child care center and assembly space. All these ground-level amenities will be available to the public. Public access to these amenities will enhance the neighborhood and benefit the Washington District community of West Sacramento.

CalSTRS has historically used its influence as a significant global investor to promote long-term sustainable public policies and business practices and has successfully integrated environmental, social and governance (ESG) principles into operations and investment strategies. CalSTRS Sustainable Investment and Stewardship Strategies program is focused on transitioning to a low-carbon economy, increasing board diversity and enhancing sustainability risk management.

In 2021, CalSTRS committed to achieving net zero greenhouse gas emissions across its investment portfolio by 2050 or sooner, aligning with the science-based targets of the Paris Climate Agreement. CalSTRS also approved an implementation framework to chart its path to net zero, which includes developing a net zero action plan.

CalSTRS takes the necessary steps to integrate climate considerations in planning and investment through participation in:

- The annual Global Reporting Initiative.
- LEED requirements and standards for employee occupied facilities.
- Sustainability policies related, but not limited, to purchasing, waste and technology.
- Employee engagement and education.

Assessing Risk from Changing Extreme Temperatures:

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

Facility Name	Extreme heat threshold (EHT)°F	Average # of days above EHT (1961-1990)	Average # of days above EHT (2031-2060)	Change from Historical to projected average # of days above EHT (2031-2060)	Avg. # days above EHT (2070-2099)	Change from historical to projected average # of days above EHT (2070-2099)
100 Waterfront Place	4.0	4.0	18.0	14.0	24.0	20.0

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

Facility Name	Historical Annual Mean Max. Temp. (1961 – 1990)	Annual Mean Max. Temp. (2031 – 2060)	Change from Historical to Annual Mean Max. Temp (2031-2060)	Annual Mean Max Temp. (2070-2099)	Change from Historical to Annual Mean Max. Temp (2070-2099)
100 Waterfront Place	74.2	78.4	4.0	79.8	6.0

Table 1.3: Top 5–10 Facilities Most Affected by Changing Temperature – Annual Mean Min Temp

Facility Name	Historical Annual Mean Min. Temp. (1961 – 1990)	Annual Mean Min. Temp. (2031 – 2060) °F	Change from Annual Mean Min. Temp (2031-2060)	Annual Mean Min. Temp. (2070-2099) °F	Change from Annual Mean Min. Temp (2070-2099)
100 Waterfront Place	49.4	53.1	4.0	54.2	5.0

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

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

Facility Name	Heating Degrees 1961-1990	Average Modeled Heating Degrees (year), 2031-2060	Change in Heating Degree Days Historical to Mid-Century	Average Modeled Heating Degrees (year), 2070-2099	Change in Heating Degree Days Historical to End-Century
100 Waterfront Place	2498	1842	-656	1657	-841

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

Facility Name	Cooling Degrees 1961-1990	Average Modeled Cooling Degrees (year), 2031-2060	Change in Cooling Degree Days Historical to Mid-Century	Average Modeled Cooling Degrees (year), 2070-2099	Change in Cooling Degree Days Historical to End-Century
100 Waterfront Place	1332	2113	781	2397	1065

Reporting Narrative on HDD and CCD

A heating degree day (HDD) is defined as the number of degrees by which a daily average temperature is below a reference temperature. The reference temperature is typically 65 degrees Fahrenheit, although different utilities and planning entities sometimes use different reference temperatures. For a heating degree day, 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 temperatures. Similarly, a 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, but different utilities and planning entities sometimes use different reference temperatures. For a cooling degree day, the reference temperature loosely represents an average daily temperature below which space cooling such as air conditioning is not needed.

More extreme heat days and increasing mean maximum temperatures will result in more use of the cooling system. This will cause more wear and maintenance costs for the heating, ventilating and air conditioning (HVAC) system as well as an increase in energy and water consumption. Air quality is also negatively affected by extreme heat days. With the projected increase in cooling days, CalSTRS Headquarters will find it harder to meet electricity use reduction goals as the facility air conditioning will be used more. Conversely, as the heating days are projected to decrease, there will be less need for natural gas used for heating. The headquarters facility, located in the Sacramento Valley, will be greatly impacted by an increase in extreme heat events. With a projected 350% increase (from the historical average) in extreme heat days by midcentury, not

only will CalSTRS' individual cooling system be taxed, the larger energy grid will face increased demands. CalSTRS Headquarters will be greatly impacted by the projected increase in cooling days, which could put significant strain on the HVAC system and increase electricity and water use.

Plan to Mitigate HDD and CDD

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

Facility Name	2030
	No Plan

Planning Narrative to Mitigate HDD and CDD

The following actions may be considered as strategies to reduce the impact of changing temperatures on facility performance and to uphold occupant health and well-being:

- Continued use of the urban farm at headquarters to provide employees and visitors access to local, organic and fresh produce.
- Continue to protect habitat and biodiversity at headquarters by caring for native plants and other species included in its landscape, restrict the onset of invasive species, and mitigate harmful runoff using permeable pavers, rain capture and bioswales.
- Maintain business continuity plans in response to an emergency, including use of onsite generators and the CalSTRS Business Resumption Center.
- Implement solar technology.
- Continue to support a hybrid work schedule in response to more extreme weather events.
- Uphold, and update when necessary, the sustainability policies such as Disposal of Assets, Facilities and Work Space, Sustainable Procurement, and Waste Management policies.
- Create new policies, as needed, to keep pace with changing sustainability codes and best practices.
- Continue to properly maintain HVAC, including air filtration with MERV 15 filters.
- Continue to participate in the Demand Response Program and use strategies such as prechilling the building during event days.

- Continue to offer indoor amenities such as the gym for employees and meeting spaces such as the cafe for employees and community members.

Long-term impacts could trigger the need for some building redesign, including possible on-site alternative energy strategies.

Assessing Risk from Urban Heat Islands

Table 1.4: Facilities in Urban Heat Islands

Facility Name	Located in an Urban Heat Island (Yes or No)	sq. ft. of Surrounding Hardscape or Pavement if Greater than 5000 sq. ft.
100 Waterfront Place	Yes	unknown

Reporting Narrative on Urban Heat Islands

Urban heat islands occur when cities replace natural land cover with dense concentrations of pavement, buildings, and other surfaces that absorb and retain heat. This effect increases energy costs (e.g., for air conditioning), air pollution levels and heat-related illness and mortality.

CalSTRS Headquarters is located in an urban heat island according to the State's Urban Heat Island interactive maps. CalSTRS Headquarters has a five-level parking garage. The former adjacent surface lot is the site of the headquarters expansion project. CalSTRS perimeter walkways are paved to allow permeation and impermeable walkways are shaded by trees and lined with native and drought-tolerant landscaping. The roof at headquarters is made of a white, reflective membrane which decreases the urban heat island effect of this facility. Urban heat island effect was and continues to be considered in CalSTRS energy plans and strategies for its existing headquarters facility as well as the adjacent expansion that is nearing completion.

Planning Outline for Urban Heat Islands Mitigation

Planning Outline PO0:b: Plan for Urban Heat Islands Mitigation

Facility Name	Mitigation or Plan	Est. Implementation Date
100 Waterfront Place	Plant trees and native landscaping	2024

Planning Narrative for Urban Heat Islands Mitigation

CalSTRS is using landscaping to reduce the impacts of the urban heat island effect. We will be adding new tree plantings at the adjacent headquarters expansion along the sidewalk as well as continued use of drought tolerant and native plants and shrubs and minimal use of hardscapes.

The headquarters expansion project will also have air-conditioned spaces that will be open to the public, such as a neighborhood cafe.

Assessing Risk from Changes in Precipitation

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)
100 Waterfront Place	19.4	21.0	10.5	21.3	12.1	1.5	1.6	1.7

Reporting Narrative on Precipitation Impacts

The impacts of climate change on the amount of precipitation California will receive in the future are slightly less certain than the impacts on temperature. 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, both drought and heavy precipitation events. Larger rains can result in flooding but will also shift the runoff timing earlier and increase runoff volumes. It will also result in decreased snowpack.

Heavier, more widespread rains can result in flooding and may also shift the runoff timing and runoff volumes. This may affect the current systems in place managing storm water runoff. CalSTRS Headquarters sits adjacent to the western

levee of the Sacramento River just below its confluence with the American River. As such, there is risk of flooding with the projected increase in precipitation. Flooding was a consideration in the design of the headquarters building. Most of CalSTRS critical business performance assets, such as servers, are located on upper floors that are above the severe projected flood lines. The landscaping at headquarters consists of native and drought tolerant landscaping that is mulched yearly. Front walkways at headquarters are made of permeable pavers designed to absorb runoff.

Planning Outline to Mitigate Precipitation Changes

Planning Outline PO0:c: Plan for Top 5–10 Facilities Most Impacted by Projected Changes in Precipitation

Facility Name	Extreme Precip (2030) Plan or strategy
100 Waterfront Place	Add bioswales and rain capture

Planning Narrative on Precipitation Changes Mitigation Plan

The headquarters expansion, which shares adjacent landscaping with 100 Waterfront Place, will include bioswales and rain capture that will also help minimize flooding. These systems are set to be completed in 2024. Rain captured in the tank will be used to irrigate campus landscaping during the dry months.

Assessing Risk from Sea Level Rise

Table 1.6: All Facilities at Risk from Rising Sea Levels

Facility Name	Tide Chart Region	2050 Water Level (ft)	Exposed in 2050? (y/n)	2100 Water Level (ft)	Exposed at 2100? (y/n)
No facilities at risk.					

Reporting Narrative on Sea Level Rise Impacts

No facilities at risk.

Planning Outline to Mitigate Sea Level Rise Impacts

Planning Outline PO0:d: Planning for Sea Level Rise Impacts Mitigation

Facility Name	Tide Chart Region	Plan 2030?
No facilities at risk.		

Planning Narrative of Sea Level Rise Impact

No facilities at risk.

Assessing Risk from Wildfire

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

Facility Name	Fire Hazard Severity Zone Designation (low, medium, high, very high)
100 Waterfront Place	Unzoned-N/A

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

Facility Name	Acres Burned (1961–1990)	Acres Burned (2031–2060)	Acres Burned (2070–2099)
100 Waterfront Place	26.5	11.3	11.4

Reporting Narrative on Wildfire Risks

Although CalSTRS Headquarters is in an urban area not at direct risk from wildfires, occupant health is still a concern as it relates to poor air quality caused by wildfires. The headquarters location in the Sacramento Valley makes it susceptible to hazardous air quality from wildfires. Increasing hazardous air quality caused by wildfires will require more air filtration and increased use of the HVAC system. The long-term impacts of estimated increasing wildfires will

continue to tax the HVAC system and CalSTRS' ability to provide healthy indoor air quality to employees. A significant increase in hazardous air quality days could possibly shorten the lifespan of an HVAC system, costing CalSTRS financially.

Planning Outline to Mitigate Wildfire Risks

Planning Outline PO0:e: Plan for Mitigating Wildfire Risk by Acres Burned for Top 5–10 Facilities Most at Risk

Facility Name	Plan 2023–2030
100 Waterfront Place	yes

Planning Narrative of Wildfire Risk Mitigation Plan

CalSTRS will continue to monitor indoor air quality and perform the necessary maintenance on the HVAC system in accordance with LEED requirements and ASHRAE standards to continue providing healthy air for building occupants.

Understanding Climate Risk to Planned Facilities

Tables 1.9: a-g: Climate Risks to New Facilities

a.1Annual Mean Max. Temperature

Facility Name	Historical Annual Mean Max. Temp. (1961–1990)	Annual Mean Max. Temp. (2031–2060)	Change from Historical to Annual Mean Max. Temp (2031–2060)	Annual Mean Max Temp. (2070–2099)	Change from Historical to Annual Mean Max. Temp (2070–2099)
200 Waterfront Place	74.2	78.4	4.0	79.8	6.0

a.2 Annual Mean Min. Temperature

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)
200 Waterfront Place	49.4	53.1	4.0	54.2	5.0

b. Annual Mean Max. Precipitation

Facility Name	Annual Mean Maximum Precipitation (1961–1990) (in/yr.)	Annual Mean Precipitation (2031–2060) (in/yr.)	Extreme Precip (1961–1990) (in/day)	Extreme Precip (2031–2060) (in/day)
200 Waterfront Place	19.4	21.0	1.5	1.6

c. Largest Increase in Extreme Heat Events

Facility Name	Extreme heat threshold (EHT) °F	Average number of days above EHT (1961–1990)	Average number of days above EHT (2031–2060)	Increase in number of days above EHT
200 Waterfront Place	4.0	4.0	18.0	14.0

d. Sea Level Rise

Facility Name	Area (California Coast, San Francisco Bay, Delta)	Sea Level Rise 0.0 m	Sea Level Rise 0.5 m	Sea Level Rise 1.0 m	Sea Level Rise 1.41 m
200 Waterfront Place	N/A	N/A	N/A	N/A	N/A

e. Wildfire Risks by Fire Hazard Severity Zone

Facility Name	Current Fire Hazard Severity Zone (low, medium, high, very high)
200 Waterfront Place	low

f. Wildfire Risk by Acres Burned

Facility Name	Acres Burned (1961–1990)	Acres Burned (2031–2060)
200 Waterfront Place	26.5	11.3

g. Risk from HDDs/CDDs

Facility Name	Heating/Cooling Degree Days (1961–1990) (HDD/CDD)	Heating/Cooling Degree Days (2031–2060) (HDD/CDD)
200 Waterfront Place	2498/1332	1842/2113

Planning Narrative for Understanding Climate Risks to Planned Facilities

CalSTRS Headquarters expansion building will be adjacent to the current headquarters building so the most likely climate risks to the facility will be familiar. CalSTRS has taken lessons learned over the past 14 years of operating the

current headquarters and will incorporate them into the construction of the expansion. Features such as on-site renewable energy, recycled water for nonpotable uses such as toilet flushing and irrigation, and solar shading to minimize thermal hot spots will address some of the challenging conditions of climate change.

Executive Order B-30-15 directs state agencies to employ full life cycle cost accounting in all infrastructure investment. Life cycle cost accounting includes:

- Considering initial investment costs, as well as lifetime operation and maintenance costs under changing climate conditions, including changing average conditions and increases in extreme events.
- Applying nonmarket evaluation methods, such as travel cost, avoided costs or contingent valuation to capture hard to quantify benefits and costs.

Life cycle cost accounting was part of the extensive research and risk assessment performed at the direction of the Teachers' Retirement Board prior to making the decision to move forward with construction of the headquarters expansion.

Understanding the Potential Impacts of Facilities on Communities

Reporting on Facilities located in Disadvantaged Communities

Table 1.10: Facilities Located in Disadvantaged Communities

Facility Name	CalEnviroScreen Score	Is it located in a disadvantaged community? Yes/No
100 Waterfront Place	85	Yes

Planning Narrative for Facilities in Disadvantaged Communities

CalSTRS Headquarters is located in a disadvantaged community. The headquarters includes a member service center to help local members and retired teachers mitigate their financial risk in retirement.

CalSTRS Waterfront Cafe serves employees, visitors and the local community by providing access to local, organic and fresh ingredients, including produce from the on-site garden. There are also community meeting spaces available to the

public to reserve for free. In 2019 and 2020, the CalSTRS board room was used to hold the Mayors' Commission on Climate Change community meetings. These meetings were open to all members of the community to attend and provide feedback on climate change roadmaps for the cities of Sacramento and West Sacramento.

The CalSTRS Headquarters expansion project will feature an activated pedestrian plaza that will offer a coffee bar, child care center, assembly space and cafeteria. All these ground-level amenities will be available to the public.

The landscaping will consist of native and drought tolerant plants as well as trees to shade walkways to help reduce the urban heat island effect.

New Facilities and Disadvantaged Communities and Urban Heat Islands

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

Facility Name	**Located in a Disadvantaged Community (yes/no)**	**Located in an urban heat island (yes/no)**
200 Waterfront Place	yes	yes

Integrating Climate Change into CalSTRS Funding Programs

Table 1.12: Integration of Climate Change into CalSTRS Planning

Name of Plan	**Have you integrated climate?**	**If no, when will it be integrated?**
Path to net zero	yes	

Reporting Narrative for Integrating Climate Change into CalSTRS Planning Process

We believe climate change is one of the greatest threats to our future, with undeniable links to business and financial investments. CalSTRS' mission is to support the retirement security of California's educators. Virtually all companies

and assets in our portfolio are affected by climate risk and must prepare for climate change. In September 2021, the Teachers' Retirement Board pledged to achieve net zero greenhouse gas emissions across the CalSTRS Investment Portfolio by 2050, or sooner.

In August 2022, the board approved a package of investment actions to enhance our efforts to achieve a net zero investment portfolio, address climate change and support the retirement security of California's public educators. This included a decision to set a science-based interim goal to reduce emissions from the portfolio by 50% by 2030. See *Path to net zero* for more details.

Planning Narrative for Integrating Climate Change into CalSTRS Planning Process

CalSTRS promotes stewardship of our natural resources and engagement with our stakeholder community. We're aligning the enterprise sustainability strategies with the Investments Branch's sustainability strategy of a low-carbon transition and net zero pledge. We engaged a sustainability expert to evaluate our sustainability program and benchmark it against peer and premier sustainability organizations.

We established a path to align enterprise and investment sustainability efforts and developed a three-year plan for advancing the CalSTRS Corporate Sustainability Program. In 2021, we started aligning the investment and enterprise sustainability strategies. Following the net zero pledge for the portfolio, we're striving to become a leader among pension funds by creating a comprehensive inventory of our enterprise greenhouse gas emissions.

Our efforts to refine our enterprise GHG assessments will help us comply with Senate Bill 1203 (Chapter 368, Statutes of 2022). The bill declared the intent of the Legislature that state agencies aim to achieve zero net emissions of greenhouse gases resulting from their operations by January 1, 2035, or as soon as possible thereafter.

We plan to leverage assistance from DGS on how to become net-zero for CalSTRS-owned facilities.

Community Engagement and Planning Processes

Table1.13: Community Engagement and Planning Processes

Name of Plan	Does this plan consider impacts on vulnerable populations? Yes/No	Does this plan include coordination with local and regional agencies? Yes/No	Does this plan prioritize natural and green infrastructure? Yes/No
Member outreach	yes	yes	no

Reporting Narrative for Community Engagement and Planning Processes

CalSTRS does ongoing community engagement with our member population. Many of our members are retired and on a fixed income and so it is of high importance that we communicate any changes in the benefits they depend on. The focus of member outreach is on retirement benefits and as such, does not prioritize green infrastructure. CalSTRS coordinates with public school districts across the state to help communicate important benefits information to our active membership. Our Benefits and Services branch is most instrumental in this coordination.

Planning Narrative for Community Engagement and Planning Processes

Community engagement and planning processes achieved.

Climate Change Implementation Planning in Funding Programs

Table1.14: Climate Change Implementation Planning in CalSTRS Funding Programs

Name of Grant or Funding Program	Have you integrated climate change into program guidelines? Yes/No	If no, Date it 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
No funding or grant programs.				

Reporting Narrative for Climate Change Implementation Planning in Funding Programs

No grant or other funding provided.

Planning Narrative for Climate Change Implementation Planning in Funding Programs

No grant or other funding provided.

Measuring and Tracking Progress

Reporting Narrative on Measuring and Tracking Progress

As a global investor, CalSTRS is concerned with the impacts of climate change on a large scale. More locally, our facilities operations are concerned with the increase in extreme weather events, specifically flooding, drought and extreme heat events.

We will continue to measure our building performance data such as energy and water use and how they are impacted by the changing climate. Using this roadmap as a guide will help us measure progress toward departmental goals under a changing climate.

CHAPTER 2 – ZERO-EMISSION VEHICLES (ZEV)

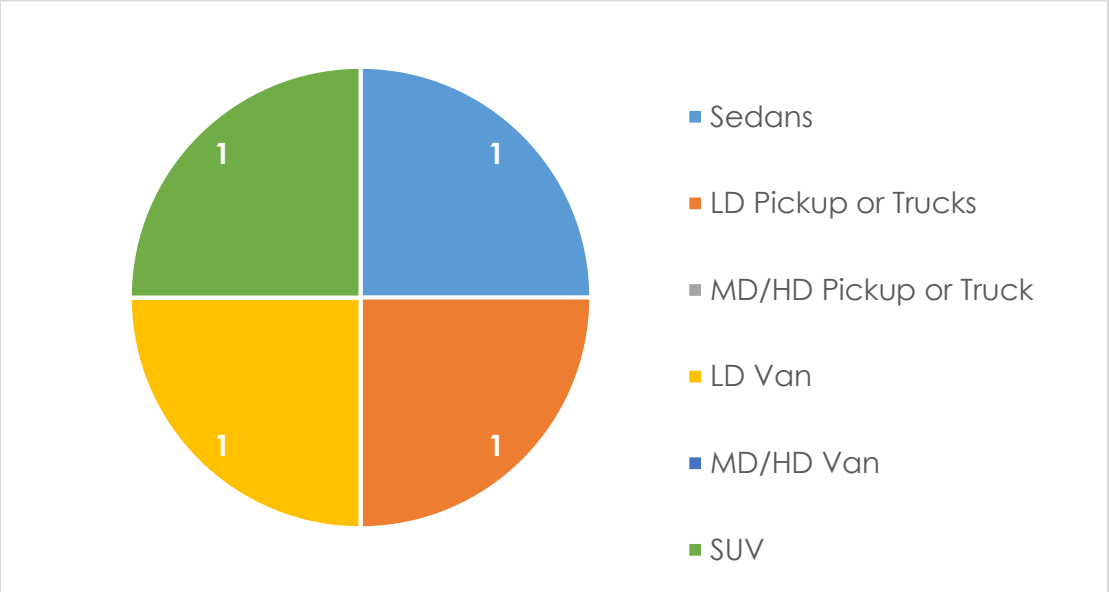
CalSTRS Mission and Fleet

CalSTRS maintains a small fleet of vehicles to perform the variety of tasks required to conduct business. Some common uses for the fleet sedan and SUV are transporting staff twice daily for messenger duties, downtown meetings, work related trips, and visiting member service centers and education offices. The pickup truck is typically used for transporting items such as miscellaneous office equipment for recycling and even turkeys from CalSTRS annual turkey drive to a local food bank. The passenger van is most often used for transportation of board members.

The fleet vehicles are only operated on paved roads on highways and in cities and are typically used for short trips.

Composition of Vehicle Fleet

Graph 2.1: 2022 Composition of Vehicle Fleet



Reporting on Total Fuel Use by Fuel Type

Table 2.1: Total Fuel Purchased in 2021 and 2022

Year	Diesel (Gallons)	Gasoline (Gallons)	Renewable Diesel (Gallons)
2021		84	
2022		134	

Reporting Narrative on Fuel Type Selections

CalSTRS is committed to complying with the ZEV and hybrid first purchasing mandate for medium and heavy-duty vehicles. To meet this requirement, we are replacing internal combustion engine vehicles with battery electric vehicles. CalSTRS first ZEV purchase came in 2017 when we purchased a hydrogen fuel cell Toyota Mirai. This seemed like the best ZEV option since there is a hydrogen fueling station near our headquarters building, where our fleet is housed. We also liked the idea of not having to rely on slow charging times experienced by electric vehicles at the time. In the first few years after the purchase was made, we were pleased with hydrogen as an alternative fuel type and considering making future hydrogen fuel cell purchases. However, in the final years of owning the Mirai, we encountered issues with hydrogen shortages at the fueling station. Many times, the station simply did not have any hydrogen at all. This forced us to rethink the fuel type for future purchases. Currently battery electric vehicles offer the most choice and available infrastructure, so we have made the decision to purchase battery electric vehicles going forward.

Rightsizing the Fleet

Teleworking, Mission Changes, and Technology Changes

The CalSTRS fleet was already very small prior to the COVID-19 pandemic. Most of the daily uses for fleet vehicles have not changed with our agency's post-pandemic hybrid telework model. The longer trips, such as visits to member service centers and offices of education have decreased with the adoption of telework. This will help to extend the life of our current fleet of vehicles by reducing total yearly miles travelled.

There have been no mission changes or technology changes to impact vehicle use at CalSTRS.

Telematics Implementation Status

Reporting Narrative on Telematics Implementation Status

Completed telematics implementation.

Planning Narrative for Telematics Data

CalSTRS is already committed to full ZEV adoption, however telematics data will give us a baseline so that we can look for opportunities to improve fleet management.

Existing Fleet Description

Light-Duty Fleet Vehicles

The CalSTRS fleet is comprised of all light-duty vehicles, including a Sedan, an SUV, a pickup truck and a passenger van. As reported earlier in this chapter, some common uses for the fleet sedan and SUV are transporting staff twice daily for messenger duties, downtown meetings, work related trips, and visiting member service centers and education offices. The pickup truck is typically used for transporting items such as miscellaneous office equipment for recycling and even turkeys from CalSTRS annual turkey drive to a local food bank. The passenger van is most often used for transportation of board members. The fleet vehicles are only operated on paved roads on highways and in cities and are typically used for short trips.

Reporting on Total Miles Traveled

Table 2.2: Total Miles Traveled

Total Miles	2017	2018	2019	2020	2021	2022
	8,654		10,580	5,837	3,269	2,660

Reporting Narrative on Total Miles Traveled

From 2017 to 2022, the yearly miles traveled has ranged from a high of 10,580 miles to, most recently, a low of 2,660. Prior to the COVID-19 pandemic, there was an upward trend in miles traveled which mirrored our growth in employees. During and after the pandemic, our yearly miles traveled was reduced by roughly half. This has been a direct result of telework and the ease of conducting meetings virtually rather than in-person. CalSTRS will continue to

conduct off-site meetings virtually, when possible, to decrease vehicle miles travelled.

Reporting on Miles per Gallon

Table 2.3: Miles per Gallon

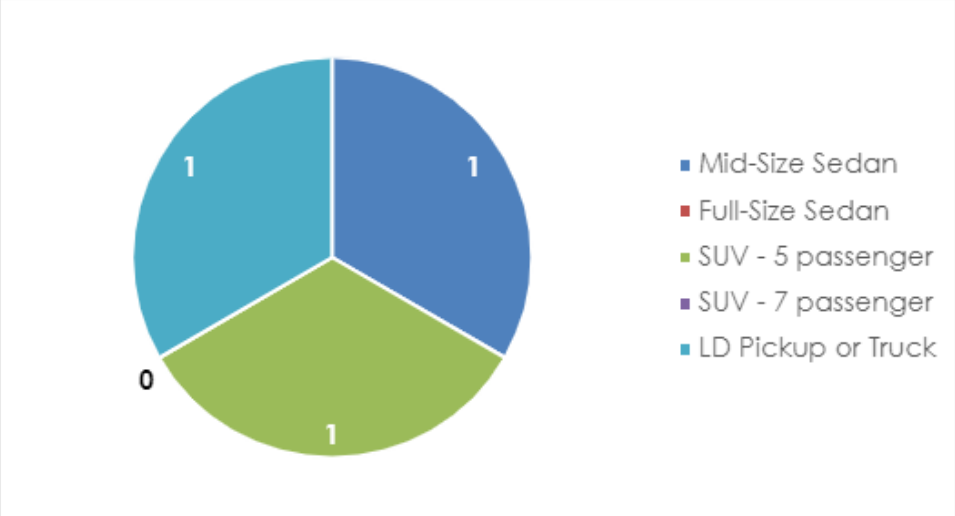
Year	2017	2018	2019	2020	2021	2022
MPG	29.9	29.9	29.9	29.56	31.13	29.13

Reporting Narrative on Miles per Gallon

The yearly miles per gallon have remained relatively constant at around 30. Currently most of the daily trips are made using our most fuel-efficient vehicles and we will continue this practice. We will use telematics data to see if there are areas where miles per gallon can be improved. For instance, telematics data shows idling times and can identify if certain routes or drivers are excessively idling.

Composition of Light-Duty Vehicle Fleet

Graph 2.2: Composition of Light-Duty Vehicle Fleet



Light-Duty Take-Home Vehicle Fleet Status

Table 2.4: Take-Home Vehicle Fleet Status

Vehicle Type	Sedans	LD Pickup or Trucks	MD/HD Pickup or Truck	LD Van	MD/HD Van	SUV
Totals	No light-duty take home vehicles					

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

No take-home vehicle program.

Medium and Heavy-Duty Fleet Vehicles

CalSTRS does not have any medium or heavy-duty fleet vehicles.

Incorporating ZEVs into the State Fleet

Light-Duty ZEV Adoption

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

# of Vehicles eligible for replacement	Sedans	LD vans	LD Pickups	SUVs, 5 passengers	SUVs, 7 passengers	SUVs, 8 passengers	Total
Totals	0	1	1	0	0	0	2

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

ZEV Category	21/22	22/23	23/24	24/25	25/26
Battery Electric Vehicle (BEV)		1			
Plug-in Hybrid Vehicle (PHEV)					
Fuel Cell Vehicle					
Percent of total purchases					
Required ZEV Percentage	35%	40%	45%	50%	55%
Total number of ZEVs in Fleet*		1			

Reporting Narrative for Light-Duty ZEV Additions to the CalSTRS Fleet.

CalSTRS currently has one light-duty combustion engine pickup truck and one light-duty combustion engine passenger van. Both vehicles are eligible for replacement; however, they are the least used vehicles in our fleet so they are in good working order. As the ZEV options for these types of light-duty vehicles are still limited, we have decided to postpone replacement purchases for the next few fiscal year cycles. Although these two vehicles are used the least, they both serve important functions. The light-duty truck is used for miscellaneous hauling that is needed by our Facilities and Business Services units and the passenger van is used to transport board members when they are in town for CalSTRS board meetings. CalSTRS is committed to replacing both vehicles with ZEVs when they are retired.

Planning Narrative for Integrating ZEVs into Take-Home Vehicles

No take-home vehicle program.

Medium and Heavy-Duty ZEV Adoption

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

Table 2.7: MD/HD Vehicles in CalSTRS Fleet Currently Eligible for Replacement

Vehicle Type	Vans, Class 2b	Vans, Class 3 and 4	Vans, Class 5 and 6	Trucks, Class 3-6	Truck, Class 8	Total
Totals Eligible for Replacement	No MD/HD vehicles					

Table 2.8: Planned Medium and Heavy-Duty ZEV Additions to the CalSTRS Fleet

Vehicle Category	21/22	22/23	23/24	24/25	25/26
Battery Electric Vehicle (BEV)	No MD/HD vehicles				
Plug-in Hybrid Vehicle (PHEV)					
Fuel Cell Vehicle					
Percent of total purchases					
Total number of ZEVs in Fleet					

Reporting Narrative for Medium and Heavy-Duty ZEV Adoption

No MD/HD vehicles.

ZEV Public Safety Exemption

Reporting Narrative for ZEV Public Safety Exemption

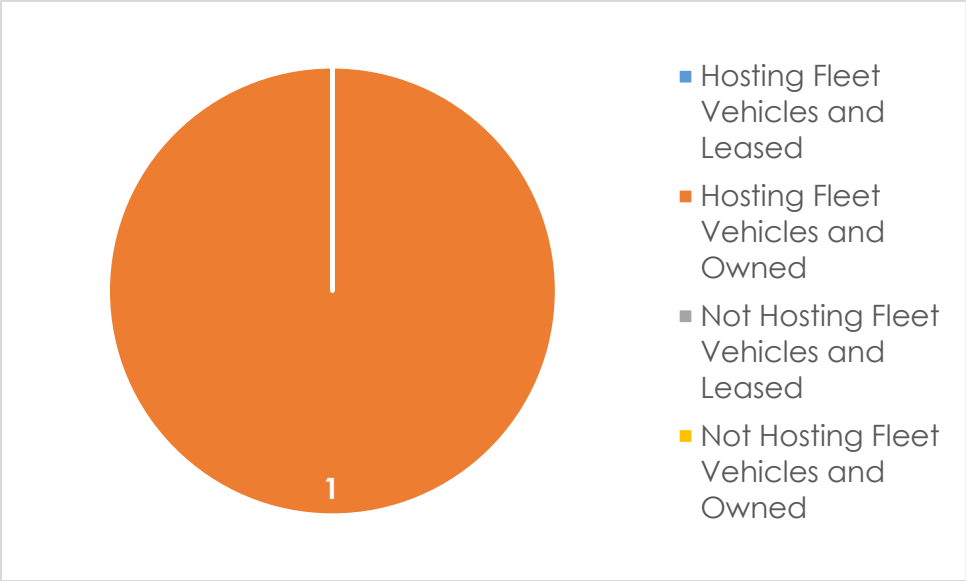
No sworn officers.

Planning Narrative for ZEV Public Safety Exemption

No sworn officers.

CalSTRS Parking Facilities

Graph 2.3: Parking Facilities



Reporting Narrative on Parking Facilities

CalSTRS parking facilities include a five-level parking garage with 834 spaces. The parking garage is used by employees, fleet vehicles and visitors. The employee, fleet vehicle and visitor parking areas are intermingled. CalSTRS Headquarters is an asset of the Teacher's Retirement Fund and hosts all fleet vehicles.

Reporting on Status of EVSE Projects

Table 2.9: Status of EV Charging Projects

Facility Name	Total Parking Spaces	Existing L1 Charging Ports (2022)	Existing L2 Charging Ports (2022)	Existing L3 Charging Ports (2022)	Total Charging Ports (2022)	EV Charging Ports Needed by 2025
100 Waterfront Place	834	0	16	0	16	39
Total	834	0	16	0	16	39

EV Charging Site Assessments

Reporting on 2022 Facility Site and Infrastructure Assessments

Table 2.10: 2022 EV Charging Infrastructure Site Assessments Conducted

Facility Name	L1 EVSE Project Assessments	L2 EVSE Project Assessments	L3 EVSE Project Assessments	Entity that Conducted the Site Assessment
	No EV charging assessments completed			
Total				

Planning Narrative on EVSE Construction Plan

The CalSTRS Headquarters expansion project, adjacent to the current headquarters and set to open in early 2024, will add additional parking spaces when it combines with the current headquarters garage. There will also be additional Level 2 charging ports but the exact number is not yet known. After completion of the headquarters expansion, CalSTRS will assess the need for more charging ports. Plans to engage utility or other programs to install electric vehicle supply equipment (EVSE) will be determined with the CalSTRS property manager. Prior to installing more charging stations, CalSTRS will investigate incentive programs offered by PG&E, the agency's electricity provider, as well

as work with the Department of General Services Office of Sustainability Clean Transportation Unit.

On-going EVSE Charging Operations and Maintenance

Public EV Charging Policies

Reporting Narrative on Public EV Charging Policies

Public charging policy not required.

Planning Narrative on Public EV Charging Policies

Public charging policy not required.

Employee EV Charging Policies

Reporting Narrative on Employee EV Charging Policies

There is no employee EV charging policy in place yet. Charging stations are pay only through the ChargePoint operating system, which the employees must register with to gain access. Energy for charging is tracked with a monthly report from ChargePoint. Employee charging energy use currently averages between 200–400 kWh per month with over 80 registered users.

Currently charging station users are charged 35 cents per kWh to charge their vehicle with the rate increasing to $3.50 per kWh after four hours. This rate increase encourages users to move their vehicle once fully charged to make the station available to other users.

Planning Narrative on Employee EV Charging Policies

Once the headquarters expansion is complete, CalSTRS will need to develop an employee EV charging policy. This will be the responsibility of the Facilities Parking Coordinator with direction from the Facilities Operations Manager.

Fleet EV Charging Policies

Reporting Narrative for Fleet EV Charging

CalSTRS does not yet have a fleet EV charging policy.

CalSTRS still has work to do in using telematics to collect and report fleet EVSE use data. We will manage fleet charging during Flex Alerts and peak time by

only charging in the morning hours when energy is cheaper and more abundant in the power grid. Our Facilities Management Division will be responsible for oversight of EV operations and maintenance.

Planning Narrative for Fleet EV Charging

CalSTRS only recently purchased our first battery electric ZEV vehicle. With this new addition to our fleet, we will be creating a fleet EV charging policy that assures adequate and timely EV charging. We hope to have this policy in place by the next roadmap reporting cycle.

Hydrogen Fueling Infrastructure

Planning Narrative for Hydrogen Fueling Infrastructure

CalSTRS has no hydrogen fuel plans. We previously owned a hydrogen fuel cell Toyota Mirai. We discovered that very often the hydrogen fueling station was out of hydrogen and not a reliable fuel source.

CHAPTER 3 – ENERGY

CalSTRS Mission and Building Infrastructure

Reporting Narrative for CalSTRS Mission and Building Infrastructure

CalSTRS was created in 1913 to provide retirement benefits to California public school educators. CalSTRS administers a hybrid retirement system consisting of traditional defined benefit, cash balance and defined contribution plans, as well as disability and survivor benefits. CalSTRS is the largest educator-only pension fund in the world. We serve California's over 900,000 public school educators and their beneficiaries. CalSTRS' mission is to secure the financial future and sustain the trust of California's educators.

Most of the work done to support CalSTRS' mission happens at the headquarters office building in West Sacramento, a 409,000 square-foot LEED Certified Gold for New Construction office building opened in 2009. The headquarters building is also LEED Certified Platinum for Operations and Maintenance.

Total Purchased Energy

Table 3.1: Total Purchased Energy 2021 and 2022

Purchased Energy	2003 Baseline Quantity	Unit	2021 Quantity	2022 Quantity	% Qty. Change 2003-22
Electricity	6,284,000	kWh	3,840,250	4,307,490	-31%
Less EV Charging	No data	kWh	226	2,773	No baseline
Natural Gas	34,232	therms	19,088	31,439	-8%
Propane	n/a	gallons			
Fuel Oil	n/a	gallons			
Steam	n/a	pounds			
Chilled H2O	n/a	kBtu			
TOTALS	24,865,103	kBtu Site	15,010,919	17,850,527	-28%

CalSTRS Energy Use

Reporting High Energy Use Buildings

Table 3.2: Properties with Largest 2022 Energy Consumption

Building Name	Floor Area (ft^2)	Site Energy (kBTU)	Source Energy (kBTU)	Source EUI (kBTU/ft^2-yr.)
100 Waterfront Place	409,000	17,831,606	49,693,104	121
Total for Buildings in This Table	409,000 ft^2	17,831,606 kBTU	49,693,104 kBTU	---
Total for All CalSTRS Buildings	409,000 ft^2	17,831,606 kBTU	49,693,104 kBTU	---
% of Totals	100 %	100 %	100 %	---

Energy Efficiency Solutions for Largest Energy Using Buildings

Planning Outline PO0a: Planning for Buildings with Largest Energy Use

Building Name	Proposed Energy Efficiency Solutions
100 Waterfront Place	Retrofitting lighting project planned 2024

Narrative for Building Energy Efficiency

CalSTRS Headquarters opened in 2009 and was designed and constructed to be energy efficient. It has been a challenge to reduce purchased energy by 20%

because the benchmark data reflected the building's energy efficient design with relatively low energy consumption for a building of its size.

Even though it has been a challenge to reduce energy by 20%, CalSTRS has met the reduction goal through a combination of refined building engineering and energy efficient projects.

In 2024, we will be doing a lighting retrofit for the remaining fluorescent fixtures in the tower. The effort will be led by our property management partners, JLL. We expect this project will result in noticeable energy reduction.

Zero Net Energy (ZNE)

Reporting on Existing Building ZNE

Table 3.3 Zero Net Energy Buildings

Status of ZNE Buildings	Number of Buildings	Floor Area (ft^2)	% of Building Area
Buildings Completed and Verified	0	409,000	100%
Building in Design or Under Construction	1	266,500	100%
Building Proposed for Before 2025 (but not yet in design)	0	0	
Addtl. Exist. Bldg. Area within 15% of ZNE target EUI and have EE projects planned	0	0	
Totals for ZNE Buildings by 2025	2	675,500	100%
Totals for All CalSTRS Buildings by 2025	2	675,500	100%
% ZNE by 2025	100%	100%	

Planning Narrative of Table 3.3: Zero Net Energy Buildings

State policies set forth the following milestones for zero net energy state buildings:

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

CalSTRS is expanding the West Sacramento headquarters campus with a new building, currently under construction and funded through a green bond. Once completed, the building will be approximately 266,500 gross square feet. The design and construction of the headquarters expansion is being led by CalSTRS. One goal for the new building is to achieve zero net energy, which meets the state policy for new construction to be ZNE. This will move CalSTRS closer to meeting the requirement for 50% of total existing building area to be ZNE by 2025. Although the current headquarters building is ZNE ready, it is limited in the ability to achieve true ZNE because of the need for natural gas to heat the building. As the building ages, and technologies improve, reaching ZNE for the headquarters building may be a possibility with a future renovation. We will also continue to work with PG&E to identify options for long-term off-site renewable energy procurement.

New Construction Exceeds Title 24 by 15%

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

New Buildings Exceeding Title 24 by 15%	Number of Buildings	Floor Area (ft^2)
Completed Since July 2012	0	
Under Design or Construction	1	266,500
Proposed Before 2025	0	

Narrative of Table 3.4 New Building Construction Exceeding Title 24 by 15%

All new state buildings and major renovations beginning design after July 1, 2012, must exceed the current California Code of Regulations (CCR) Title 24, energy requirements by 15% or more.

The CalSTRS Headquarters expansion, currently under construction, will be an approximately 266,500 square foot office building with a cafe and day care

center scheduled to be completed in 2024. In addition to striving for ZNE, as well as LEED platinum for New Construction, the new building is designed to meet the Title 24 energy efficiency requirements by at least 15%. Once construction is complete, the building will enter a commissioning phase. This will allow CalSTRS to determine the building's actual energy efficiency.

Existing Buildings Energy Efficiency

Reporting on Energy Efficiency for Existing Buildings

Table 3.5: CalSTRS-Wide Energy Trends (if available)

Year	Floor Area (ft^2)	Total Source kBTU Consumption	CalSTRS Average EUI (Source kBtu /square foot)
Baseline Year 2003*	409,000	63,629,182	156
2013	409,000	64,465,681	158
2014	409,000	61,397,615	150
2015	409,000	57,589,400	141
2016	409,000	60,976,516	149
2017	409,000	56,774,457	139
2018	409,000	53,736,561	131
2019	409,000	55,144,633	135
2020	409,000	45,611,903	112
2021	409,000	43,352,349	106
2022	409,000	49,693,104	121
% Change 2003–2022	**0 %**	**-28 %**	**-28 %**

* CalSTRS baseline year is 2010, which is the first full year of energy date for our building.

Narrative for Table 3.5: CalSTRS-Wide Energy Trends

Even though the CalSTRS Headquarters building is relatively new and built to be energy efficient, we were still able to reduce energy consumption by 28% since the baseline year. Engineering staff has worked hard to operate the building in the most efficient way possible. Future strategies to further reduce energy consumption include a lighting retrofit project.

Energy Savings Projects

Table 3.6: Summary of Energy Savings Projects 2021–2022

Year Funded	Estimated Energy Savings (kBTU/yr)	Floor Area Retrofit (sq.ft.)	Percent of CalSTRS Floor Area
2021	57,899	Unknown	unknown
2022	0	0	0
Total	**57,899**		

Planning Narrative for Table 3.6 Energy Savings Projects 2021–2022

CalSTRS has been focused on replacing old fluorescent fixtures with energy efficient LED fixtures. We have already replaced the lobby fixtures and elevator cab lights and most recently, interior stairwell sconce lighting at our headquarters building. Budgeting for the larger lighting retrofit in the office space has been a challenge, which is why we started with smaller areas. We will most likely be starting this larger retrofit in 2024 and expect a noticeable energy savings from it.

Energy Audits/Surveys Completed or In-Progress

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

Year	Total CalSTRS Floor Area (sq. ft.)	Energy Audits/ Surveys Under Way (sq. ft.)	Percent of CalSTRS Floor Area
2021	0	0	0
2022	409,000	409,000	100%

Planning Narrative for Table 3.7 Energy Audits/Surveys Completed or In-Progress

CalSTRS has utilized the State of California Energy Strategy and Support Program over the last two years. Through this program we had consultants conduct an energy audit for our headquarters building which helped identify our next energy savings project, a lighting retrofit. They are currently finishing up a report for an on-site energy audit for the same building which we hope will identify future energy savings projects related to the HVAC system. CalSTRS uses our building management contractors, JLL, to manage all our projects once identified.

Demand Response (DR)

Participating in DR Utility Programs and Participating in DR Events

Table 3.8: Demand Response (DR) Program Participation

DR Program Participation	Number of Buildings	Estimated Available Energy Reduction (kW)	Actual Curtailment (kW)
Number of Buildings Participating in 2021	1	unknown	unknown
Number of Buildings Participating in 2022	1	unknown	unknown
Planned Number of Buildings that will Participate in 2023	1	unknown	unknown
Total Number of CalSTRS Buildings	1	unknown	unknown
2022 CalSTRS Buildings	100 %	unknown	unknown

Participating (Percent)			

Planning Narrative for Table 3.8: Demand Response (DR) Program Participation

The CalSTRS headquarters building enrolled in an automated demand response program with our utility provider, PG&E, in 2017. As part of that program, the building installed an automated demand response gateway device (also called a virtual end node, or VEN) to receive demand response event signals, and the building management system was programmed to automatically reduce energy use during demand response events by resetting space temperatures in the building. This worked well until 2021, when PG&E stopped this program without notifying CalSTRS. We have been trying to re-enroll in a similar demand response program by working directly with PG&E with no results other than opting into their voluntary Peak Day Pricing program which does not include an automated response or reports on load shed during events. Most recently we have engaged with DGS's demand response aggregator and look forward to having our building enrolled in a more robust demand response program where we will be able to document energy savings from event days.

Renewable Energy

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 DGS Power Use
Current On-Site Renewables in Operation or Construction	0	0	0	0%
On-Site Renewables Planned	1	1,500	2,365,500	51.2%
On-Site Renewables Totals	1	1,500	2,365,500	51.2%
CalSTRS-Wide Total Energy Use (kWh equivalent)	-	-	4,623,561	
Current Off-Site Renewables	0	0	0	0%
Planned Off-Site Renewables	0	0	0	0%

Off-Site Renewables Combined Current and Planned	0	0	0	0%
Current Combined On-Site and Off-Site Renewable Energy	**0**	**0**	**2,365,500**	**51.2%**
Additional Planned On-Site and Off-Site Renewables	0	0	0	0%

Planning Narrative for Table 3.9, for all Existing Building Renewable Energy

The CalSTRS headquarters expansion project includes onsite solar, some of which will be located on the current headquarters parking structure. We have estimated that the solar power generation will produce enough power to cover about half of our current electricity usage. Although the new solar energy generation will primarily be used to offset the expansion energy usage, CalSTRS headquarters building will continue to purchase Renewable Energy Credits (RECs) to cover electricity purchased by the headquarters building. This strategy will help CalSTRS reach the goal for state owned buildings to be Zero Net Energy by 2025.

Monitoring-Based Commissioning (MBCx)

Table 3.10: Current and Potential MBCx Projects

Facility	Building Name	Location	Floor Area (sq. ft.)	EMS Make, Model, Installation / Upgrade	EMS Year	MBCx Capable, Difficult, or No EMS	MBCx Projected Start Date
100 Waterfront Place	Headquarters	West Sacramento	409,000	Niagara Staefa – Talon system	2010	Already in Place	n/a

Planning Narrative for Table 3.10: MBCx Status of Buildings

CalSTRS incorporates building commissioning on a regular basis to facilitate efficient building operation in conjunction with LEED Existing Buildings: Operations and Maintenance.

We have achieved savings in energy usage because of MBCx activities. One example was the installation of occupancy sensors on all committee and conference rooms that reduced energy usage when they are unoccupied.

Building Controls

Reporting on EMS/BMS/Controls Building Capability

Table 3.11: Building Controls

Equipment Controls	% of Buildings Controlled Remotely Off-site	% of Buildings with Controls On-site	% of Total Buildings
Lighting		100	100
HVAC: EMS/BMS		100	100
HVAC: Smart Thermostats		0	0
Other: _____			

Planning Narrative for Table 3.11: EMS/BMS/Controls Building Capability

The CalSTRS headquarters building uses the Talon building automation system as our BMS.

Energy Reduction Strategies - Best Management Practices

Planning Narrative) for Energy Reduction Strategies in CalSTRS Buildings Best Management Practices

CalSTRS has achieved almost all the energy reduction strategies listed in the Department of Technology's basic policy 4819.31, item 13, Management Memo 14-07 "Standard Operating Procedures for Energy Management in State Buildings" and its associated Standard Operating Procedures as well as Management Memo 14-09 "Energy Efficiency in Data Centers and Server Rooms." Ensuring lights and equipment are turned off at the end of each

workday, purchasing Energy Star rated equipment, and occupancy sensor installation are just some examples of these energy reduction strategy best practices.

The only challenging energy reduction strategy has been the replacement of fluorescent light fixtures with the more energy efficient LED. Replacing all the fixtures in such a large building as our headquarters can be costly. We have been slowly replacing these lights in smaller areas of the building to spread the cost over multiple years as the budget allows. We plan on completing the final phase of this project in 2024. Ultimately, we expect this will save CalSTRS money, as well energy use.**Error! Bookmark not defined.**

CHAPTER 4 – WATER EFFICIENCY AND CONSERVATION

CalSTRS Mission and Water Use

As mentioned in earlier chapters of this report, the CalSTRS headquarters building is the only building that we own and operate. We will open a second building adjacent to the headquarters building in early 2024. The current building is 409,000 square feet of office space with roughly 46,000 square feet of landscaping. The headquarters building is where we conduct most of our business, securing the financial future and sustaining the trust of California's educators.

Our building uses water in a way that is typical of an office building. Water is used for sinks and toilets, HVAC systems and landscape irrigation. The building also houses a cafe that has typical restaurant uses for water. More recently, while construction of the expansion building next door has been underway, the construction team has also used water from our headquarters building.

Reporting on Total Purchased Water

Table 4.1: Total Purchased Water

Purchased Water	2021 Quantity	2022 Quantity	2021 Cost ($/yr.)	2022Cost ($/ yr.)
Potable	2,890,200	3,602,800	$30,662	$33,810
Recycled Water	0	0	0	0

Reporting on Properties with Largest Purchased Water Use per Capita.

Table 4.2: Properties with Purchased Largest Water Use per Capita

Building Name	Area (ft2)	# of Building Occupants	Total 2022 Gallons	Total 2022 Irrigation in Gallons (if known)	Gallons per Capita
100 Waterfront Place	409,000	1,300	3,602,800	566,275	2,336
Total for Buildings in This Table	409,000	1,300	3,602,800	566,275	2,336
Total for All CalSTRS Buildings	409,000	1,300	3,602,800	566,275	2,336
% of Totals	**100 %**		**100 %**	**100%**	**---**

Reporting on Properties with Largest Landscape Area Using Purchased Water

Table 4.3: Properties with Largest Landscape Area Using Purchased Water

Building Name	Landscape Area (ft2)
100 Waterfront Place	46,424
Total Landscaping area for Buildings in This Table	46,424
Total Landscaping for All CalSTRS Buildings	46,424
% of Totals that is large landscape	**100 %**

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

Table 4.4: CalSTRS-Wide Purchased Water Use Trends

Year	Total Occupancy /year	Total Amount Used (Gallons/year)	Per capita Gallons per Person per Day
Baseline Year 2010	1,100	5,267,400	13.11930262
2018	1,300	6,217,100	13.1024236
2019	1,300	5,648,500	11.90410959
2020	300	3,306,700	30.19817352
2021	300	2,890,200	26.39452055
2022	1,300	3,602,800	7.592834563
2024 Goal	1,300	2,810,695	6

Reporting Narrative on Purchased Water Use Trends from 2010 to Present

Until the Governor directed state agencies to work from home in March of 2020 in response to the COVID-19 pandemic, CalSTRS water usage remained stubbornly consistent. This was a result of our building starting with highly efficient water fixtures and an efficient drip irrigation system with drought tolerant landscaping. This made it very difficult to meet the mandatory reductions.

Our employees returned to work in a hybrid mode in April of 2022. Most employees are scheduled to work two days in the office and three days at home. This has resulted in significantly less water usage at our headquarters building than in pre-pandemic years. We will need future years data to see if this trend holds.

Reporting on Total Purchased Water Reductions from 2010 to Present

Table 4.5: Total Purchased Water Reductions Achieved in Gallons

Purchased Water Use		
2010 Baseline totals (Gallons) X	**2021Totals (Gallons)**	**2022 Totals (Gallons)**
5,267,400	2,890,200	3,602,800
+ or -Gallons Compared to Baseline Year	-2,377,200	-1,664,600
CalSTRS- Wide Reduction as a % from 2010 baseline	-45%	-32%

CalSTRS Indoor Water Use

Fixtures and Water Using Appliances Needs Inventories

Reporting on Building Indoor Water Fixtures and Water Using Appliances Needs

Table 4.6: Building Indoor Water Fixtures and Water Using Appliances Needs Inventories Summary

# of toilets to be replaced	# of urinals to be replaced	# of faucet aerators to be replaced	# of showerheads to be replaced *	# of clothes washers to be replaced	# of garbage disposals to be replaced.	# of pre-rinse valves to be replaced
0	0	0	0	0	15	0

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

CalSTRS has already achieved the water conservation requirements, except for replacing garbage disposals. We plan to replace these as they reach end of life.

Water Conservation and Water Efficiency Projects for Purchased Water

Reporting on Current Indoor Water Efficiency Projects 2020 to Present

Table 4.7: Summary of Current Indoor Water Efficiency Projects Completed 2020 to Present or In Progress

Completed Projects per Year	Water Saved (Gallons/yr.)	Number of Indoor Water Efficiency Projects Completed	Cost Savings per Year
2020			
2021			
No current projects			

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

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

Building Name	Type of Project	Est Water Savings	Est. Start Date
No projects planned			

Planning Narrative for Future Indoor Water Efficiency—Building Priority Projects

As explained earlier in this chapter, CalSTRS headquarters started with a very water efficient building compared to similar sized buildings. Although we will continue to look for ways to conserve water, the most effective reduction strategy might be to continue our hybrid model of work.

Planning Narrative on General Water Management BMP

General water management BMP achieved.

Planning Narrative on Leak Detection and Repair BMP

Leak detection and repair BMP achieved.

Planning Narrative on Kitchen Water Conservation BMP, Fixtures

Kitchen water conservation BMP achieved.

Planning Narrative on Laundry Facilities Water Conservation BMP

No laundry facilities.

CalSTRS Total Nonpurchased Water

Reporting on Total Nonpurchased Water Excluding Water Reuse or Recycling

Table 4.8: CalSTRS-Wide Nonpurchased Water Use

Year	Groundwater Basin(s) Name	Number of Domestic or Irrigation Wells	Groundwater Use in Gallons	Surface Water Use in Gallons	Total (Gallons / Year)
Baseline Year 2020	Nonpurchased water not used.				
2021					
2022					

Reporting Narrative for Nonpurchased Water

Nonpurchased water not used.

Reporting Narrative for Nonpurchased Water Use Trends

Nonpurchased water not used.

Planning Narrative for Nonpurchased Water Unavailability.

Nonpurchased water not used.

CalSTRS Water Energy Nexus Reporting

Reporting on Annual Amount of Boiler Makeup Water Used

Table 4.9: Annual Amount of Boiler Makeup Water Used

Boiler Water Use	Year 2021	Year 2022
Amount of Water Used for Makeup (Gallons)	505	523
Amount of Water Currently Reused. (Gallons)	6,203	6,203
Remaining additional water suitable for other purposes (Gallons)	0	0
Totals for all Facilities	6,708	6,726

Planning Narrative on Boiler Water Reuse Opportunities

Boiler water reuse achieved.

Planning Narrative for Boiler Efficiency

Boiler water use efficiency achieved.

Reporting on Cooling Towers Water Use

Table 4.10: Cooling Tower Water Use

Cooling Tower Water Use	Year 2021	Year 2022
Amount of Water Used for Make-up (Gallons)	1,383,200	1,549,900
Totals for all Facilities	1,383,200	1,549,900

Planning Narrative on Cooling Tower Water Use.

Cooling tower water use data is complete.

Planning Narrative for Cooling Tower Water Reuse

Chemicals in the system water make it too harsh for reuse. The filtration system required to make water appropriate for reuse would be too costly and would also affect the conductivity that is maintained at 1,000 ppm. Conductivity above 1,000 ppm would cause cooling tower scaling which would result in a cooling tower inefficiency. Other water treatment technologies have not yet been examined, but CalSTRS will continue to research cooling tower water reuse.

Planning for Narrative for Cooling Tower Efficiency

Cooling towers water use efficiency achieved.

Reporting on Boilers Needs Inventories Summary

Table 4.11: Summary of Boilers Needs Inventory

Number of meters to purchase and install	Water Treatment	Other
Totals	No boiler treatment needs	

Planning Narrative for Boilers Needs

No boiler water treatment needs.

Reporting on Cooling Systems Needs Inventory Summary

Table 4.12: Summary of Cooling System Needs Inventory

Equipment Needed	Equipment Totals for all Facilities
Meters	No cooling system needs.
Water Treatment	
Other	

Planning Narrative for Cooling Systems Needs

No cooling system needs.

Reporting on Efficiency Projects for Boilers and Cooling Systems 2020 to Present

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

Project Type	Water Saved (Gallons/yr.)	Number of Completed Projects	Number of Projects in Progress
2020	No projects		
2021	No projects		
2022	No current projects		

Planning Narrative for BMP for Building Boilers and Cooling Systems

Building boilers and cooling systems BMP achieved.

CalSTRS Outdoor Water Use

Reporting on Outdoor Irrigation Hardware Inventory

Table 4.14: Summary of Outdoor Irrigation Hardware Needs Inventory

Irrigation Hardware Type	Total Hardware Needed
Separate meters or sub-meters	0
Irrigation controllers required with weather or soil moisture adjustment and flow sensing capabilities	0
Backflow prevention devices	0
Flow sensors to be purchased and installed	0
Automatic rain shut-off devices	0
New pressure regulators	0
New hydro-zones	0
New valves	0

Irrigation Hardware Type	Total Hardware Needed
Filter assemblies	0
Drip irrigation emitters	0
Booster pumps	0
Rotary nozzles or other high efficiency nozzles	0

Planning Narrative for Outdoor Irrigation Hardware Needs

CalSTRS uses a well maintained drip irrigation system with soil moisture sensors and automatic rain shut-off. The system is in good working order and regularly inspected. At the current time, we don't have any hardware needs beyond typical maintenance of the system.

Reporting on Outdoor Irrigation Hardware Water Efficiency Projects

Table 4.15: Summary of Outdoor Hardware Water Efficiency Projects Completed 2020 to Present or In Progress

Year Funded	Water Saved (Gallons/yr.)	Completed Hardware Water Efficiency Projects	Hardware Water Efficiency Projects in Progress
2020	**0**	**0**	**0**
2021	**0**	**0**	**0**
2022	**0**	**0**	**0**

Planning Narrative for Irrigation Hardware Water Efficiency Projects

No upgrades needed.

Planning Narrative on Irrigation Hardware Maintenance BMP

CalSTRS hires a landscaping company that performs irrigation hardware maintenance BMP.

Reporting on Living Landscape Inventory

Table 4.16: All Facilities With > 500 sq. ft. of Living Landscape Inventory

Facilities with Landscape >500 Sq.	Total Turf (sq. ft.)	Number of Historic Sites or Memorials MWELO Landscape Area (sq. ft.)	Climate Appropriate Landscape Area (sq. ft.) Groundwater Basin Name	Irrigation Source is Groundwater (Yes or No)	Irrigation source is Surface Water (Yes or No)
46,424	0	46,424	n/a	No	No

Reporting Narrative on Living Landscape Inventory

Far from being just an aesthetic or ornamental feature, landscaping plays a critical role around public buildings and facilities. From providing safety and security, to reducing local heat islands, suppressing dust, reducing water runoff, maintaining soil health, aiding in water filtration and nutrient recycling, landscaping around public buildings is essential. Further, landscaping in public places provides pleasant public gathering spaces. The health and proper maintenance of these landscapes is vital to the physical wellbeing of California's people as well as to its social, cultural, political and historical life.

Additionally, the many vital ecosystem functions carried out by living public landscaping are critical in helping California meet its goals for greenhouse gas reduction, climate adaptation, water and energy efficiency and water conservation.

The CalSTRS landscape inventory includes a large, mature valley oak tree and several mature sycamores which offer shade, beauty and carbon sequestration.

All landscaped areas are irrigated using satellite-monitored drip irrigation that reduces use of potable water. Only native and adaptive plants and mulch are present in landscaping at CalSTRS Headquarters, which positions CalSTRS well to deal with drought and climate change. The only exception to the native and adaptive plants is the 230 square feet dedicated to the Waterfront Garden, which provides produce to the cafe.

Reporting on Living Landscape Upgrades for the Next Five Years

Planning Outline PO0:b: Planned Projects for Living Landscape Upgrades for the Next Five Years

Landscape >500 Sq. ft.) Facility Name	Replace Turf (sq. ft.)	MWELO landscape area Upgrade (sq. ft.)	Climate appropriate landscape Upgrade area (sq. ft.)	Date for Achieving Upgrades
		MWELO landscape achieved		

Planning Narrative on Living Landscape Upgrades for the Next Five Years

MWELO landscape achieved.

Planning Narrative for Remaining non MWELO Compliant Living Landscape Upgrades

MWELO landscape achieved.

Reporting on Living Landscape Water Efficiency Projects 2020 to Present

Table 4.17: Summary of Completed Living Landscaping Water Efficiency Projects

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

Planning Narrative on Living Landscape BMP

Although most of CalSTRS Headquarters landscaping is drought tolerant, during severe drought or other water shortages, trees and large shrubs are given priority

for irrigation. Mulch is refreshed once a year at a depth of at least three inches. Irrigation is adjusted for seasonal changes. During the winter and spring months, irrigation is reduced significantly. The irrigation system is checked monthly for leaks, misalignment and other malfunctions. Repairs are made immediately with the correct parts. The irrigation system is adjusted as needed. Watering is done outside of the 10 a.m. to 6 p.m. window. With only drip irrigation, there is no sprinkler runoff. Water Use Classifications of Landscape Species (WUCOLS) are used to find plant water use requirements and plants are watered accordingly. In addition to properly mulched landscaping, most landscaping is surrounded by permeable walkways that prevent storm water runoff. Landscaping is primarily composed of plant species native to the climate zone and incorporates plantings for pollinators, such as California fuchsia (Epilobium canum). Leaks are fixed immediately.

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

Table 4.18: Large Landscape Inventory and Water Budget Requirements

Name of Facility Sites/Locations with > 20,000 sq. ft. of Landscaping	Landscape Area per Facility	Water Budget per Facility	EPA WaterSense or Irrigation Association Certified Staff per Facility
100 Waterfront Place	46,424	560,000	2

Reporting on Achieving Large Living Landscape Requirements

Planning Outline PO4:c: Achieving Large Living Landscape Area Requirements

Facility Name	Landscaping sq. ft. to be upgraded to MWELO standards	Water Budget per Facility in Gallons	Ground Water Basin	# of staff Needing EPA WaterSense certification	Date for Achieving
100 Waterfront Place	0	560,000	Sacramento Vally	0	

Planning Narrative on Achieving Large Living Landscape Requirements

Large living landscape requirements achieved.

Critically Overdrafted Groundwater Basins and Water Shortage Contingency Plans

Reporting on Buildings in Critically Overdrafted Groundwater Basins

Table 4.19: Buildings in Designated Critically Overdrafted Groundwater Basins

Building Name	Basin Name	Amount of water Used 2021 (Gallons)	Amount of water Used 2022 (Gallons
No facilities			

Reporting on Buildings with Urban Water Shortage Contingency Plans

Table 4.20: Buildings with Urban Water Shortage Contingency Plans

Building Name	Name of Water Supplier with Urban Water Shortage Contingency Plans	Year of Publication or Update
100 Waterfront Place	City of West Sacramento	2020

Planning Narrative for Urban Water Shortage Contingency Plans

CalSTRS headquarters building is subject to the city of West Sacramento's urban water shortage contingency plan. Water reduction would not greatly impact our operations. CalSTRS workforce is highly adaptable and critical operations can be conducted remotely, if necessary. As best management practices, we already take the suggested steps for water reduction listed in the city's contingency plan.

CalSTRS does not yet have a plan for reducing the required percentage of water for each stage of the urban water shortage contingency plan. Now that

we have identified the need, facilities operations management will start developing a plan to be completed by 2026.

Reporting Narrative for CalSTRS Contingency Plan

CalSTRS is aware of our water supplier's contingency plan. A 50% reduction in water use at our facility would require action above the best management practices already undertaken by CalSTRS. It would require an immediate response.

Planning Narrative on CalSTRS Contingency Plan

If a 50% reduction in water use at our facility was required because of a Stage 6 water emergency called by the city of West Sacramento, CalSTRS would implement full-time telework for employees. We have successfully used this response during the COVID-19 pandemic, for extreme heat events, and for the series of atmospheric rivers that impacted our area in early 2023.

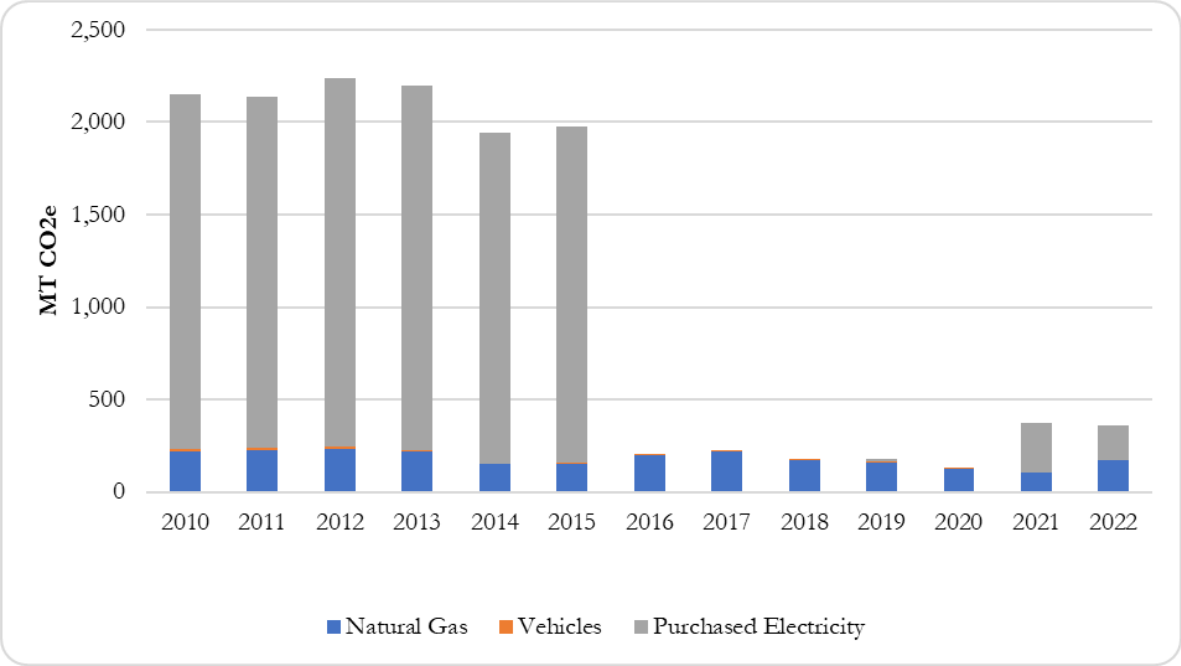
CHAPTER 5 – SUSTAINABLE OPERATIONS

Greenhouse Gas Emissions

Table 5.1: GHG Emissions since 2010 (Metric Tons)

Emissions Source	Natural gas	Vehicles	Purchased Electricity	Total
2010 Baseline	221	11	1,919	2,151
2011	227	11	1,897	2,135
2012	233	10	1,995	2,238
2013	221	6	1,969	2,196
2014	149	5	1,787	1,941
2015	153	5	1,816	1,974
2016	199	6	0	205
2017	216	9	0	225
2018	173	3	0	176
2019	162	2	16	180
2020	123	1	0	124
2021	107	1	266	374
2022	173	1	187	361
Percent Change since Baseline	**-22%**	**-91%**	**-90%**	**-83%**

Graph 5.1: GHG Emissions since 2010



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

Since CalSTRS met the statewide goal of 20% greenhouse gas emissions reduction against the 2010 baseline, we have set a new goal for our agency to reduce our emissions by 5% over the previous year. Most recently, in 2022, we were unable to meet this goal. For most of 2021, almost all CalSTRS employees worked remotely full-time. This resulted in very low building energy use and lowered GHG emissions. When we started the hybrid work model, energy use and GHG emissions did increase as employees came back to the building more regularly.

We are looking into strategies that will help us meet our current GHG reduction goal, such as possibly closing the building on Fridays and having a remote workday for all employees on that day.

It has become more challenging to reduce GHG emissions the more efficient the building becomes. We will continue to use recommended strategies such as identifying energy efficiency projects. One such project is our office light retrofit scheduled to be completed in 2024. We will also continue to purchase renewable energy in the form of RECs and purchase zero-emission vehicles for our fleet. We also plan to install solar PVs onsite in the future.

Carbon Inventory Worksheet

Equipment	Manufacturer	Model#	Fuel Type	Size/Capacity/BTU Rating
Boiler 1	Bryan Boilers	RV350-W-FDG-LX	Natural	3.5 MMBtu/hr
Boiler 2	Bryan Boilers	RV350-W-FDG-LX	Natural	3.5 MMBtu/hr
Boiler 3	Bryan Boilers	RV350-W-FDG-LX	Natural	3.5 MMBtu/hr
Generator	Cummins	QSKTA60-GE	Diesel	2922 BHP
Fire Pump	John Deere	60684F120	Diesel	240 BHP
Water Heater	A.O. Smith	BTH 400A 100	Natural	399900 Btu/hr
Water Heater	A.O. Smith	BTH 400A 100	Natural	399900 Btu/hr
Combi-Oven	Altosham	6-10-10-10	Natural	53,000- 80,000 Btu/hr
Natural Gas Range	Jade	JTRH-4-36C	Natural	175,000 Btu/hr
Steam Jacketed Kettle	Groen	DH40	Natural	100,000 Btu/hr
Tilting Pan	Groen	BPM-40G-NAT-E	Natural	144,000 Btu/hr
Fryer Battery (x2)	Dean Industries	D50G-C-UFF	Natural	102,300 Btu/hr
Charbroiler	Jade	JMRH-24B	Natural	60,0000 Btu/hr

Modular Griddle	Jade	JMRH-48GT	Natural	105,000 Btu/hr
Salamander Broiler	Jade	JSB-36WM	Natural	35,0000 Btu/hr
Modular Range	Jade	JMRH-4-A	Natural	140,000 Btu/hr

Planning Narrative for Carbon Inventory Worksheet

Completing a carbon inventory is the first step in planning our future reduction of fossil fuel burning equipment. The next step will include researching electric options along with timelines and budgeting for replacement.

Building Design and Construction

New Building LEED Certification

Table 5.2: New Building Construction since July 1, 2012

Building Name	LEED Certification Type and Level Achieved	Commissioning Performed (Y/N)
No new buildings		

Planning Narrative of Table 5.2: New Building Construction since July 1, 2012

Although CalSTRS does not have any new buildings completed, we have a new building under construction that is set for completion in early 2024. We expect it will receive the platinum level of certification for LEED Building Design and Construction.

LEED for Existing Buildings Operations and Maintenance

Table 5.3: Large Building LEED Certification for Existing Buildings

Number of Buildings over 50,000 sq. ft. and eligible for LEED EBOM	Number of Building over 50,000 sq. ft. that have achieved LEED EBOM	Percentage of Buildings over 50,000 sq. ft. that have achieved LEED EBOM
1	1	100%

Planning Narrative for Table 5.3 Large Building LEED Certification

CalSTRS will maintain our LEED EBOM certification on our building.

Indoor Environmental Quality (IEQ)

Daylighting in New Construction

CalSTRS headquarters expansion building will maximize daylighting by providing a direct line of sight to the outdoors via vision glazing between 2.5 and 7.5 above the finished floor in 90% of all regularly occupied areas. It will also feature toplighting and sidelighting as well as reflective room surfaces and photosensor controls.

Planning Narrative for CALGreen Tier 1 Indoor Environmental Quality Measures

CalSTRS has achieved the CALGreen Tier 1 indoor environmental quality measures.

Planning Narrative for IEQ-New Buildings and Renovation Measures

The CalSTRS headquarters expansion building, set to be completed in 2024, will exceed the requirements for indoor air quality. The building design will be achieving LEED platinum for new construction as well as a WELL Building Standard certification at the Gold level.

Planning Narrative for Compliance with Furnishing Standards

Furnishing standards achieved.

Planning Narrative on Using Green Seal Cleaning Products

Green cleaning products standards achieved.

Planning Narrative for Cleaning Procedures—Various Standards

Cleaning procedures standards achieved.

Planning Narrative for HVAC Operations

JLL building engineers follow all HVAC best management practices. Their operation of the headquarters building consistently results in an Energy Star score of 97-100 for the building.

Planning Narrative for HVAC Inspection Requirements

HVAC inspection requirements achieved.

Integrated Pest Management (IPM)

Reporting on IPM plans

Table 5.4: Integrated Pest Management Contracts

Pest Control Contractor Name	IPM Specified (Y/N)	Contract Renewal Date
Clark Pest Control	Yes	2024

Planning Narrative for Pest Control Contracts

Integrated pest management requirements achieved.

Fossil Fuel Landscaping Equipment Replacement with Low Emitting Landscaping Equipment

Planning Narrative for Replacing Fossil Fuel Landscaping Equipment

No fossil fuel landscaping equipment.

Waste and Recycling Programs

Designated Waste and Recycle Coordinator and Program Basics

Reporting Narrative on Designated Waste and Recycle Coordinator and Program Basics

CalSTRS' facilities have all the required receptacles and bin signage for waste and recycling. There are four different waste streams including mixed recycling, organics, certified destruct paper and landfill. CalSTRS contracts with a waste management company to haul all mixed recycling, organics and landfill waste and a certified destruct paper company for pickup and shredding of paper. We also have on-going employee outreach and training, including waste bin instruction for newly hired staff as well as ongoing communication through the intranet. The Facilities Environmental Coordinator performs annual reviews to make sure that the number and condition of the receptacles are appropriate. Signage is refreshed as needed. CalSTRS is currently TRUE (Total Resource Use and Efficiency) certified by the Green Business Certification Inc. TRUE is a zero-waste certification program used by facilities to define, pursue and achieve their zero waste goals, cutting their carbon footprint and supporting public health.

Planning Narrative on Designated Waste and Recycle Coordinator and Program Basics

Designated waste, recycle coordinator and program basics achieved.

SARC Report

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 2022—2023
0.90	.03	.05	7.33 tons	12.15 tons	5% increase

Reporting Narrative on SARC Report on Total Waste per Capita

The number of employees at our headquarters building fluctuates around 1,300. Our successful waste and recycling program is reflected in our low per capita disposal rate. Most of our waste is diverted from the landfill via compost, mixed recycling and paper shredding. Our diversion rate hovers around 90%. This is a

direct result of well-marked bin signage and ongoing communication with employees and visitors.

The years 2020 and 2021 were impacted by the COVID-19 pandemic. While most employees worked full-time remotely, our waste totals decreased significantly. As our employees started a hybrid model of work, with most people working two days in the office, waste totals started to increase again, however they remain well below the pre-pandemic amounts. This has helped us with source reduction which is highest on the solid waste management hierarchy established by the California Integrated Waste Management Act.

Planning Narrative on SARC Report on Total Waste per Capita

Per capita disposal rate achieved.
Annual Report Summary: SARC (ca.gov)

Recycling Program and Practices

Reporting Narrative on Recycling Program and Practices

CalSTRS recycles most of the waste materials it generates with mixed recycling collection and paper collection. Recycling is hauled off-site by a contracted hauler. Some of the more common mixed recycling generated includes cardboard, glass bottles, plastic food and drink containers, and metal cans and beverage containers. Paper is collected and shredded by a certified destruct vendor. Some other common items that are recycled through e-waste pick up include laptops and monitors.

Planning Narrative on Recycling Program and Practices

Film plastics, associated with packaging and individual employee use, continue to be a challenge to recycle. In the future, CalSTRS will create an education campaign for employees on ways to reduce or swap out single use and film plastics for more sustainable items that don't include plastic.

Organics Recycling

Reporting Narrative on Organic Recycling Program and Practices

CalSTRS' headquarters building, which is our only current facility, has had an organics recycling program since the building was opened in 2009. Organic waste is taken to the Yolo County landfill's composting facility by our waste hauler. We have educational bin signage that directs employees, as well as

visitors to our cafe, to sort all food waste, soiled paper and compostable cafe items such as bagasse containers, into food waste (compost) bins.

Key players in CalSTRS' organics recycling program include building management, the recycling coordinator, the waste hauler, custodial staff and employees.

Planning Narrative on Organic Recycling Program and Practices

Organic recycling requirements achieved.

Reporting on Edible Food Recovery Program

Table 5.6: Edible Food Recovery Program Elements

Building Name	Cafeteria ➢ 5,000 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
100 Waterfront Place	Less than 5,000 sq. ft.	157	yes	no

Reporting Narrative on Edible Food Recovery Program

No edible food recovery program required.

Planning Narrative on Edible Food Recovery Program

No edible food recovery program required.

Reporting on Food Service Items Program

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
100 Waterfront Place	Cafe	unknown	Not in place

Planning Narrative on Food Service Items Program

SB 1335 (Allen, Chapter 610, Statutes of 2018) requires food service facilities located in a state-owned facility, operating on, or acting as a concessionaire on state-owned property, or under contract to provide food service to a state agency to dispense prepared food using food service packaging that are reusable, recyclable or compostable. CalRecycle adopted regulations December 31, 2020, to establish the process and criteria to determine what types of food service packaging are reusable, recyclable or compostable. CalRecycle also published a list of food service packaging that meets these criteria. Food service facilities will only be allowed to purchase food service packaging from the approved list, which will be updated at least once every five years.

CalSTRS is working with our cafe vendor on submitting packaging to CalRecycle to vet for the approved list as it pertains to SB 1335. We expect to complete this by 2025. Although we have not cross referenced our current packaging against the list that CalRecycle maintains, we have consulted with the Yolo County landfill to confirm that our compostable food service items such as bagasse to-go containers, compostable cutlery and straws are composting completely in their facility.

Hazardous Waste Materials

Reporting on Hazardous Waste Materials

Table 5.8: Hazardous Waste Materials

CalSTRS -Wide Hazardous Material Name	CalSTRS Total Hazardous Material Amount (lbs.)
No hazardous waste	

Reporting Narrative for Hazardous Waste Materials

No hazardous waste.

Planning Narrative for Hazardous Waste Materials

No hazardous waste.

Universal Waste

Reporting on CalSTRS-Wide Universal Waste Materials

Table 5.9: Reporting on CalSTRS-Wide Universal Waste Materials

Category	Universal Waste Contract in Place YES or NO
Electronic Waste	yes
Batteries	yes
CRTS	no
CRT glass	no
Lamps	yes
Mercury Wastes	no
Non-empty aerosol cans	no
PV modules	no

Planning Narrative for CalSTRS-Wide Universal Waste Materials

Typical hazardous waste for CalSTRS includes e-waste, lightbulbs and batteries. We dispose of these items using licensed hazardous waste disposal vendors. The categories listed as no contract in Table 5.9 are because we do not currently generate that type of waste. If a need arises to dispose of those categories, we will get a contract in place for proper disposal.

Material Exchange

Reporting Narrative on CalSTRS-Wide Material Exchange

Our Business Services unit operate a materials exchange program for office supplies within CalSTRS. Employees are encouraged to check with Business Services prior to ordering new office supplies. This reuse program cuts down on waste and spending. We also donated used laptops to a local school district. This process turned out to be very challenging and cumbersome and required more work than if we had disposed of the laptops as e-waste, which is our usual process for technology that has reached end of useful life at CalSTRS.

Planning Narrative on CalSTRS-Wide Material Exchange

CalSTRS will continue with its successful internal office supplies material exchange program. A strategy for increasing participation in this program is to advertise it through our intranet.

Waste Prevention Program

Reporting Narrative on CalSTRS-Wide Waste Prevention

Some examples of waste prevention at CalSTRS include the used office supplies exchange run by our Business Services unit and having all printers set to print double sided. It can sometimes be challenging to get employees used to checking for used items before ordering new products.

Planning Narrative on CalSTRS-Wide Waste Prevention

To combat the challenge of getting employees used to checking used before ordering new, we plan on using intranet communication. If we communicate to people why it is better to go with used products first, they may be more likely to adopt the strategy.

Reuse Program

Reporting Narrative for CalSTRS-Wide Material Reuse

Reuse is closely related to waste prevention. As mentioned earlier, CalSTRS has an office supply reuse program. We also reuse work-from-home desks that we offer to our employees who work remotely as part of their hybrid work schedule. When employees separate from CalSTRS, they return their remote furniture and it is reused by new employees. Employees are required to check for used desks in stock before they are allowed to order new.

Planning Narrative for CalSTRS-Wide Material Reuse

Communication is a strategy we will use to encourage reuse at CalSTRS. We will also research other purchases to see if reuse is a good option.

Employee Waste and Recycling Training and Education

Reporting Narrative for Employee Waste and Recycle Training and Education

Pursuant to Assembly Bill 2812 (Gordon, Chapter 530, Statutes of 2016), each state department is required to provide adequate receptacles, signage, education, and staffing, and arrange for recycling services consistent with existing recycling requirements for each office building of the state agency or large state facility. 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. Additionally, the bill requires each state agency to include in its existing Report to CalRecycle a summary of the state agency's compliance with the act. CalSTRS has onboarding for all new employees that includes education on the different waste stream bins throughout the building for recycling, compost, paper shredding and landfill. There is also signage posted at all core areas and cafe waste bin stations to help guide users. The CalSTRS intranet is used for ongoing communications to employees about efforts to reduce waste, reuse materials, recycle, compost and buy recycled products. CalSTRS provides purchasing guidelines for suppliers to educate them on buying recycled materials and other environmentally preferred purchasing requirements.

Signage is reviewed yearly by the Facilities Environmental Coordinator to see if changes are needed. The coordinator also communicates directly with janitorial staff in an ongoing basis to identify any areas of concern.

Planning Narrative for Employee Waste and Recycle Training and Education

Employee training and education achieved.

Environmentally Preferred Purchasing (EPP)

Reporting Narrative for Measure and Report Progress on EPP Spend

State agencies are required to purchase and use environmentally preferable products (EPP) that have a reduced effect on human health and the environment when compared with competing goods that serve the same purpose.

Some strategies CalSTRS has implemented to increase EPP spend are incorporating EPP criteria in goods and services purchasing and educating buyers on the benefits of EPP products. Most recently, CalSTRS embedded a step in the shopping cart process for goods purchasing that requires the requestor to complete EPP information before submitting their shopping cart for approval. EPP language is also included in all contracts.

EPP data is pulled from our accounting/purchasing system and reported to executive staff on a quarterly basis.

Planning Narrative for Measure and Report Progress on EPP Spend

CalSTRS measures and reports progress on EPP spend to executive leadership as well as CalRecycle.

Goods and Services Categories with the Greatest Potential to Green:

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

As shown in the table below, CalSTRS still has a way to go to meet the 75% EPP target for printing and writing paper and metal products. CalSTRS Procurement holds a quarterly procurement forum where shopping cart requestors throughout the agency are invited to learn procurement best practices and to keep up to date with any changes related to procurement. The forum is also used to make buyers aware of the recycled content requirements and reporting guidelines and to share strategies for increasing recycled content purchases.

One area CalSTRS struggles to meet the 75% requirement is the printing and writing paper category. CalSTRS sends its members, both retirees and current teachers, many communications per year via mail. As fiduciaries of the

Teachers' Retirement Fund, CalSTRS must weigh the additional cost of printing on minimum 30% recycled content paper, which is quite significant for large mailing print orders. For smaller, more targeted orders, CalSTRS purchases the costlier, minimum content paper. For larger orders, it is more economically responsible for CalSTRS to order 10% recycled content paper. CalSTRS continues to review this issue yearly and is looking at ways to decrease mailings overall and convert more member communication to a digital format.

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

Good or Service	2022 Total Spend ($)	2022 Percent EPP Spend (%)	EPP Target (%)
Printing and writing paper	$389,697	21%	75%
Metal products	$2,492	16%	75%

EPP BMP

Reporting Narrative for EPP BMP

CalSTRS reduces our environmental impact by purchasing IT goods through statewide contracts, Green Seal cleaning products, paper products that are Forest Stewardship Council certified and SABRC compliant copy paper.

Planning Narrative for EPP BMP

EPP BMP achieved.

Reporting on EPP Training and Outreach

Table 5.11: 2022 EPP Basic Training Completions

CalHR Classification	Total Number of Staff	EPP Basic Training Completion	Percent Trained	2023 EPP Training Goal
AGPA	2	2	100%	100%
SSA	1	1	100%	100%

CalHR Classification	Total Number of Staff	EPP Basic Training Completion	Percent Trained	2023 EPP Training Goal
SSMI	1	1	100%	100%

Table 5.12: 2022 EPP Intermediate Training Completions

Classification	Total number of staff	EPP Intermediate Training Completions	Percent Trained	2023 EPP Training Goal (%)
AGPA	2	0	0%	100%
SSA	1	0	0%	100%
SSMI	1	0	0%	100%

Table 5.13: 2022 EPP Executive Training Completions for Executive Members

Executive Member	Title	Date Completed
No executives have completed training		

Reporting Narrative on EPP Training and Education

CalSTRS uses an array of communications to promote the understanding and advancement of sustainable procurement internally. Sustainable procurement information is shared through the CalSTRS intranet, as well as quarterly procurement forums targeted at all staff who make purchasing decisions in the organization.

CalSTRS Procurement works with all business areas within the organization on EPP language for the various contracts needed for operation. Additionally, CalSTRS Procurement has a dedicated EPP staff member.

SABRC reporting is built into the SAP purchasing system. All purchasing is tracked by Procurement Management and the facilities environmental coordinator and reported to management.

Planning Narrative on EPP Training and Education

CalSTRS will use the next year to identify all staff that are part of the procurement process, including but not limited to buyers, requisitioners, coordinators, data specialists, supervisors, (program, project, unit) managers, and executives. Identified staff will be encouraged to complete EPP training through CalPCA with the goal of 100% participation.

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

Reporting on SABRC Progress

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

Product Category	SABRC Reportable Dollars	SABRC Compliant Dollars	% SABRC Compliant
Antifreeze	$0	$0	0%
Carpet	$0	$0	0%
Compost and Mulch	$0	$0	0%
Glass Products	$0	$0	0%
Erosion Control Products:	$0	$0	0%
Lubricating Oils	$0	$0	0%
Paint	$0	$0	0%
Paper Products	$39,339	$38,374	98%

Product Category	SABRC Reportable Dollars	SABRC Compliant Dollars	% SABRC Compliant
Pavement Surfacing	$0	$0	0%
Plastic Products	$88,603	$76,717	87%
Printing and Writing Paper	$389,697	$80,076	21%
Metal Products	$2,492	$397	16%
Soil Amendments and Soil Toppings	$0	$0	0%
Textiles	$0	$0	0%
Tire Derived Products	$0	$0	0%
Tires	$0	$0	0%

Planning Narrative for Measure and Report SABRC Progress

As mentioned earlier in this chapter, CalSTRS is still short of the 75% post-consumer recycled content requirement in the categories of printing and writing paper and metal products. Our goal every year is to meet the 75% requirement We will continue to print CalSTRS member communications on minimum 30% post-consumer recycled content paper whenever it is fiscally responsible to do so. However, our printing budget does not cover the cost of printing all member communications on 30% post-consumer recycled content paper, which has a substantially higher cost. At a minimum all publications include 10% post-consumer recycled content and FCS certified paper stock. As we reduce our overall print communications, it may be possible to increase the print jobs that meet the minimum recycled content requirement, thus increasing our SABRC compliance percentage.

For metal compliance, continued education of all buyers and those employees making purchasing decisions within the organization will be the key to meeting the 75% requirement. Because most of the metal products we purchase are office products that are made of steel, we should have no trouble meeting the minimum requirement as all steel products meet the postconsumer mandates for the metal category, per the steel industry. The challenge will be in accurate reporting. We will educate shopping cart requestors through quarterly

procurement forums and all buyers will take the Environmentally Preferable Purchasing training offered through the California Procurement and Contracting Academy.

Reducing Impacts

Reporting Narrative for Reducing Impacts

CalSTRS is committed to reducing the environmental impact of the goods and services that are purchased, since procuring EPP containing post-consumer recycled content and minimizing waste can have a positive impact on the environment.

CalSTRS strives to meet requirements from both the State Agency Buy Recycled Campaign (SABRC) as well as LEED Purchasing. While SABRC focuses on making purchases with a minimum post-consumer recycled content in 16 reportable categories, LEED Purchasing has a wider scope which includes post-consumer recycled content as well as purchasing extended use items, sustainable agriculture, local sourcing of food and beverages, bio-based materials and Forest Stewardship Council certified paper and wood products. Following these requirements, when possible, lessens impacts to public health, natural resources, economy and environment.

Service contracts are written to include information about CalSTRS' EPP requirements. Contractors are also provided with a Sustainable Purchasing Guidelines and Reporting Procedures document to help guide them.

All purchases will continue to be tracked and analyzed to see if they meet the current Department of General Services purchasing standards and specifications available from the DGS Buying Green website. Any purchases that do not meet purchasing standards will be identified and an action plan will be created to meet minimum requirements.

Location Efficiency

Smart Location Score for New Leases after January 1, 2020

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

Facility name	Smart Location Calculator Score
Lease 1	No new leases
Lease 2	

Lease 3	
Average	
Baseline	
% change from Baseline	

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

No new leases.

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

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

Facility name	Smart Location Calculator Score
Lease 1	No leased buildings
Lease 2	
Lease 3	

CHAPTER 6 – FUNDING OPPORTUNITIES

Funding Opportunity Climate Change Adaptation

Table 6.1: Climate Change Priority Projects

Building Name	Project	Funding Source	Est. Begin Date	Est. Completion Date
No priorities				

Funding Opportunities for ZEVs and EV Infrastructure

Table 6.2: EV Priority Projects

Building Name	Project	Funding Source	Est. Begin Date	Est. Completion Date
No priorities				

Funding Opportunities for Building Energy Conservation and Efficiency

Table 6.3: Building Energy Conservation and Efficiency Priority Projects

Building Name	Project	Funding Source	Est. Begin Date	Est. Completion Date
No priorities				

Funding Opportunities for Water Conservation and Efficiency

Table 6.4: Water Conservation and Efficiency Priority Projects

Building Name	Project	Funding Source	Est. Begin Date	Est. Completion Date
No priorities				

Funding Opportunities for Sustainable Operations

Table 6.5: Sustainable Operations Priorities

Building Name	Project	Funding Source	Est. Begin Date	Est. Completion Date
No priorities				
	Need Special Equipment			
	Need Staff Training			
	Need Signage			
	Need Department Wide Outreach			

Full Life Cycle Cost Accounting

Reporting on Life Cycle Cost Accounting

No infrastructure investments.

Planning for Implementing Life Cycle Cost Accounting

No infrastructure investments.

APPENDIX A – SUSTAINABILITY LEADERSHIP

CalSTRS Enterprise Sustainability	
Chief Executive Officer Cassandra Lichnock	
Chief Operating Officer Lisa Blatnick	
Chief Administrative Officer Melissa Norcia	
Director Jeff Isham	Director Vaishali Dwarka
Facilities Operations Manager Christopher Porter	Manager Noelle Ploof
Facilities Environmental Coordinator Heather Conway	Enterprise Sustainability Manager Ronda Lenci

Appendix B – Sustainability Milestones and Timeline

2012:

- **Executive order B-18-12 and B-16-12 issued.**
- **New and renovated buildings to exceed Title 24 by 15%**

2013:

- **Buildings less than 10,000 square feet meet CalGreen Tier 1.**
- **Begin water use benchmarking from a 2010 baseline.**

2015:

- **LEED certification for all existing buildings greater than 50,000 square feet.**
- **Reduce water use by 10%**
- **10% of fleet light duty vehicle purchases to be zero emissions vehicles.**

2016:

- **Reduce water use 25% from 2013 to February 28, 2016.**

2017:

- **100% of new and renovated buildings to be zero net energy beginning design after October 2017.**

2018:

- **20% energy use reduction using a 2003 baseline.**

2020:

- **Reduce water use by 20%.**
- **25% of fleet light duty vehicle purchases to be zero emissions vehicles.**

2025:

- **50% of existing buildings to be zero net energy.**

2035:

- **Zero emissions from State operations.**

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)
CALSTRS	California State Teachers' Retirement System
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
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
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 – 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 – 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 – the water discharged to remove high mineral content system water, impurities, and sediment.

Best management practices (BMP) – ongoing actions that establish and maintain building water use efficiency. BMP can be continuously updated based on need and tailored to fit the facility depending on occupancy and specific operations.

Compost – 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) – 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 – 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% or more of a lawn's yearly nitrogen requirements

Heating degree day (HDD) – 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 – 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) – a method of estimating irrigation needs of landscape plantings in California. It is intended as a guide for landscape professionals.

Landscape water budget – 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

Makeup water – 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 – a layer of material applied on top of soil. Examples of material that can be used as mulch include wood chips, grass clippings, leaves, straw, cardboard, newspaper, rocks, and even shredded tires. Benefits of applying mulch include reducing erosion and weeds and increasing water retention and soil vitality. Whenever possible, look for mulch that has been through a sanitization process to kill weed seeds and pests.

Natural infrastructure – "using natural ecological systems or processes to reduce vulnerability to climate change related hazards, or other related climate change effects, while increasing the long-term adaptive capacity of coastal and inland areas by perpetuating or restoring ecosystem services. This includes, but is not limited to, the conservation, preservation, or sustainable management of any form of aquatic or terrestrial vegetated open space, such as beaches, dunes, tidal marshes, reefs, seagrass, aquifers, parks, rain gardens, and urban tree canopies. It also includes systems and practices that use or mimic natural processes, such as permeable pavements, bioswales, and other engineered systems, such as levees that are combined with restored natural systems, to provide clean water, conserve ecosystem values and functions, and provide a wide array of benefits to people and wildlife." per Public Resource Code Section 71154(c)(3).

Nonpurchased water – water that a department uses that does not come from a 3rd party supplier. It may be water from domestic wells owned by the department or water that is taken from a river, lake, canal or other source and used by the department. The water may be returned to source after use.

Trickle flow – a device that allows users to reduce flow to a trickle while using soap and shampoo. When the device is switched off, the flow is reinstated with the temperature and pressure resumes to previous settings.

Sprinkler system backflow prevention devices – 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 – areas with localized spikes in temperature, which impact human health, increase pollution, and increase energy demand. Urban heat islands occur during the hot summer months in areas with higher percentages of impervious surface and less vegetation. This is likely in areas with large parking lots, dense development, and lower tree density and shading. Urban heat islands can be mitigated (i.e., reduced) through

tree planting and other greening measures, cool roofs (e.g., lighter roofing materials that reflect light), cooler pavements, and other measures.

Water budget – a landscape water budget is the calculated irrigation requirement of a landscape based on landscape area, local climate factors, specific plant requirements and the irrigation system performance.

Water-energy nexus – water and energy are often managed separately despite the important links between the two. 12% of California's energy use is related to water use. Water is used in the production of nearly every major energy source. Likewise, energy is used in multiple ways and at multiple steps in water delivery and treatment systems as well as wastewater collection and treatment.

Water shortage contingency plans – each urban water purveyor serving more than 3,000 connections or 3,000 acre-feet of water annually must have an urban water shortage contingency plan (water shortage plan) which details how a community would react to a reduction in water supply of up to 50% for droughts lasting up to three years.

WUCOLS (Water Use Classification of Landscape Species) – used to help determine water budgets and irrigation schedules. Use this link to access the necessary information for your landscaping needs. WUCOLS Plant Search Database (ucdavis.edu)

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
Facilities Operations **Facilities environmental coordinator – Heather Conway**

Understanding Climate Risk at Planned Facilities
Facilities Operations **Facilities operations manager – Christopher Porter; facilities environmental coordinator – Heather Conway**

Integrating Climate Change into Department Planning and Funding Programs
Facilities Operations **Facilities operations manager – Christopher Porter; facilities environmental coordinator – Heather Conway**

Measuring and Tracking Progress
Facilities Operations **Facilities environmental coordinator – Heather Conway**

Zero-Emission Vehicles

Incorporating ZEVs Into the Department Fleet
Business Services; Facilities Operations **Business services analyst – Cheehlu Xiong; facilities environmental coordinator – Heather Conway**

Telematics
Business Services **Business services manager – Tosha Bernatene**

Outside Funding Sources for ZEV Infrastructure
Facilities Operations **Facilities environmental coordinator – Heather Conway**

Comprehensive Facility Site and Infrastructure Assessments
Facilities Operations **Facilities environmental coordinator – Heather Conway**

EVSE Construction Plan
Facilities Operations **Facilities transportation coordinator – Gabriel Gandara**

EVSE Operation
Facilities Operations **Facilities transportation coordinator – Gabriel Gandara**

Energy

Zero Net Energy (ZNE)
Facilities Operations **Facilities environmental coordinator – Heather Conway**

New Construction Exceeds Title 24 by 15%
Facilities Operations **Facilities environmental coordinator – Heather Conway**

Reduce Grid-Based Energy Purchased by 20% by 2018
Facilities Operations **Facilities environmental coordinator – Heather Conway**

Server Room Energy Use
Facilities Operations **Facilities environmental coordinator – Heather Conway**

Demand Response
Facilities Operations **Facilities environmental coordinator – Heather Conway**

Renewable Energy
Facilities Operations **Facilities environmental coordinator – Heather Conway**

Monitoring-Based Commissioning (MBCx)
Facilities Operations **Facilities environmental coordinator – Heather Conway**

Financing
Facilities Operations **Facilities environmental coordinator – Heather Conway**

Water Efficiency and Conservation

Indoor Water Efficiency Projects in Progress First initiative
Facilities Operations **Facilities environmental coordinator – Heather Conway**

Boilers and Cooling Systems Projects in Progress
Facilities Operations **Facilities environmental coordinator – Heather Conway**

Landscaping Hardware Water Efficiency Projects in Progress
Facilities Operations

Facilities environmental coordinator – Heather Conway

Living Landscaping Water Efficiency Projects in Progress
Facilities Operations **Facilities environmental coordinator – Heather Conway**

Buildings with Urban Water Shortage Contingency Plans in Progress
Facilities Operations **Facilities environmental coordinator – Heather Conway**

Green Operations

Greenhouse Gas Emissions
Facilities Operations **Facilities environmental coordinator – Heather Conway**

Building Design and Construction
Facilities Operations **Facilities environmental coordinator – Heather Conway**

LEED for Existing Buildings Operations and Maintenance
Facilities Operations **Facilities environmental coordinator – Heather Conway**

Indoor Environmental Quality
Facilities Operations **Facilities environmental coordinator – Heather Conway**

Integrated Pest Management
Facilities Operations **Facilities environmental coordinator – Heather Conway**

Waste Management and Recycling
Facilities Operations **Facilities environmental coordinator – Heather Conway**

Environmentally Preferable Purchasing
Facilities Operations **Facilities environmental coordinator – Heather Conway**

Location Efficiency
Facilities Operations **Facilities environmental coordinator – Heather Conway**

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% with ZEVs, and by 2020 to ensure at least 25% 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% 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% below 1990 levels by 2030 and reaffirms California's intent to reduce GHG emissions to 80% 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 and Management Memos

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

- **SAM Chapter 1800**: Energy and Sustainability
- **MM14-02:** Water Efficiency and Conservation
- **MM 14-05**: 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
- **MM 15-04**: Energy Use Reduction for New, Existing, and Leased Buildings
- **MM 15-06**: State Buildings and Grounds Maintenance and Operation
- **MM 15-07**: Diesel, Biodiesel, and Renewable Hydrocarbon Diesel Bulk Fuel Purchases
- **MM 16-07**: Zero-Emission Vehicle Purchasing and Electric Vehicle Supply Equipment 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:

- **AB 1482** (Gordon, 2015): Requires that the California Natural Resources Agency (CNRA) update the state's adaptation strategy safeguarding California every three years. Directs state agencies to promote climate adaptation in planning decisions and ensure that state investments consider climate change impacts, as well as the use of natural systems and natural infrastructure. (Public Resources Code Section 71153)
- **SB 246** (Wieckowski, 2015): Established the Integrated Climate Adaptation and Resiliency Program within the Governor's Office of Planning and Research to coordinate regional and local efforts with state climate adaptation strategies to adapt to the impacts of climate change. (Public Resources Code Section 71354)
- **AB 2800** (Quirk, 2016): Requires state agencies to take the current and future impacts of climate change into planning, designing, building, operating, maintaining and investing in state infrastructure. CNRA will establish a Climate-Safe Infrastructure Working Group to determine how to integrate climate change impacts into state infrastructure engineering. (Public Resources Code Section 71155)

Other Legislative Actions

- **AB 4**: Passed in 1989. The State Agency Buy Recycled Campaign (SABRC) statutes are in Public Contract Code Section 12153-12217. The intent of SABRC is to stimulate markets for materials diverted by California local government and agencies. It requires state agencies to purchase enough recycled-content products to meet annual targets, report on purchases of recycled and nonrecycled products, and submit plans for meeting the annual goals for purchasing recycled-content products.

- **AB 32 Scoping Plan**: The scoping plan assumes widespread electrification of the transportation sector as a critical component of every scenario that leads to the mandated 40% reduction in GHG by 2030 and 80% reduction by 2015.

- **AB 2583** (Blumenfield 2012) **Public Resources Code §25722.8**: Statute requires reducing consumption of petroleum products by the state fleet compared to a 2003 baseline. Mandates a 10% reduction or displacement by Jan. 1, 2012, and a 20% reduction or displacement by Jan. 1, 2020.

- **AB 75** – Implement an integrated waste management program and achieve 50% disposal reduction target. State Agencies report annually on waste management program.

- **SB 1106** – Have at least one designated waste management coordinator. Report annually on how your designated waste and recycling coordinator meets the requirement.

- **AB 2812** - Provide adequate receptacles, signage, education, staffing, and arrange for recycling services. Report annually on how each of these is being implemented.

- **AB 341** – Implement mandatory commercial recycling program (if meet threshold). Report annually on recycling program.

- **AB 1826** – Implement mandatory commercial organics recycling program (if meet threshold). Report annually on organics recycling program.

- **SB 1383** – 50% reduction in the level of the statewide disposal of organic waste from the 2014 level by 2020, a 75% reduction by 2025, and 20% 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.

- **SB 1335** - 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% of state-owned parking spaces by 2022. It also advances the ZEV procurement target to 50% 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:

- **Safeguarding California**: The state's climate adaptation strategy organized by sector. Each sector identifies risks from climate change and actions to reduce those risks.
- **Safeguarding California Implementation Action Plans**: Directed under EO B-30-15, the Implementation Action Plans outline the steps that will be taken in each sector to reduce risks from climate change.
- **Planning and Investing for a Resilient California**: Prepared under direction of EO B-30-15, this document provides a framework for state agencies to integrate climate change into planning and investment, including guidance on data selection and analytical approach.
- **California's Climate Change Assessments**: California has completed three comprehensive assessments of climate change impacts on California. Each assessment has included development of projections of climate impacts on a scale that is relevant to state planning (i.e., downscaled climate projections). These data are available through **Cal-Adapt**, an online data visualization and access tool.
- **Water Use Reduction Guidelines and Criteria**: Issued by the California Department of Water Resources February 28, 2013, pursuant to Executive Order B-18-12. Each applicable agency was required to take actions to reduce water use in facilities and landscapes that are operated by the state, including owned, funded, or leased facilities. State-operated facilities are defined as facilities where the agency has direct control of the buildings' function, maintenance, and repair. For leased facilities, the Green Building Action Plan directed at that time that new and renegotiated leases include provisions for water conservation, reporting water use, and installation of sub-meters to the extent possible and economically feasible.
- **Strategic Growth Council (SGC) Resolution on Location Efficiency:** Location efficiency refers to the greenhouse gas emissions arising from the transportation choices of employees and visitors to a building as determined by the Smart Location Calculator. Adopted on December 6, 2016, the resolution directs members of the SGC to achieve a 10% – improvement in the Smart Location Score of new leases compared to the average score of leased facilities in 2016.

APPENDIX G – LIST OF TABLES AND GRAPHS