Sustainability Roadmap 2022-2023 Department of State Hospitals

Sustainability Master Plan
and Biannual Progress Report on Legislative Sustainability Mandates and the Governor's Sustainability Goals for California State Agencies
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DEPARTMENT OF STATE HOSPITALS ROADMAP

Sustainability Road Map 2022-2023
Department of State Hospitals

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EXECUTIVE SUMMARY

The Department of State Hospitals (DSH) is pleased to present the Department's "2022-2023 Sustainability Roadmap" which describes the Department's actions in meeting the objectives of Executive Orders (EOs) B-29-15, B-18-12, and B-30-15 during calendar year 2021, and the actions DSH is taking to continuously lessen environmental impacts and achieve operational excellence.

DSH manages the nation's largest inpatient forensic mental health hospital system. Its mission is to provide evaluation and treatment in a safe and responsible manner, by leading innovation and excellence across a continuum of care and settings. DSH oversees five state hospitals and employs nearly 13,000 employees.

- DSH-Atascadero opened in 1954 and resides on California's Central Coast in San Luis Obispo County.
- DSH-Coalinga opened in 2005 and is in Fresno County.
- DSH-Metropolitan opened in 1965 and is in the city of Norwalk in Los Angeles County.
- DSH-Napa, which opened in 1875, resides in Napa County.
- DSH-Patton facility opened in 1893 and is in San Bernardino County.

The five state hospitals collectively encompass 474 buildings, comprising of more than 6.6 million gross square feet of space on 2,600 acres of land. Much of the DSH infrastructure is more than 60 years old and maintenance programs address the servicing, repairs, and upgrades required to sustain critical building systems, structures, and grounds.

DSH has made capital improvements to its aging buildings over time including seismic retrofits, security improvements, fire-life-safety upgrades, infrastructure replacement, energy savings retrofits, solar photovoltaic (PV) system installations, and a limited number of new construction projects.

Climate adaptation is a crucial component to DSH's Sustainability Roadmap and DSH has embarked on several initiatives to improve the environment such as implementing energy efficiency measures campus-wide by replacing older existing roofs with new cool roofs while implementing the Statewide Water Management Plans containing control measures to maintain water resources during critical events. Additionally, DSH must plan for the impacts of drastic swings in precipitation and prolonged fire seasons. Projects focused on climate adaption, such as Energy Savings Company (ESCO) energy retrofits, the installation of new Heating, Ventilation, and Air Conditioning (HVAC) equipment

works towards maintaining a safe environment for patients and increases air quality through more efficient air handling and filtration.

Incorporating Zero Emission Vehicle (ZEV) into the State Fleet is at the forefront of the state's goal of decreasing greenhouse gas and reducing its carbon footprint. To meet these goals, DSH is continuously working to transition from traditional gasoline vehicles to ZEVs. The DSH Fleet Acquisition Plan (FAP) earmarks the replacement of a multitude of light, medium and heavy-duty vehicles with ZEV vehicles. DSH currently has 19 light and 3 medium ZEVs in service and has requested 6 heavy-duty ZEVs in the 2023-24 FAP including one of California's first electric refuge truck.

Efficiency measures such as the successful installation of telematics aimed at maximizing the use of the remaining combustible engine, and electric vehicles by monitoring and tracking usage including identifying vehicle trends will help the life expectancy and lower overall costs of maintenance for wear and tear. Additionally, DSH will continue to upgrade the infrastructure by installing electric vehicle charging stations hospital wide to assist in determining how best to position ZEVs in its fleet aligning with current Executive Orders and mandates.

DSH has implemented energy efficiency equipment installations and projects to reduce plug load and energy consumption at all five hospitals. Purchasing of Grid-based energy reduction was achieved through the installation of three Photovoltaic Plants (PVs), LEDs lighting upgrades, and modernization of HVAC equipment in several buildings across the hospitals. DSH has achieved measurable savings in energy use by applying conservation procedures and replacing antiquated HVAC equipment.

Although record setting levels of precipitation in the 2022-23 winter greatly helped California's waterways and reservoirs recover from the significant drought periods of the last decade, DSH continues to focus on water use reduction. For example, the DSH-Atascadero Sewer and Wastewater Treatment Plant project will redirect wastewater to the City of Atascadero's treatment plant for processing and reclamation versus the current evaporative process.

While DSH has made many strides in advancing its sustainability initiatives, several factors challenge the Department's ability to achieve optimum energy efficiency and sustainability goals. These challenges include:

- Aging buildings and infrastructure systems
- Historically significant buildings and/or districts
- Clinical/treatment best practices require modern and ligature-free facilities
- Resource constraints & prioritization of critical fire/life or health/safety projects

Despite these and other challenges, DSH has reduced energy consumption since 2010 and has implemented renewable energy efforts, including on-site solar PV plants generating 4.4 megawatts (MW) of power and future planned installation of solar PV projects with battery storage. DSH is proactively investigating measures to mitigate the impacts of climate change at all locations.

DSH is continuously integrating sustainability requirements into scope development used for deferred maintenance repairs, new facilities planning, and renovation projects for existing buildings. DSH has made progress towards achieving the requirements of the Executive Orders referenced in this document and continues to be committed to achieving the Governor's sustainability goals. Unless otherwise noted, this report outlines DSH's efforts achieved through December 2021 and planned through 2023.

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CHAPTER 1 - CLIMATE CHANGE

Department Mission and Climate Change Adaptation

The Department of State Hospitals (DSH) recognizes the importance of integrating varied plans and approaches to mitigate its impact on the environment and an ever-changing climate. The Department currently has major projects in progress targeting reductions of energy and water use, and greenhouse gas emissions at all five hospitals. DSH continues to develop its Infrastructure Master Plan (IMP) with the focus to expand and modernize the structures of the facilities to support its patient population and the care and treatment provided.

Additionally, increased ambient temperatures can negatively impact patients and exacerbate their medical conditions. For example, many patients are prescribed psychotropic medications which inhibit the body's ability to regulate its own temperature making patients potentially subject to serious side effects like heat-stroke. Health facilities treating patients with psychotropic drugs are required, by law, to maintain consistent interior building temperatures between 78–80 degrees Fahrenheit. Increased temperatures can also negatively affect treatment plans that include outdoor activities. To mitigate the risk of this and other implications, DSH is implementing several energy retrofits projects to all hospitals. These projects include but are not limit to replacements of boiler equipment, HVAC and chillers, shade structures, and the building automation system (BAS).

Climate Change Risks to Facilities

Climate Change Risk Process:

Under a changing climate, temperatures are expected to increase. As a result, facilities will experience higher maximum temperatures and increased minimum temperatures. DSH plans to perform climate risk assessments at all five hospitals to develop policies to address impacts to its buildings as well as maintenance and operations.

DSH goals for 2022-2023 were aimed to continuously improved the cooling and power reliability at all facilities and reduce the impact of seasonal heat waves by:

- Implementing energy efficiency measures campus-wide by replacing older existing roofs with new cool roofs.

- Implementing the Statewide Water Management Plan which contains control measures to maintain water resources during critical events.
- Developing the IMP to evaluate each of the five campuses, including utility infrastructure and generator capacity.
- Installing solar canopies at one or more locations on each campus.
- Replacing outdated evaporating cooling systems with energy efficient HVAC units.
- Implementing microgrids and other distributed energy resources that can improve reliability and resilience to the facilities.

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 avg. # of days above EHT (2031-2060)	Avg. # days above EHT (2070-2099)	Change from historical to projected average # of days above EHT (2070-2099)
DSH-A	93.7	4.4	22.1	17.6	46.4	41.9
DSH-C	105.6	4.4	28.5	24.1	57.2	52.8
DSH-M	98.3	4.5	11.6	7.1	26.5	22.0
DSH-N	99.1	4.4	12.3	7.8	22.2	17.8
DSH-P	102.4	4.4	28.7	24.3	50.7	46.2

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)
DSH-A	71.2	75.7	4.5	79.1	7.9
DSH-C	77.8	82.5	4.8	86.2	8.4
DSH-M	76.0	80.4	4.4	84.0	8.0
DSH-N	71.9	75.9	4.0	79.4	7.5
DSH-P	76.4	81.8	5.4	85.4	9.1

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)
DSH-A	42.7	46.8	4.1	50.2	7.5
DSH-C	49.4	53.8	4.3	57.4	8.0
DSH-M	54.4	58.6	4.2	62.4	8.0
DSH-N	45.9	49.9	4.0	53.6	7.7
DSH-P	48.8	54.0	5.3	58.2	9.4

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
DSH-A	3218.0	2095.7	N/A	1537.4	-1680.6
DSH-C	2426.3	1608.4	N/A	1178.8	-1247.5
DSH-M	1187.8	540.6	N/A	273.3	-914.6
DSH-N	2730.1	1849.1	N/A	1344.6	-1385.4
DSH-P	2255.2	1288.5	N/A	839.2	-1416.0

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
DSH-A	278.3	880.3	602.1	1408.5	1130.2
DSH-C	1915.1	2945.4	1030.4	3669.1	1754.0
DSH-M	1268.6	2392.2	1123.5	3266.5	1997.8
DSH-N	504.3	1250.2	745.9	1894.0	1389.6
DSH-P	1370.1	2562.7	1192.6	3330.4	1960.3

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 (i.e., a proxy for when heat would be needed). Similarly, a Cooling Degree Day (CDD) is defined as the number of degrees by which a daily average temperature exceeds a reference temperature.

As DSH facilities provide patient care 24 hours per day, 7 days per week, 365 days a year, maintaining adequate power to keep all systems operating safely and continuously is a high priority. During extreme heat events, employee workload will increase as more scrutiny is placed on maintaining indoor temperatures at or below the mandated maximums. Medications must be stored at room temperature (approximately 78-80 degrees Fahrenheit), food should be kept cool when stored and warm during serving, patient and employee outdoor activities will also need to be planned accordingly if extreme weather is expected or occurring. This increases workload and reduces the margin of error as it poses greater risks to the health and safety of our patient and employee population.

On older campuses, like DSH-Napa, some buildings have outdated and inefficient HVAC systems, leading to uncomfortable indoor temperatures during warmer days or months. If a system fails, or is unable to keep pace, the indoor temperatures will increase and may lead to an unsafe environment for employee and patients.

DSH-Coalinga and DSH-Patton have the highest expected annual mean temperature. DSH-Patton is most vulnerable to temperature change because of its Urban Heat Island (UHI). As open land and vegetation is replaced with buildings, roads, and other infrastructure, the formation of urban heat islands occurs where urban regions experience warmer temperatures than the adjacent rural surroundings.

Plan to Mitigate HDD and CDD

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

Facility Name	2030
DSH-A	SEE NARRATIVES BELOW
DSH-C	SEE NARRATIVES BELOW
DSH-M	SEE NARRATIVES BELOW
DSH-N	SEE NARRATIVES BELOW
DSH-P	SEE NARRATIVES BELOW

Planning Narrative to Mitigate HDD and CDD

DSH plans to employ the following infrastructure solutions at each facility to mitigate and protect the health and safety of all employee and patients:

- Energy efficiency measures campus-wide by replacing older existing roofs with new cool roofs.

- Development of the IMP to evaluate each of the five campuses, including utility infrastructure and generator capacity.
- Install statewide solar canopies and battery storages to help with energy load and usage during peak hours.
- Replace outdated evaporating cooling systems with energy efficient HVAC units.
- Participate in Demand Response Energy programs to help with electrical load to the grid.

Several points listed above are in planning or development stages at one or more hospitals. For example, there are Solar and ESCO projects at all five hospitals to address the HVAC and energy efficiency issues. Multiple roof, HVAC, and air handler replacement projects are in the design or construction phase, and the IMP is nearing completion.

Aside from infrastructure implementation, the hospitals also have heat and emergency operation plans (EOP) to mitigate and educate employees on how to respond to the risk of heat, wildfires and other disasters. There are procedures in place to help identify hospital's risks, informs employees of what to do in the event of an emergency, covers risk prevention, what to do in case of an emergency and who needs to be notified.

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.
DSH-A	No	NO DATA
DSH-C	Yes	NO DATA
DSH-M	Yes	NO DATA
DSH-N	No	NO DATA
DSH-P	Yes	NO DATA

Reporting Narrative on Urban Heat islands

Urban Heat Islands (UHI) are areas with localized spikes in temperature. These often lead to increased pollution, energy demand, and can have negative impacts on human health. UHIs occur during the hot summer months in areas with higher percentages of impervious surface and less vegetation. Largely focused in areas with large parking lots, and dense development with lower tree density and shading. UHI scan 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.

Planning Outline for Urban Heat Islands Mitigation:

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

Facility Name	Mitigation or Plan	Est. Implementation Date
DSH-A	ESCO, SOLAR, EVS, IMP	ONGOING
DSH-C	ESCO, SOLAR, EVS, IMP	ONGOING
DSH-M	ESCO, SOLAR, EVS, IMP	ONGOING
DSH-N	ESCO, SOLAR, EVS, IMP	ONGOING
DSH-P	ESCO, SOLAR, EVS, IMP	ONGOING

Planning Narrative for Urban Heat Islands Mitigation

DSH-Coalinga, Metropolitan and Patton, the three hospitals in an urban heat island, have several projects in the design or construction stage with the aim of reducing high-heat impacts to patients and operations.

DSH-Coalinga has completed the installation of a solar project and is actively working with the Department of General Services (DGS) Sustainability Team to install solar canopies at one of the parking lots on site. There are also plans to install battery storages to maximize energy savings. These two projects will help store energy during peak hours and offload energy during non-peak hours. The solar portion of this project is aimed to be completed by April 2026.

DSH-Metropolitan has multiple shade structure projects at several patient care or housing buildings. This helps provide shade to outdoor areas deflecting heat absorption from sunlight and will provide cooler surroundings. The hospital is also developing a green space or employee park area to be fully landscaped. More plants and vegetation will help lower surface and air temperatures by providing shade and cooling through evapotranspiration.

DSH-Patton also has several efforts to minimize heat absorption. They have recently finished the installation of a cool roof on the EB building with several other designs in progress to add cool roofs to other buildings. A cool roof is designed to reflect more sunlight than a conventional roof; therefore, will absorb less solar energy and help lower the temperature of the building.

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)
DSH-A	23.6	27.4	0.2	30.0	0.3	6.9	6.9	9.3
DSH-C	6.8	7.5	0.1	8.4	0.2	2.1	2.2	2.7
DSH-M	13.7	14.8	0.1	16.3	0.2	4.6	5.0	6.2
DSH-N	23.6	27.8	0.2	31.0	0.3	6.0	5.3	7.1
DSH-P	19.3	20.0	0.0	21.4	0.1	6.3	6.7	8.0

Reporting Narrative on Precipitation Impacts

Changes in seasonal precipitation patterns affected by a changing climate, as shown in Table 1.5, will likely cause dramatic weather shifts, such as unexpected rainfalls and heat rises which will increase the risk of droughts and/ or floods. This will also cause deterioration of building structures due to the age and inefficiency of buildings and systems. The condition of some the Department's older buildings will likely not be able to withstand floods or higher magnitude rainfalls without incurring damage or degradation. More than a few of these older buildings are closed and contain hazardous materials like lead paint and asbestos. The hospitals also have server rooms, electrical distribution, and mechanical equipment that are vulnerable to damage by water intrusion. Across the campuses, a significant portion of utilities - water, sewer, gas, chilled water and steam distribution - are constructed underground and services may be impacted and/or inaccessible due to flooding.

Planning Outline to Mitigate Precipitation Changes

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

Facility Name	Extreme Precip (2030) Plan or strategy
DSH-A	INFRASTRUCTURE MASTER PLAN (IMP)
DSH-C	INFRASTRUCTURE MASTER PLAN (IMP)
DSH-M	INFRASTRUCTURE MASTER PLAN (IMP)
DSH-N	INFRASTRUCTURE MASTER PLAN (IMP)
DSH-P	INFRASTRUCTURE MASTER PLAN (IMP)

Planning Narrative on Precipitation Changes Mitigation Plan

With exception to DSH-Coalinga, most hospital infrastructures are greater than 60 years old. DSH is working to implement several projects to mitigate the risk of high precipitation events, and these include additions or modifications to storm drainages to divert rainwater to open areas or landscaped areas. The Infrastructure Master Plan (IMP) will also provide an analysis of existing conditions for utilities, roads, and buildings. It will evaluate options to safeguard all server rooms and electrical/mechanical services at all facilities by providing increased flood mitigation measures and relocating critical utilities from below-grade and ground floor locations, where possible. Modifying the existing infrastructures to comply with code will also be analyzed. Historical buildings on site will be more challenging to renovate, but these factors will be further researched so the IMP can provide a plan for improvements in reliability, building replacement, and durability over the existing conditions.

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)
DSH-A	N/A	N/A	N/A	N/A	N/A
DSH-C	N/A	N/A	N/A	N/A	N/A
DSH-M	N/A	N/A	N/A	N/A	N/A
DSH-N	N/A	N/A	N/A	N/A	N/A
DSH-P	N/A	N/A	N/A	N/A	N/A

Reporting Narrative on Sea Level Rise Impacts

No Facilities at Risk.

Planning Outline to Mitigate Sea Level Rise Impacts

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

Facility Name	Tide Chart Region	Plan 2030?
DSH-A	No Data	No Plan
DSH-C	No Data	No Plan
DSH-M	No Data	No Plan

DSH-N	No Data	No Plan
DSH-P	No Data	No Plan

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)
DSH-A	Medium
DSH-C	Low
DSH-M	Low
DSH-N	High
DSH-P	High

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)
DSH-A	11.9	14.1	13.1
DSH-C	0.0	0.0	0.0
DSH-M	0.0	0.0	0.0
DSH-N	6.8	6.6	6.4
DSH-P	9.7	14.2	15.0

Reporting Narrative on Wildfire Risks

According to the National Interagency Fire Center, California is the most prone state in the US for the risk of wildfires. In August of 2020, the State suffered through one of the largest wildfires, burning nearly 319,935 acres, and displacing thousands of citizens. The table above shows an estimated projection of acres burned and acres that are at risk of burns in the future on or near DSH facilities.

Three of the five hospitals are in wildfire risk areas. Wildfires are uncontrollable, deadly, and pose a significant risk to our hospitals. Fire damage to buildings notwithstanding, wildfire smoke can be carried by wind and become a hazard for the hospital employee and patients. Unlike many state departments who occupy regular office buildings with only Business (B) occupancies, DSH also has Institutional (I) occupancies. This creates more risks especially during times of emergency or evacuations. In these situations, patients with critical health issues are most vulnerable.

Planning Outline to Mitigate Wildfire Risks

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

Facility Name	Plan 2023-2030
DSH-A	IMP, Emergency Operations Plan (EOP), Emergency Business Continuity Plan (EBCP)
DSH-C	IMP, Emergency Operations Plan (EOP), Emergency Business Continuity Plan (EBCP)
DSH-M	IMP, Emergency Operations Plan (EOP), Emergency Business Continuity Plan (EBCP)
DSH-N	IMP, Emergency Operations Plan (EOP), Emergency Business Continuity Plan (EBCP)
DSH-P	IMP, Emergency Operations Plan (EOP), Emergency Business Continuity Plan (EBCP)

Planning Narrative of Wildfire Risk Mitigation Plan

Table 1.8 shows DSH-Atascadero, Napa and Patton are at risks for wildfires, whereas Coalinga and Metropolitan are projected at zero. However, DSH has implemented actions and plans to help alleviate emergency like wildfires at all hospitals. Along with the IMP that will plan to increase building infrastructure and durability, DSH also has emergency operation plans like the EOP and EBCP. The EOP is a plan specifying the function during the mitigation, preparedness, response and recovery phases of a given emergency incident. The EBCP is a plan detailing the site-specific procedures defining how the hospitals will continue to operate during an emergency or recovery disaster.

Strategies implemented to combat the increased threat of wildfires and its impacts include removal of dead trees, clearing underbrush on a consistent basis and regular cleaning of HVAC systems. The Plant Operations employee also have warehouses where N-95 masks are stored and issued during high smoke pollution events. Both DSH-Atascadero and DSH-Napa, have substantial fire breaks separating the main facility from at-risk areas. Many hospital buildings and patient areas are constructed of concrete, brick or other non-flammable materials. Current and future projects like the IMP will also ensure the use of fire-resistant materials during repairs, retrofits, and new construction.

If faced with a catastrophic wildfire event, a campus may require evacuation and/or disconnection of utilities. For high risks facilities like Napa, there are evacuation plans and training in place for the hospitals to be prepared for such event. Even for low-risk hospitals, there are plans in place to assist other hospitals in case of emergencies. For example, DSH-Metropolitan, currently has two sites for patient evacuations. DSH-Metropolitan has provided care for patients from DSH-Patton during COVID-19 as an additional surge site and can continue in the event DSH-Patton is affected by wildfires.

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)
DSH-A	71	76	4	79	8
DSH-C	78	83	5	86	8
DSH-M	76	80	4	84	8
DSH-N	72	76	4	79	7
DSH-P	76	82	5	85	9

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)
DSH-A	43	47	4	50	8
DSH-C	49	54	4	57	8
DSH-M	54	59	4	62	8
DSH-N	46	50	4	54	8
DSH-P	49	54	5	58	9

b. Annual Mean Max. Precipitation

Facility Name	Annual Mean Maximum Precipitation (1961 – 1990) (in/yr.)	Annual Mean Precipitation (2031 – 2060) (in/yr.)	Extreme Precip (1961-1990) (in/day)	Extreme Precip (2031-2060) (in/day)
DSH-A	24	27	7	7
DSH-C	7	8	2	2
DSH-M	14	15	5	5
DSH-N	24	28	6	5
DSH-P	19	20	6	7

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
DSH-A	94	5	22	17

DSH-C	106	5	29	24
DSH-M	98	4	11	7
DSH-N	99	5	12	7
DSH-P	102	4	29	25

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
DSH-A	N/A	N/A	N/A	N/A	N/A
DSH-C	N/A	N/A	N/A	N/A	N/A
DSH-M	N/A	N/A	N/A	N/A	N/A
DSH-N	N/A	N/A	N/A	N/A	N/A
DSH-P	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)
DSH-A	Medium
DSH-C	Low
DSH-M	Low
DSH-N	High
DSH-P	Medium

f. Wildfire Risk by Acres Burned

Facility Name	Acres Burned (1961-1990)	Acres Burned (2031-2060)
DSH-A	12	14
DSH-C	0	0
DSH-M	0	0
DSH-N	7	7
DSH-P	10	14

g. Risk from HDDs/CDDs [1]

Facility Name	Heating/Cooling Degree Days (1961-1990) (HDD/CDD)	Heating/Cooling Degree Days (2031-2060) (HDD/CDD)
DSH-A	71	76
DSH-C	78	83
DSH-M	76	80
DSH-N	72	76
DSH-P	76	82

Planning Narrative for Understanding Climate Risks to Planned Facilities

The information from the tables above provides substantial insights to all five DSH facilities. From the data, changes in climate are expected to affect all five sites with some hospitals being more prone to risks than others. DSH continues to plan renovations and new builds to not only maximize the care of our patients and employee, but to also create a more sustainable and energy efficiency environment at all five hospitals.

The data above will assist DSH in planning operational and maintenance schedules, developing procedures and protocols for running HVAC systems, energy storage programs, and phased power shut-downs during Flex-Alerts. DSH's plan to incorporate renewable energy sources and energy storage will also help the hospitals remain operational during extreme weather events or periods of peak demand.

All plans and actions taken must first consider the health and safety of the patients, and with the type I occupancy, the code requirements for hospitals are far more stringent than residential or commercial. There are also historical buildings that may prevent and/or make it harder for the Department to reach zero net energy or LEED. These are some hurdles that the Department will have to cross to plan for success in mitigating the effects of a changing climate.

1 Climate data can be found at the Environmental Protection Agency (EPA) website from the interactive map ArcGIS - Heat Waves and Climate Change Indicators: Heat Waves | US EPA

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
DSH-A	N/A	No
DSH-C	75	No
DSH-M	N/A	Yes
DSH-N	N/A	No
DSH-P	N/A	No

Planning Narrative for Facilities in Disadvantaged Communities

According to the above chart and from CalEnviroScreen, DSH-Metropolitan is the only hospital that resides in a disadvantaged area. Given the facility's central location within the city of Norwalk, it is a significant source of employment for local and surrounding communities. However, health services and/or other social services are not provided to the local community as DSH is mandated to only serve patients committed to DSH's inpatient mental health hospital system. DSH-Metropolitan has developed mutual aid agreements with local city and county partners to aid under specified circumstances.

The Department's priority will continue to be the well-being of its patients and employee in an emergency/traumatic event or during disaster situations. DSH patients are housed in secured facilities. Mutual assistance and outreach following catastrophic events will be extended to the community, as conditions permit. DSH has limited resources which are directed to safeguard patients, employee, and facilities during and following a natural disaster or large-scale event.

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)
DSH-A	No	No (Heat Island index=0)
DSH-C	No	Yes (Heat Island index=730)
DSH-M	Yes	Yes (Heat Island index=9,197)
DSH-N	No	No (Heat Island index=352)
DSH-P	No	Yes (Heat Island index=38,575)

Integrating Climate Change into Department Funding Programs

Table 1.12: Integration of Climate Change into Department Planning

Plan Type	Have you integrated climate?	If no, when will it be integrated?
Five Year- Capital Outlay Plan	Yes	
Infrastructure Master Plan	Yes	
Statewide Water Management	Yes	
Prioritization Scoring Criteria	Yes	

Reporting Narrative for Integrating Climate Change into Department Planning Process

Adaptation strategies are integrated in the scope of each DSH's Capital Outlay renovation, alteration, special repair and betterment of existing structures, including scoring criteria used to prioritize deferred maintenance projects. The IMP also continues to develop with climate change in mind as it addresses the improvement of aging infrastructures that may be threatened by extreme weather events as well as considering sustainability goals. The Department also plans to participate in the Statewide Water Management program to improve its aging sewer systems that intense rainfall can overwhelm.

Climate change poses a risk to DSH's aging buildings and infrastructure. The cost associated with bringing all campus buildings and systems to the current code standards will likely not be feasible given the aging infrastructure and feasibility of implementing multiple projects at once. The IMP will provide a framework that will assist the Directorate, California Health and Human Services Agency, and the Department of Finance in determining the best course of action for DSH to take.

The California's Climate Adaptation Strategy outlines the priorities and

Measurable actions to ensure adaptions to climate changes. It elevates six key priorities that must drive all resilience actions in California:

- Strengthen Protections for Climate Vulnerable Communities
- Bolster Public Health and Safety to Protect Against Increasing Climate Risks
- Build a Climate Resilient Economy
- Accelerate Nature-Based Climate Solutions and Strengthen Climate Resilience of Natural Systems
- Make Decisions Based on the Best Available Climate Science
- Partner and Collaborate to Leverage Resources

The adaptation is mandated by Assembly Bill 1482. This will enable further coordination and integration approaches to building climate resiliencies throughout the facilities at DSH.

Planning Narrative for Integrating Climate Change into Department Planning Process

DSH is currently implementing, integrating, and planning for climate change at all five hospitals. All current and future projects will be planned and designed accordingly to mitigate climate change. The Plant Operation teams and the Facilities Planning and Construction Management team at DSH Sacramento will strive for all plans and projects of the department contribute to greener and more sustainable infrastructures.

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
DSH Sustainability Road Map	Yes	Yes	Yes
Five-year Capital Outlay Plan	Yes	Yes	Yes
Infrastructure Master Plan	Yes	Yes	Yes

Reporting Narrative for Community Engagement and Planning Processes

The Sustainability Roadmap, Five-year Capital Outlay, and IMP are anticipated to positively impact the vulnerable patient population at the hospitals and its surrounding areas. These plans focus on contribution to energy and natural infrastructure improvements of the hospitals, thus will help decrease air pollutions and increase green buildings. This will help improve safety and comfortability to DSH patients. These plans will need coordination with agencies like DGS, regulatory agencies (e.g., State Fire Marshal (SFM), Division of the State Architect (DSA), Department of Health Care Access and Information (HCAI), etc.), local utility companies, and DSH's contracted Architecture and Engineering firm, JC Chang, and Associates incorporation.

DSH-FPCM and the Plant Ops team for each hospital oversee construction projects in all phases. The team will also be responsible for the coordination and development of these plans with local and regional agencies, where applicable.

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 Department 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
Self-Generation Incentive Program (SGIP)	No	2024 (currently working with DGS and Forefront on battery	Yes	Yes

		storage projects)		
California Water Conservation Grant	No	Grant program on hold	N/A	Yes
California Energy Strategy and Support Program	No	**Working with AESC (Alternative Energy Systems Consulting, Inc.) and DGS for energy efficiency measures**	Yes	Yes
Community Microgrid program	No	Working with PG&E	Yes	Yes
MCE EV Charging Program [2]	Yes		Yes	Yes

Reporting Narrative for Climate Change Implementation Planning in Funding Programs

No grant or other funding provided.

The grant programs listed above are those that DSH is exploring to seek funding through as individual projects arise that are in line with the grant purpose, or as funding is made available to start or augment existing projects.

Planning Narrative for Climate Change Implementation Planning in Funding Programs

Climate change integration achieved.

2 MCE EV Charging Program – All DSH's EV projects are enrolled in this program. DSH-N just recently received MCE rebate check for project completion. The rebate funds will be used to fund future EV projects for the department.

Measuring and Tracking Progress

Reporting Narrative on Measuring and Tracking Progress

Climate impacts that are most concerning to DSH facilities are increased temperatures and precipitation. With climate change and the unforeseen weather adjustments, these two can cause severe damage and safety issues.

DSH has already incorporated climate change policies into infrastructure investments and projects. Milestones in the design and construction phases will be added to ensure that goals are met. The FPCM team at DSH will also work on integrating the climate change adaptation plan into its Capital Outlay and Deferred Maintenance/Special Repair projects. DSH Budget Packages (BP) and Studies will include natural and green infrastructure options in all future projects. Current ESCO projects are also looking to install Building Management or Automation Systems (BMS or BAS) to allow for automated control and monitoring of various building systems such as HVAC systems, lighting, and access controls to observe and track the operations of the facilities.

DSH's IMP will provide an analysis of existing conditions for utilities, roads, and buildings. The IMP will evaluate options to safeguard all server rooms and electrical/mechanical services at all facilities by providing increased flood mitigation measures and relocating critical utilities from below-grade and ground floor locations.

CHAPTER 2– ZERO-EMISSION VEHICLES

Department Mission and Fleet

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

DSH hospitals operate on a 24/7 basis. Service vehicles are utilized daily for a variety of needs including, but not limited to, patient transports to off-site medical and court appointments. The majority of DSH's fleet assets are utilized for short trips within the facility or law enforcement patrol resulting in idle time and low mileage with a need for little major maintenance and repairs. DSH's statewide fleet consists of sedans, vans, pickup trucks which range from light duty, medium duty and heavy duty, SUVs, electric carts, and pursuit-rated sedans/SUVs.

The typical usages for DSH's fleet assets include, but are not limited to, the following:

- Facility maintenance and operations
- Motor pool services
    - Food delivery
    - Laundry and patient property
    - Patient transportation to and from court and medical appointments
    - Patient transportation to approved discharge locations and treatment centers upon their release from the facility
    - Employee transportation
- Hospital police services
    - First responders
    - Security patrol
    - Transport of patients to the local jail and court ordered appointments

DSH-Atascadero is a 621-acre facility originally built in 1954 with a variety of terrain types. Vehicles are subject to terrain such as asphalt, concrete, dirt roads, paved, and un-paved roadways while traveling on grounds. The majority of employee driven vehicles are used throughout the day for short trips to travel within the grounds or within the vicinity of Atascadero. However, patient transportation vehicles travel distances as far as 550 miles round trip when driven to surrounding DSH facilities. DSH-Atascadero is currently planning to install 17 level 2 port chargers on its facility. The project is currently in design with DGS.

DSH-Coalinga is a 304-acre facility originally built in 2005 located in a remote rural area, making travel and transportation a key element to their operational success. Fleet vehicles encounter a variety of surfaces on-site including black top, concrete, dirt roads, asphalt, paved, and un-paved roadways. Although, the majority of DSH-Coalinga fleet stay on grounds or used within in the vicinity of Coalinga, patient transportation vehicles are used to travel longer distances for a longer period. Patients are transported in modified security fleet transportation vans for medical services and court appointments in outlying areas which exceed typical battery electric vehicle ranges of 60-80 miles per charge. DSH-Coalinga just recently finished installation of a total 36 level 2 ports chargers at its facility.

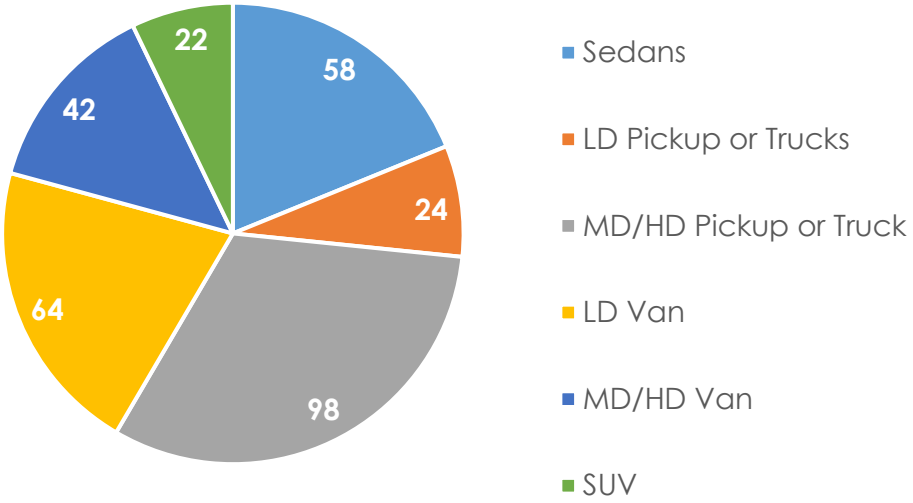
DSH-Metropolitan is a 160-acre facility originally built in 1916 located in an urban area in Southern California. Vehicles on site are driven on the same terrain and are used in a consistent manner as other locations. Currently, DSH-Metropolitan has 16 EV charging stations installed on campus with current projects in design to install another 130 level 2 ports chargers.

DSH-Napa has approximately 2,200 acres of wild land areas which employee are tasked with maintaining, patrolling, and providing emergency services for, along with 150 acres of improved areas, including Camp Coombs and the adjoining Skyline Park. Additionally, vehicles are also subject to terrain which ranges from asphalt, concrete, dirt roads, paved, and un-paved roadways while traveling on grounds. Although some land is developed with concrete and asphalt, most outlying areas are rugged and in a natural state, which require the availability of durable off-road vehicles. DSH-Napa just recently finished installation of 50 level 2 ports charger total near the new main kitchen and at the admin south parking lot area.

DSH-Patton is a 275-acre facility located in San Bernardino County, roughly 65 miles from DSH-Metropolitan and provides law enforcement related services to local communities in the event of emergencies. DSH fleet vehicles are subject to terrain such as asphalt, concrete, dirt roads, paved, and un-paved roadways while traveling on grounds. Vehicles are used a minimum of five workdays per week for short trips within the facility and surrounding areas of Patton. DSH-Patton is currently planning to install a total of 76 level 2 ports charger at its facility. The project is currently in design with Southern California Edison (SCE) and DGS.

Composition of Vehicle Fleet

Graph 2.1: 2022 Composition of Vehicle Fleet



Fuel Types

Reporting on Total Fuel Use by Fuel Type.

Table 2.1: Total Fuel Purchased in 2021/2022

Year	Diesel (Gallons)	Gasoline (Gallons)	Renewable Diesel (Gallons)
2021	37,866	110,177	145,497
2022	25,473	94,954	23,835

Reporting Narrative on Fuel Type Selections

DSH hospitals have a fleet consisting of Gasoline, Diesel, Electric, and one Hydrogen powered vehicle. The decision on which fuel DSH hospitals use is based on a variety of reasons; gasoline and diesel-powered assets are typically reserved for heavy-duty applications and long-distance travel due to their higher energy density and range. Meanwhile, electric power is favored for shorter-range tasks, where it offers lower emissions and quieter operation. The above table consists of data from fuel purchased via the WEX Fleet Fuel Card as well as fuel that is stored on-site. Although discussion of the adoption of hydrogen as a fuel source have occurred, there is a lack of hydrogen fueling stations located near any DSH hospital thus limiting the access to the alternative fuel source.

Rightsizing the Fleet

Telematics, Mission Changes, and Technology Changes

Telematics is a method for monitoring vehicle use using Global Positioning Systems (GPS) and on-board diagnostics. Telematics provides valuable information that often results in fuel savings, opportunities for future ZEV adoption, and improved vehicle utilization. Telematics is especially important for verifying that plug-in Hybrid Vehicles are maximizing the use of electric fuel rather than gasoline. The real-time insights provided by telematics allow fleet managers to make informed decisions on integrating ZEVs into their fleet which in part contributes to a greener and more sustainable form of transportation. With the implementation of Telematics, DSH's Fleet and Asset Management Section (FAMS) is working on finalizing Policy Directive (PD) 2701 to provide employee with instructions in management of Telematics.

Telematics Implementation Status

Reporting Narrative on Telematics Implementation Status

DSH has worked with RMJ Technologies to purchase and install a total of 288 telematics devices at all five DSH hospitals. There are 29 remaining devices and DSH is in the process of scheduling with RMJ Technologies to complete installations by March 2024.

Planning Narrative for Telematics Data

Telematics data will be used to monitor safe vehicle operation as well as cost savings resulting from better fuel efficiency and maintenance. DSH is in the process of completing Policy Directive 2701 – Telematics, which will operationalize the DSH Statewide Telematics Fleet Monitoring Program. It will also provide staff with instructions in the management of telematics to ensure safety and cost savings on vehicle maintenance.

Existing Fleet Description

Light Duty Fleet Vehicles

DSH hospitals operate on a 24/7 basis. Light duty service vehicles are utilized daily for a variety of needs, including but not limited to patient transports to off-site medical and court appointments. The majority of DSH's fleet assets are utilized for short trips within the facility or law enforcement patrol resulting in idle time and low mileage with a need for little major maintenance and repairs. DSH's Light-

Duty statewide fleet consists of sedans, vans, pickup trucks, SUVs, electric carts, and pursuit-rated sedans/SUVs.

Typical usage for DSH's light-duty fleet assets include, but are not limited to, the following:

- Facility maintenance and operations
- Motor pool services
  - Food delivery
  - Laundry and patient property
  - Patient transportation to and from court and medical appointments
  - Employee transportation
- Hospital police services
  - First responders
  - Security patrol
  - Transport of patients to the local jail and court ordered appointments

Vehicles operated on various types of terrain, which include, but are not limited to, the following:

- Asphalt
- Concrete
- Dirt roads
- Paved and un-paved roadways

Reporting On Total Miles Traveled

Table 2.2: Total Miles Traveled

Total Miles	2017	2018	2019	2020	2021	2022
	Data not available	1,654,549	1,691,522	1,075,202	1,352,985	1,247,405

Reporting Narrative on Total Miles Traveled

DSH hospitals do not have a set standard amount of yearly miles traveled for its light duty fleet given that the vehicles are utilized for patient and employee transportation, which is dependent on operational needs. Based on recent records, in 2019, vehicles traveled a total of 1,691,522 miles, however, there was a decline in mileage in 2020 due to the emergence of the COVID-19 pandemic. The pandemic prompted a series of measures aimed at mitigating the spread of the virus, such as reducing patient transfers between facilities, postponed non-essential medical appointments, and the adoption of telehealth and telecourt services. These changes curtailed the demand for patient and employee

transportation, therefore, causing the overall trend of decreasing mileage during this period. With COVID-19 restrictions being lifted, DSH hospitals began to experience a trend in mileage slowly increasing and returning to pre-pandemic levels of activity.

DSH hospitals are actively implementing a range of strategies to reduce the total number of miles traveled such as using telematics to optimize transportation routes to minimize unnecessary mileage and improve fuel efficiency. Additionally, DSH hospitals are encouraging carpooling among employee to reduce the number of individual cars traveling. These combined efforts reflect the commitment to reducing DSH's environmental footprint, cutting operational costs, and promoting sustainable transportation practices within the department.

Reporting On Miles Per Gallon

Table 2.3: Miles per Gallon

Total Miles	2017	2018	2019	2020	2021	2022
9.80	NO DATA	12.14	10.64	8.01	9.14	9.80

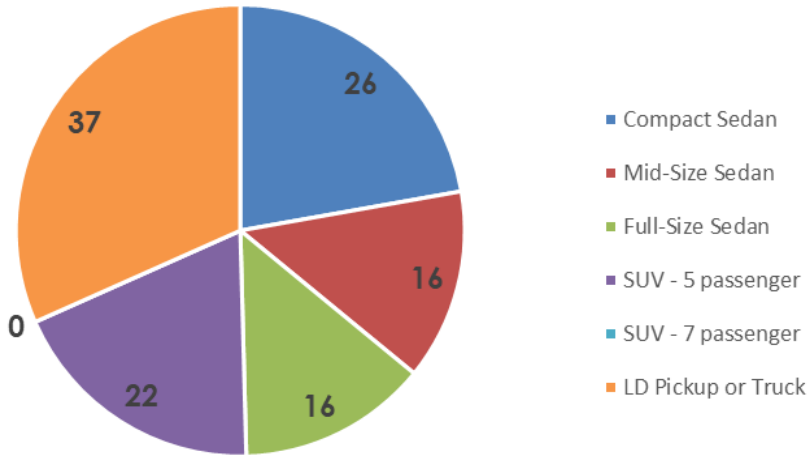
Reporting Narrative on Miles Per Gallon

During the COVID-19 pandemic, beginning in 2020, transportation to outside services were impacted to minimize the spread of the virus, . Vehicles were not being utilized as frequently, thus causing a drop in the average miles driven as well as fuel use. Per Executive Order B 16-12, ZEV Purchasing Requirements for FY 23-24 have increased to 45% for light duty vehicles. This percentage will increase to 50% for FY 24-25. DSH is currently implementing multiple EV projects and striving to modernize its fleet, which will help increase the miles-per-gallons fuel usages for vehicles. It is important to note that Zero Emission Vehicles (ZEVs) are not tracked via MPG, as their fuel consumption differs from traditional vehicles. Instead, ZEVs are monitored based on their days used to avoid skewing data on DSHs total miles per gallon consumed.

The total average miles per gallon of DSH fleet from 2017 – 2022 was calculated by collecting the fuel consumption data of over 500+ vehicles and equipment. This approach involved summing the total fuel consumed by each asset and then finding the average miles per gallon across the entire fleet and equipment.

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

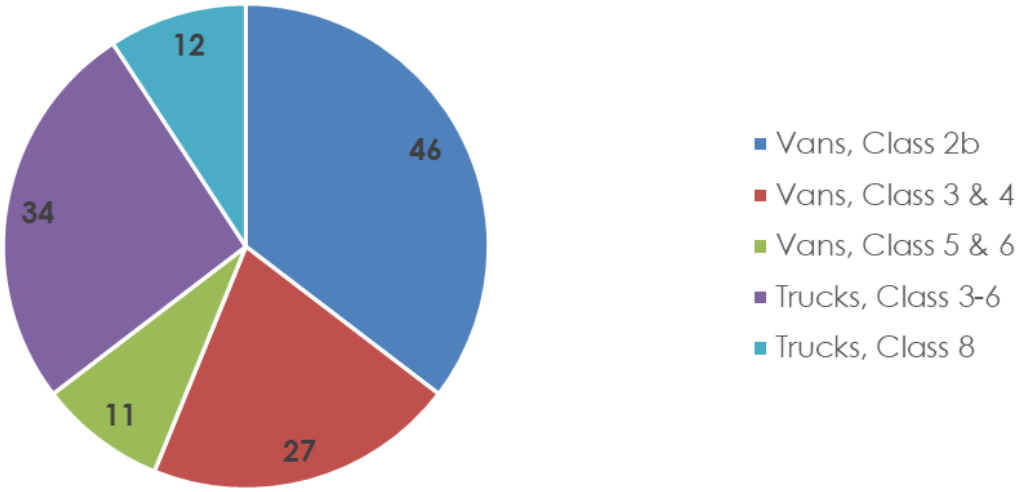
Vehicle Type	Sedans	LD Pickup or Trucks	MD/HD Pickup or Truck	LD Van	MD/HD Van	SUV
Totals	0	0	0	0	0	9

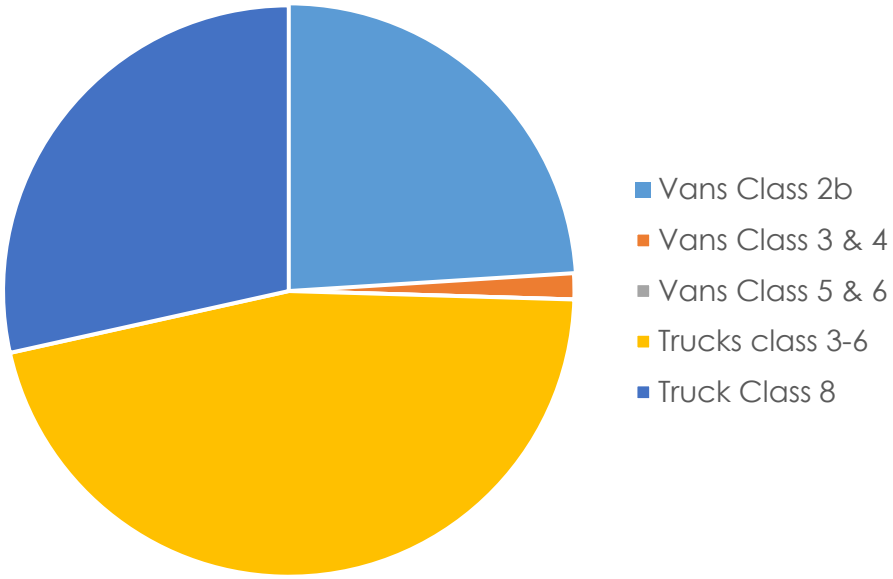
Planning Narrative on Integrating the Take Home Vehicle Program with Telework and Emissions Reduction Strategies

Currently, DSH has not issued home storage permits for ZEV vehicles and does not plan to in the near future. The only vehicles DSH has approved for vehicle home storage permit certification are gas vehicles that have special performance requirements necessary for the protection of public safety and welfare that are exempted from these mandates (Executive Order B-16-12 ZERO EMISSION PURCHASING MANDATE – 4121).

Medium and Heavy-Duty Fleet Vehicles

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





Incorporating ZEVs into the State Fleet

Light-Duty ZEV Adoption

Table 2.5: Light Duty Vehicles in Department 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	45	42	9	12	0	0	108

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

ZEV Category	21/22	22/23	23/24	24/25
Battery Electric Vehicle (BEV)	0	10	4	N/A
Plug-in Hybrid Vehicle (PHEV)	0	1	0	N/A
Fuel Cell Vehicle	0	0	0	N/A
Percent of total purchases	0	76%	57%	N/A
Required ZEV Percentage	**0%**	**40%**	**45%**	**50%**
Total number of ZEVs in Fleet*	0	18	32	N/A

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

DSH hospitals light duty zero emission vehicles play a crucial role in several areas. Battery electric vehicles (BEVs) are ideal for short-distance patient and employee transportation within the facility grounds, ensuring quiet, emission-free traveling. Plug-in hybrid electric vehicles serve well for off-site patient transportation to medical and court appointments, offering extended range compared to BEVs while still benefiting from lower emissions during shorter trips. All fleet assets are driven by DSH hospital employee which range from public safety to plant operations employee. Although DSH has one hydrogen powered vehicle within its fleet, the Department has halted from purchasing more due to the challenges that arise in terms of lack of charging infrastructure on site and near each of the DSH hospital facilities. Currently, there are no vehicle classes missing within the Department needing to conduct state functions.

Planning Narrative for Integrating ZEVs into Take-Home Vehicles

DSH does not have a take-home program given take home vehicles are specific to public safety functions.

Medium- Heavy-Duty ZEV Adoption

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

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

Vehicle Type	Vans, Class 2b	Vans, Class 3 & 4	Vans, Class 5 & 6	Trucks, Class 3-6	Truck, Class 8	Total
Totals Eligible for Replacement	46	27	11	34	12	130

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

Table Header Format	21/22	22/23	23/24	24/25	25/26
Battery Electric Vehicle (BEV)	0	5	6	**N/A**	**N/A**
Plug-in Hybrid Vehicle (PHEV)	0	0	0	**N/A**	**N/A**
Fuel Cell Vehicle	0	0	0	**N/A**	**N/A**
Percent of total purchases	0	44%	16%	**N/A**	**N/A**
Total number of ZEVs in Fleet	0	3	14	**N/A**	**N/A**

Reporting Narrative for Medium-Heavy Duty ZEV Adoption

Daily operations for medium- and heavy-duty vehicles are critical to operations especially when it comes to transporting patients or groups of more than five. The use of medium- and heavy-duty vehicles at the hospitals range from:

- Emergency Response Vehicles: Ambulances and fire trucks provide emergency services at hospital facilities and surrounding areas in accordance with mutual aid agreements
- Facility Operations: Food delivery, laundry, mail, and patient property
- Patient Transportation: Transportation of patients by CDCR or Department of Protective Services (DPS) to local jails, medical, legal, and court-ordered appointments
- Plant Operations: Mobile services to provide air conditioning, plumbing, electrical repairs, construction, landscape, and facilities maintenance in employee - and patient occupied areas.

Challenges with use of medium- and heavy-duty ZEV's include but not limited to:

- Range limitations: Drivers must calculate how far the medium- and heavy-duty ZEVs are able to take them on a single round-trip.
- Inability to install necessary EV charging infrastructure: Installation of EV charging infrastructure at the domicile site is not feasible and/or there is no publicly available infrastructure in the area that could be accessed to support the vehicles.

ZEV Public Safety Exemption

Reporting Narrative for ZEV Public Safety Exemption

DSH DPS law enforcement pursuit-rated vehicles are exempt from EO B-16-12 goals pursuant to:

- 165 California Vehicle Code section:
  - All DSH peace officers are appointed pursuant to Chapter 4.5, section 830 PC et. al. Specifically, 830.3(v)PC and 830.38 PC.
- 21055 California Vehicle Code:
  - Driven in response to emergency calls.
  - Pursuit of suspected/actual law violators.
  - Provides fire suppression and medical aid (fire services).
  - All vehicles are equipped with solid, forward facing red lights and sirens.
- DGS Management Memo 16-07 – Zero-Emission Vehicle Purchasing and Electric Vehicle Service Equipment Infrastructure Requirements:
  - DSH law enforcement qualifies as an exempt state law enforcement agency per Policy Overview, Item #5, Special Performance Requirements, as per SAM section 4121.4.

DSH DPS law enforcement operations have the following types of public safety vehicles:

- Patient Transportation Vehicles (long range - 50+ mile round trips)
- DPS marked patrol vehicles
- Fire Engines
- Fire Chief vehicles (emergency response equipped)
- Detective vehicles
- Canine Transport vehicles
- Ambulances

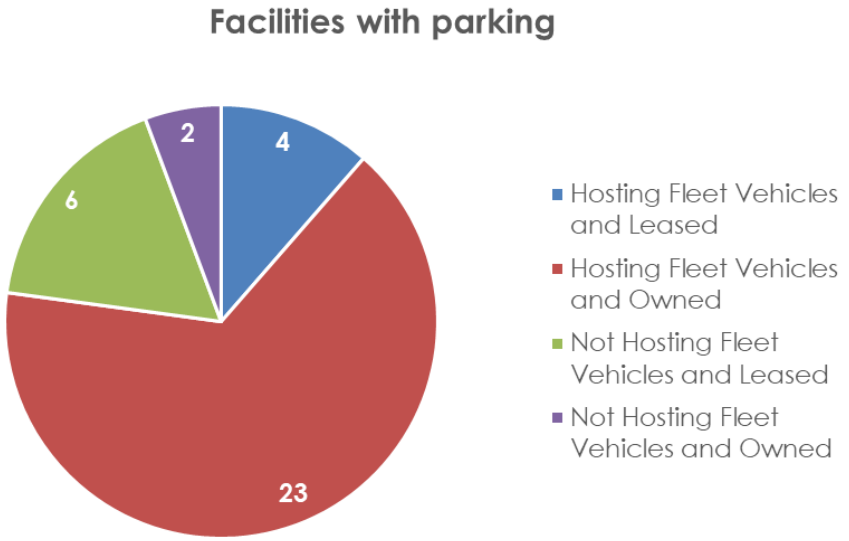
Planning Narrative for ZEV Public Safety Exemption

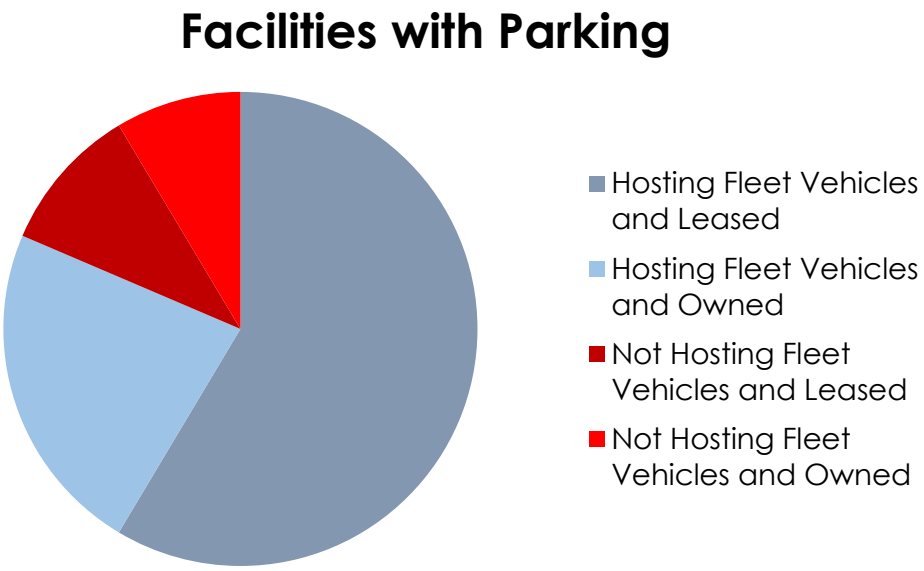
DSH recognizes the importance of transitioning towards more environmentally friendly vehicles. However, one current challenge DSH encounters is the

unavailability of zero emission pursuit rated and fire safety vehicles for purchase within the market. Despite this limitation, DSH is committed to work towards sustainability and has received approval to purchase 18 Hybrid Electric Pursuit Rated vehicles on the Fiscal Year (FY) 2022-23 Fleet Acquisition Plan (FAP) and are requesting to purchase 12 Hybrid Electric Pursuit Rated vehicles on FY 2023-24 FAP. These hybrid vehicles offer a more fuel-efficient and lower-emission alternative while still meeting the requirements of law enforcement functions.

Department's Parking Facilities

Graph 2.4: Parking Facilities





Reporting Narrative on Parking Facilities

There are parking lots located across all hospital campuses, in close proximity or next to each building. Parking lots and stalls have been designated for visitors, employees, and fleet with some spaces being dual use. Depending on the location, some are available for use by employee and/or fleet vehicles. For example, at DSH-Metropolitan, there is a visitor parking lot in front of the visitor center. Employee parking is often spread throughout campuses and fleet parking locations are often identified by signs.

DSH does not offer public/host parking as all DSH facilities are closed campus and require full-time, on-site escorts given the secure nature of the facility to treat forensic patients. DSH does not differentiate between leased and owned parking spaces, as parking is limited. Parking lots throughout DSH facilities are scarce and do not necessarily support the logistical layouts of services performed across the facilities. DSH is in the process of developing an IMP which will evaluate options to increase the capacity of existing parking facilities.

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
DSH-A	36	0	2	0	2	N/A
DSH-C	72	1	10	0	11	N/A
DSH-M	100	0	18	0	18	N/A
DSH-N	260	0	6	0	6	N/A
DSH-P	152	0	5	0	5	N/A
Total	**620**	**1**	**42**	**0**	**42**	**N/A**

EV Charging Site Assessments

The two charging ports listed above for DSH-A are Level Two Beam charging ports.

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
DSH-A		0		DGS/ SCE
DSH-C		0		DGS/ SCE
DSH-M		0		DGS/ SCE
DSH-N		2		DGS/ SCE
DSH-P		2		DGS/ SCE
Total		**4**		

Planning Narrative on EVSE Construction Plan

DSH will continue to work with DGS and the Department of Finance (DOF) on all future projects to incorporate implementation of Electric Vehicle Supply Equipment (EVSE) standards and other infrastructure needs, which will assist DSH in meeting future goals. Currently there are two ongoing assessments/projects for EV infrastructures at each hospital. DSH-Napa was recently completed and DSH is working with DGS and BTC Power to install EV Connect data for reporting. These EV projects are often led and managed by DGS with exceptions to design being done by Southern California Edison (SCE) or outside stakeholders in contract with DGS. During the study and design phase, DSH provides input to DGS and the assigned design team to help successfully implement the project.

DSH plans to evaluate current DGS EVSE guidelines and policies to implement for departmental use. DSH Plant Operations and Hospital Administrators will work closely together with FAMS to draft an enterprise-wide policy applicable to all DSH locations. Further, EVSE reporting requirements and data collection efforts will be established and implemented according to DSH fleet management policies and directives.

DSH EV chargers are used by state fleet and state employees' vehicles. EV chargers are purchased and installed by the hospitals as well as the DGS Office of Sustainability Transportation Unit. Although maintenance is limited on these charging units, DSH employee are responsible for the upkeep and repair of the equipment after the equipment warranty expires.

On-going EVSE Charging Operations and Maintenance

Public EV Charging Policies

Reporting Narrative on Public EV Charging Policies

Public charging policy not required or in place.

Planning Narrative on Public EV Charging Policies

Public charging policy not required or in place.
DSH does not offer public charging for EVs and there are no plans to allow access to the public given the secure nature of DSH's facility.

Employee EV Charging Policies

Reporting Narrative on Employee EV Charging Policies

No employee EV charging policy in place.

Planning Narrative on Employee EV Charging Policies

DSH does not currently have a policy in place for Employee Fleet EV charging. There are signs posted at most of the hospitals for maximum time allowed per charger. The reporting of energy use is tracked through the EV Connect application on a cloud-based system. From those reports, DSH will closely monitor the energy consumption and work with the DGS Sustainability team to determine if and when a charging policy will be developed and implemented.

Fleet EV Charging Policies

Reporting Narrative for Fleet EV Charging

No fleet EV charging policies are in place.

Planning Narrative for Fleet EV Charging

DSH does not have a policy in place for Fleet EV charging. The reporting of energy use is tracked through the EV Connect application on a cloud-based system. From those reports, DSH will closely monitor the energy consumption and work with the DGS Sustainability team to determine if and when a charging policy will be developed and implemented.

Hydrogen Fueling Infrastructure

Planning Narrative for Hydrogen Fueling Infrastructure

DSH has no plans to install hydrogen fueling infrastructure at its facilities. However, DSH is working closely with DOF to consider how fueling and electrical infrastructure is built into the scope of future facilities projects, accounting for growth and compliance with future demand. Discussions with the California Department of Transportation (CalTrans) regarding shared infrastructure for hydrogen fueling will continue to be evaluated.

CHAPTER 3– ENERGY

Department Mission and Building Infrastructure

Reporting Narrative for Department Mission and Building Infrastructure:

DSH's five hospitals encompass approximately 6.6 million gross square feet of space in 474 buildings and roughly 2,600 acres of land. DSH continuously works to optimize and minimize energy use by improving the efficiency of mechanical equipment, facilities, and operations. DSH has been working with the DGS Sustainability Team and outside stakeholders to conduct comprehensive energy audits at DSH facilities that will result in documented solutions for achieving energy cost reductions.

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	**179,856,224**	**kWh**	**60,878,665**	**56,359,108**	**-69%**
Less EV Charging	**-**	**kWh**		**-**	
Natural Gas	**5,877,559**	**Therms**	**5,600,717**	**5,572,672**	**-5%**
Propane		**Gals**		**-**	
Fuel Oil		**Gals**		**-**	
Steam		**Lbs**		**-**	
Chilled H2O		**kBtu**		**-**	
TOTALS	**-**	**kBtu Site**	**767,789,705**	**749,564,476**	**4%**

Department 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)
DSH-N	1,565,915	285,435,842	327,286,144	209
DSH-P	1,307,200	127,604,302	242,947,095	186
DSH-M	1,218,276	112,172,776	222,424,446	183
DSH-A	903,748	102,713,586	175,781,112	195
DSH-C	1,200,512	99,809,293	215,838,777	180
Total for Buildings in this Table	**6,195,651**	**727,735,798**	**1,184,277,573**	**---**
Total for all Department Buildings	**6,195,651**	**727,735,798**	**1,184,277,573**	**---**
Percent of Totals	**100%**	**100%**	**100%**	**---**

Energy Efficiency Solutions for Largest Energy Using Buildings

Planning Outline PO3a: Planning for Buildings with Largest Energy Use

Building Name	Proposed Energy Efficiency Solutions
DSH-A	Finish ESCO and EV project. Potential Solar projects in discussion with DGS Sustainability team. IMP research ongoing.
DSH-C	Finish ESCO and EV project. Solar projects proposal in development with DGS. IMP research ongoing.
DSH-M	Finish ESCO project. EV and Solar projects are in conceptual designs. IMP research ongoing.
DSH-N	Finish ESCO project. EV projects finished. Potential Solar projects in discussion. Working with AESC to discuss energy savings for steamers on site. IMP research ongoing.
DSH-P	Finish ESCO and EV projects. Potential Solar project in process with DGS. IMP research ongoing.

Narrative for Building Energy Efficiency

Future site upgrades are proposed annually in DSH's Five-Year Infrastructure Plan, which is a short- and long-range plan that identifies Capital Outlay and Deferred

Maintenance/Special Repair project needs, as well as a planning schedule with funding requirements. There are also ESCO projects ongoing at each of the five hospitals, including identifying additional energy efficiency measures during the preliminary assessment. DSH is also working with J.C. Chang & Associates to develop the IMP - a 50-year infrastructure improvement plan. Below are some projects at each hospital that will contribute to energy efficiency and savings at the hospitals:

DSH - Atascadero:

1. Air Handler and Roof Replacement Project:
    - Increased roof insulation, reducing building energy use and carbon emissions.
    - Replacement of old inefficient HVAC systems with energy efficient HVAC systems
2. EV Charging:
    - Provide infrastructure for clean alternate fuel vehicles.
3. ESCO Energy Retrofit:
    - Project consists of adding electrical generation to the facility and using the waste heat from the generators to provide a large part of the heating needs of the campus.
    - Existing steam boilers will be replaced with fluid heaters to drive unfired steam generators.
    - Switching to energy efficient LED lighting

DSH - Coalinga:

1. Solar and Battery Storage:
    - Decrease energy use from solar energy produced.
    - Store power during peak hours and offload energy during non-peak hours
2. Shade Structures:
    - Increase shaded areas and outdoor storages.
    - Create cooler outdoor areas during the summer heat.
3. EV Chargers:
    - Reduce carbon footprint.

DSH - Metropolitan:

1. ESCO:
    - Switched to energy efficient LED lighting.
    - Adding in a Building Automatic Systems (BAS) to the Central Utility Plant
    - Replacement of old inefficient HVAC systems with energy efficient HVAC systems

2. Shade Structures:
   - Deflect radiation from the sun thus providing more shaded areas to patient areas.
   - Allow for cooler outdoor areas for employee and patient use for activities and storages.
3. Employee Park:
   - Provide a well vegetated landscape areas for the employees on site.
   - Help to lower heat and overall temperature from hardscape areas.

DSH - Napa:

1. Electrification Budget Study:
   - Study to move the hospital away from steam uses.
   - Reduce the carbon emissions and provide better energy savings to the overall campus.
2. Courtyard Shade Structure:
   - Deflect radiation from the sun thus providing more shaded areas to patient areas.
   - Future shade structures will be proposed in all future courtyard renovations at the campus to help lower heat rise.

DSH - Patton:

1. ESCO:
   - Lighting upgrades from incandescent, fluorescent and HID lamps to LED throughout the campus.
   - Adding Variable Frequency Drive (VFDs) to the Air Handler Units.
   - Changing damper configurations to switch from constant variable air volume system with Building Management Systems (BMS)
2. EV Charging Stations:
   - Charging stations to be added at parking Lot M & K on campus.
   - Total of 76 EV chargers will be installed.
   - 36 chargers to be installed at Lot M
   - 40 chargers to be installed at Lot K

Due to the size, cost, and complexity of most major renovation and construction projects, DGS is the state entity responsible for managing the work efforts. Conversely, minor special repair and improvement projects will be retained by DSH under the purview of on-site facilities management and maintenance employee.

Challenges the Department is Facing to meet the Governor's Sustainability Goals

DSH's ZNE goals are challenged due to the need for DSH facilities to operate 24 hours per day, 7 days a week, 365 days per year and are dependent upon utility grids for power supplies. Two hospitals, DSH-Coalinga and DSH-Patton use utility grids coupled with renewable energy for their daily operations. Although implementation of ZNE for existing patient buildings are challenging, DSH is committed to meeting the State's sustainability goals. The department has been working with DGS Sustainability's Solar group for options on renewable energy such as battery storages and solar projects at all five hospitals.

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 California Energy Code is part 6 of the California Building Standards Code, which is Title 24 of the CCR. The goal of Title 24 is to ensure that building construction, system design, and installation achieve energy efficiency and preserve outdoor and indoor environmental quality. These standards establish a minimum level of building energy efficiency for both residential and nonresidential buildings. The following buildings demonstrate DSH's progress in meeting the energy requirements.

DSH-Napa - Main Kitchen

Completed in November of 2017, the DSH-Napa New Main Kitchen project consisted of a new single-story 30,000 gross square foot central kitchen facility. The Main Kitchen serves meals to 1,100 patients through the campus' six satellite kitchens. The new kitchen has a cook/chill bulk food delivery system and involved abatement and demolition of six existing structures, and extensive underground utilities work. Program areas include utensil and cart sanitation, dry storage with high-capacity food storage racks, large coolers and freezer walk-ins, clinical

dietitian work areas, loading docks, outdoor terrace, large mechanical yard, electrical yard with emergency generator, surface parking lot, and additional functional support spaces.

The project was well coordinated with all design disciplines in ventilation and steam loads, proper clearances and drainage, weight loads, and ADA compliance. The landscape consists of varying species of trees, shrubs, perennials, and grasses, with several being incorporated into the site's edible garden for intended use by the kitchen. The project is designed to meet Leadership in Energy and Environment Design (LEED) Silver certification. According to the code analysis in the construction documents, the building design also exceeded Title 24 by 15%.

DSH-Metropolitan - Central Kitchen

Completed in 2010, Metropolitan's new central kitchen occupies 27,000 square feet and replaced an old inefficient kitchen at the end of its life cycle. The new replacement facility consists of half the physical size and doubles the meal production of the previous system. *Foodservice Equipment & Supplies Magazine* named Metropolitan State Hospital the winner of the "2012 Design Project of the Year" competition. The project has earned a LEED Gold certification for its energy efficiency and sustainable design initiatives. The sustainable packaging equipment has increased efficiency, improved food consistency, and dramatically reduced food waste.

DSH-Patton - Central Kitchen

Completed in 2019. Patton's new central kitchen occupies 36,000 square feet. The new central kitchen is a partial remodeling of seven existing satellite kitchens located in five separate buildings. The utilization of a new central kitchen which includes state of the art equipment, including parallel remote refrigeration system with temperature monitoring capabilities; cook-chill equipment (form-fill seal machine, kettles, chiller tanks); flight type dishwasher; energy efficient steam equipment; bakery rack ovens; blast chillers; variable speed exhaust hood systems and the operation of a cook-chill program. The cook-chill program allows the operation of a five day a week production schedule utilizing a food bank system. The project has earned a LEED Gold certification for its energy efficiency and sustainable features. It also exceeded Title 24 by 15%.

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	0	0%
Building in Design or Under Construction	0	0	0%
Building Proposed for Before 2025 (but not yet in design)	0	0	0%

Addl. Exist. Bldg. Area within 15% of ZNE target EUI and have EE projects planned	0	0	0%
Totals for ZNE Buildings by 2025	0	0	0%
Totals for All Department Buildings by 2025	0	0	0%
% ZNE by 2025	0%	0%	

Planning Narrative of Table 3.3: Zero Net Energy Buildings

DSH is working collaboratively with DGS and other energy vendors to achieve ZNE goals; however, due to the existing structures, historic buildings and schedules of implementations/ plans, the Department will not be able to reach the 50% requirement by 2025. With the existing conditions of some buildings and historical elements on site, there are many stringent code requirements that increase the timeline for renovations.

Executive Order B-18-12 requires that all new buildings, major renovation projects and build-to-suit leases over 10,000 square feet obtain LEED Silver certification or higher. All new buildings under 10,000 square feet shall meet applicable CalGreen Tier 1 Measures.

All State buildings over 50,000 square feet were required to complete LEED EBOM (Existing Buildings: Operations & Maintenance) and meet an Energy Star rating of 75 to the maximum extent cost effective. However, most of DSH buildings are too old to effectively meet LEED requirements with the cost of meeting requirements exceeding the cost to design, build and occupy a new sustainably designed building.

DSH is working with DGS, JC Chang, and other agencies to plan and achieve sustainability goals for all five hospitals. As mentioned, DSH continues to work with the DGS Sustainability team on energy savings projects. DSH's IMP will provide a framework to guide addressing many deficiencies in the antiquated hospital infrastructures and will focus on the following objectives:

- Improve patient and employee safety.
- Mitigate facility deficiencies.
- Provide more efficient delivery of patient care.
- Enhance sustainability of the site facilities
- Upgrade utilities and systems

These goals and changes stated in the IMP focus on developing a long-term road map of phased projects, revitalizing, and improving the systems for each individual project at all the hospitals. Any new systems or builds will be built to meet ZNE and LEED requirements.

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	3	69,400
Under Design or Construction	1	20,700
Proposed Before 2025	N/A	N/A

The Department's three new buildings: Napa Kitchen, Patton Kitchen and the Metropolitan Visitor Center were all designed with energy efficiency in mind. The two kitchens were described in the previous narratives and had met LEED Silver and Gold.

DSH-Metropolitan – New Visitor Center

The Metropolitan New Visitor Building project consisted of a single-story, 3,904 gross square foot for the building and over 4,500 linear feet of security fencing. The building was designed to provide energy efficiencies. The rooftop packaged air-conditioning unit specified exceeds the minimum required efficiency per Bureau of Energy Efficiency (BEE) section 110.2. Similarly, the lighting systems utilize the latest in LED technology, as well as sensors, dimmers, and timers to maximize energy savings. The installed indoor lighting system wattage exceeds the applicable Title 24 energy requirements by over 30%. The building is also equipped with solar tubes which direct sunlight into the rooms during daytime and reduce the need for lighting. The outdoor fence security lighting utilizes efficient LED fixtures that exceed the efficiency of similar security lighting installations. The outdoor fixtures are equipped with photocells to ensure energy savings during daylight.

DSH Five-Year Infrastructure Plan

Four of the five DSH hospitals are 66 to 145 years old and have undergone periodic repairs, but few buildings have been upgraded to modern day standards since their original construction. Many of the hospital's needs are to replace existing failing systems and install equipment/systems necessary to keep patients and employees safe.

Due to the age of DSH's campuses, many of its structures are considered historical, making demolition and repairs difficult. Other types of infrastructure, such as domestic water, electrical, and sewer systems, are also old and in need of upgrades. Some proposed Capital Outlay projects made under the Department's 2022 - 2023 five-year plan to help with infrastructure upgrades are:

DSH-Atascadero: Potable Water Booster Pump System
This project will provide uninterrupted operations of the main fire sprinkler system at the hospital. As the hospital increases its water usages, the water pressure decreases. When several users draw water at the same time, this causes pressure drops in water and puts the main fire sprinkler system at risk of proper functionalities. DGS Project Management and Development Branch (PMDB) had prepared a study to install two booster stations to handle the peak hours of water use.

DSH-Metropolitan: Fire Water Line Connection to Water Supply
This project will provide the capacity of water required for the fire sprinkler system to comply with current fire code requirements related to fire flow. The replacement of the existing northerly 750,000-gallon steel tank with a new 1,000,000-gallon dedicated fire water storage tank will allow the hospital to meet current and future fire flow requirements.

DSH-Metropolitan: Central Utility Plant
The original construction was completed in 1988. With the aged equipment and old design, repairs and maintenances are difficult and costly. The CUP operates 24/7 and deterioration has accelerated in recent years. There are extensive leaks, and the entire system overall is not energy efficient. This project will replace the entire system with equipment that is more resilient, efficient, and cost-effective.

DSH also plans to submit the following Capital Outlay Projects for the next future fiscal year:

- DSH-Atascadero: Electrical Infrastructure Upgrades/Repairs
- DSH-Atascadero: Sewer and Wastewater Treatment Plan
- DSH-Coalinga: Skilled Nursing Facility (SNF) Conversion
- DSH-Napa: Electrical Infrastructure Upgrades/Repairs
- DSH-Patton: Electrical Infrastructure

Aside from major Capital Outlay projects, DSH has also implemented several energy-efficient projects to reduce loads and consumption (ESCO, Solar, EVs, etc.). Energy reduction has also been achieved through the installation of LEDs, photovoltaic solar panels, and modernized HVACs in various buildings at all five hospitals. To further reduce DSH's dependency on grid-based energy, the following energy conservation measures have been incorporated into DSH's day-to-day operations:

- Occupancy sensors whenever appropriate should be installed to save energy uses.
- DSH strives to purchase the ENERGY STAR rated equipment, considering Environmentally Preferable Purchasing (EPP) principles.
- DSH's temperature set point for building heating and cooling systems are no higher than 68°F in winter and no lower than 78°F in summer.
- DSH maintenance personnel are to inspect and maintain ducts, air filters, and related hardware to maximize effectiveness of building systems at the lowest acceptable power use.
- Install and utilize Environmental Management System (EMS) whenever possible to provide cooling.
- Monitor water temperatures to ensure temperatures are being efficiently maintained and the hot water system is set between 105˚F and 120˚F due to licensing standards.
- Boilers are to be inspected annually to ensure compliances.
- All monitors and printers are set to auto-sleep when not in use to optimize power savings.
- All new IT infrastructure projects are to comply with the Energy Efficient Ethernet (EEE) standards.

Existing Buildings Energy Efficiency

Reporting on Energy Efficiency for Existing Buildings

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

Year	Floor Area (ft^2)	Total Source kBTU Consumption	Department Average EUI (Source kBtu /square foot)
Baseline Year 2003	6,195,651	1,534,516,398	234
2013	5,929,684	0	0
2014	5,929,684	0	0
2015	5,929,684	0	0
2016	5,929,684	0	0
2017	6,195,651	1,195,523,486	193
2018	6,195,651	1,568,160,775	253

2019	6,195,651	1,307,736,924	211
2020	6,195,651	1,328,317,874	214
2021	6,195,651	1,211,425,901	196
2022	6,195,651	537,907,860	87
% Change 2003-2020	**0%**	**-13%**	**-9%**

Narrative for Table 3.5: Department-Wide Energy Trends

All energy values reflected in Table 3.5 are grouped into a combined figure as each campus has one meter for the entire facility. Table 3.5 also shows DSH consumed 537,907,860 kBtu of electricity in 2022, compared to 1,328,317,874 kBtu in 2020. There is a total of 13% electricity reduction overall in kBTU consumption. The energy reduction in usage are contributions of sustainability projects such as ESCO, solar, EV, and other energy/ retrofit projects that were completed between 2021 and 2022.

Values for 2013-2016 were not collected or submitted as part of the CRIS reporting requirements.

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 Department Floor Area
2021	34,767,755	1,077,373	1.4%
2022	1,118,150	142,378	0.2%
Total	**35,885,905**	**1,219,751**	**1.5%**

Planning Narrative for Table 3.6 Energy Savings Projects 2021-2022

DSH is currently working with Alternative Energy Systems Consulting, Inc. (AESC) to conduct and survey all five hospitals for energy saving solutions and action plans. The first energy audit report was done for Napa State Hospital early in 2023. The rest of the report for the other hospitals will follow. The intent of the energy analysis report is to help DSH identify energy savings opportunities associated with recommended upgrades to the facility's equipment systems.

With support and input from Napa State Hospital employee, State of California Energy Strategy and Support (SOC ESS) identified twelve energy efficiency

measures that, if implemented, will reduce energy consumption by 117,010 kWh and 22,302 therms annually. The energy efficiency projects would be anticipated topay for themselves in 3.4 years (with estimated SOC ESS incentive). The calculated simple payback was estimated using the average electric rate of $0.309 per kWh and average gas rate $1.063/therm. All the measures in these savings include but not limited to installations of heat pumps, installations of circulating block heaters, replacements of HVAC units, and replacements of windows.

The Department's efforts to conduct energy savings projects are prioritized as it tries to meet the Governor's sustainability goals. All five hospitals have their own ESCO, EV and Solar projects. All ESCO projects are currently in construction, whereas the EVs and Solar projects are either completed, in design or underway. DSH is also looking to participate and implement demand response programs like PG&E's microgrid systems to help further energy savings at the site.

All DSH's sustainability projects like ESCO, EV and Solar are managed by the DGS Office of Sustainability. DSH also reached out to vendors like AESC who work directly with DGS for energy strategy plans and PG&E for demand response programs.

Energy Audits/Surveys Completed or In-Progress

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

Year	Total Department Floor Area (sq. ft.)	Energy Audits/ Surveys Under Way (sq. ft.)	Percent of Department Floor Area
2021	6,195,651 SF	N/A	N/A
2022	6,195,651 SF	1,565,915 SF	25%

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

As mentioned above in the previous narrative, DSH is currently working with AESC to conduct and survey all five hospitals for energy saving solutions and action plans. Napa State Hospital's energy audit report was shared with the hospital earlier this year of 2023. The rest of the energy audits, studies and reports are in progress. The chart below shows the recommended measures found for Napa State Hospital.

Recommended Measures – Energy Savings and Cost Summary

Measure No.	Measure Name	Annual Energy and Cost Savings					Project Cost, Incentives, and Payback				
		kWh Savings	kW Reduction	Therms Savings	GhG Savings (MT)	Annual Cost Savings	Project Cost	Estimated Incentives	Simple Payback without Incentives (yrs)	Simple Payback with Incentives (yrs)	Effective Useful Life (yrs)
1	Install Air-Source Heat Pump Block Heaters at Plant Operations (Building 145)	58,900	7	0	12	$18,222	$23,800	$11,900	1.3	0.7	15.0
2	Retrocommission to Implement Deadband at Central Kitchen	330	0	686	4	$832	$1,690	$845	2.0	1.0	3.0
3	Install Circulating Block Heaters at Receiving and Treatment (R&T) (Building 168)	3,050	0	0	1	$944	$1,500	$88	1.6	1.5	15.0
4	Replace HVAC Unit at Napa County Detox Center (Building 253)	29,904	1	17,630	100	$28,000	$96,180	$0	3.4	3.4	15.0
5	Replace Heating and Cooling Unit with Packaged Heat Pump at Plant Operations (Building 145)	17,266	5	2,295	16	$7,782	$48,090	$0	6.2	6.2	15.0
6	Replace West Windows at Plant Operations (Building 145)	2,518	1	126	1	$913	$11,200	$793	12.3	11.4	20.0
7	Replace Packaged Unit with Heat Pump at Mail Room (Building 332)	5,042	-13	1,565	9	$3,224	$37,640	$0	11.7	11.7	15.0
Totals		**117,010**	**1**	**22,302**	**142**	**$59,916**	**$220,100**	**$13,626**	**3.7**	**3.4**	

DSH met with AESC to further discuss the measures and saving costs. AESC gave DSH the next steps to implement these measures. The hospital is currently discussing which measures should be addressed d first. The Department has also discussed possibly completing some of these measures in house instead which may be faster to implement and for the ones that may require more technical scope, DSH will be partnering with DGS or other necessary vendors.

AESC will be available to help assist DSH in identifying available financial incentives to complete these and future measures found at other hospitals. The Department can possibly finance the energy savings projects through the Golden State Financial Marketplace (GS $Mart) or PG&E On-Bill Financing (OBF). DSH may also consider an energy savings performance contract with an Energy Service Company (ESCO), many of whom offer options to help achieve energy savings at an individual site or portfolio of properties.

Demand Response (DR)

Participating in DR Utility Programs & 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	**0**	**0**	
Number of Buildings Participating in 2022	**0**	**0**	
Planned Number of Buildings that will Participate in 2023	**5**	**TBA**	
Total Number of Department Buildings	**5**	**TBA**	
2022 Department Buildings Participating (Percent)	**0%**	**0%**	

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

Executive Order B-18-12 requires all state departments to plan and participate in Demand Response (DR) program to reduce peak loads on the electricity grid. Participation in DR program not only helps improve the grid reliability, but also enables savings on utility bills. In the previous roadmap, DSH mentioned no participation in any DR programs due to not having performed formal energy audits in the last five years. However, as stated in previous narratives, DSH is planning and looking to participate in DR programs. The department is currently working with AESC to perform energy audits at each hospital to start incorporating energy efficiency measures. Aside from the DR programs, all hospitals had or are in the process of implementing solar, battery storage and EVs to help reduce power consumption of the grid.

DSH has been researching and consulting with utility companies like PG&E for potential implementation of "Microgrids." Microgrid is a group of interconnected loads that help reduce and or manage the electricity demand and alleviate power consumptions. This helps lower the utility bills and reduce peak loads during peak hours. The microgrid can also store power of its own from the actual grid. This provides back up power to the hospitals in case of power outages during storms or blackouts.

The next step the Department will take to implement a microgrid at each hospital is to study the electrical loads and existing grids with the help of DGS and the appropriate utility company offering microgrids demand response program (PG&E). A feasibility study/audit will need to be performed at each campus to ensure the existing grid can handle the addition of a microgrid. DSH has

contacted PG&E and is awaiting more information. While the Department awaits coordination with PG&E, there are projects at Napa and Patton on Electrification Studies. These projects/studies will contribute to the implementation of the microgrids and its feasibility.

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 DSH Power Use
On-Site Renewables in Operation or Construction	4	0	11,769,669	10.7%
On-Site Renewables Planned	0	0	0	0.0%
On-Site Renewables Totals	4	0	11,769,569	10.7%%
Department-Wide Total Energy Use (kWh equivalent)	-	-	110,187,906	-
Off-Site Renewable Totals	0	0	0	0.0%
Off-Site Renewables Planned	0	0	0	0.0%
Off-Site Renewables Combined Current & Planned	0	0	0	0.0%
Current Combined On-Site and Off-Site Renewable Energy	**4**	**0**	**11,769,569**	**10.7%**
Additional Planned On-Site and Off-Site Renewables	0	0	0	0.0%

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

Renewable energy includes harnessing energy from the sun through solar power, wind, and other clean renewable energy that help to reduce GHG emissions. EO B-18-12 requires that new or major renovated state buildings over 10,000 square feet use clean, on-site power generation and clean back-up power supplies if economically feasible. The majority of the buildings at DSH hospitals are aged thus creating a challenge to generate on-site and off-site renewable energies. However, the Department had and is working on installing solar, battery storages and EVs to all its hospital. All hospitals also have ongoing ESCO projects including but not limited to retrofitting, HVAC replacements, LED lights, etc. These ESCO projects also contribute to the energy savings at each hospital.

According to the data and Table 3.9 above, the hospital is sitting at 10.7% for renewable energy produced. The Department will strive to purchase 100% renewable energy by 2035. As mentioned, each hospital is already equipped with solar, EV and ESCO projects on site. DSH is in the work of implementing battery storages to its hospitals (starting with Coalinga) to maximize its on-site energy. Additionally, the Department is also working with utility companies, DGS and energy savings vendors to perform energy audits/ reports to reveal what other measures can be done at the hospitals to make its infrastructures and systems more sustainable. DSH is also working with the DGS Solar group on obtaining online and/or cloud login to keep track of energy produce from existing and future solar projects.

Monitoring-Based Commissioning (MBCx)

Table 3.10: Current & 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	MBCx Projected Cost ($ if known)
DSH	Atascadero	10333 El Camino Real	903,748			MBCx Capable	In Progress	TBD
DSH	Coalinga	24511 W Jayne Ave	1,185,312			No EMCS	In Progress	TBD

DSH	Napa	2100 Napa Vallejo Hwy	1,565,915			MBCx Capable	In Progress	TBD
DSH	Metropolitan	11401 Bloomfield Ave	1,218,276			MBCx Capable	In Progress	TBD
DSH	Patton	3102 Highland Ave	1,307,884			No EMCS	In Progress	TBD
Total			**6,181,135**					**N/A**

Planning Narrative for Table 3.10: MBCx Status of Buildings

DSH has installed BMS systems in most of its facilities in buildings over 5,000 square feet. Some ESCO projects and their scopes also included the addition of a BAS and BMS as parts of the upgrades. For example, DSH-Napa had some components of its Energy Management System (EMS) upgraded as a part of the ESCO project. DSH-Metropolitan's ESCO project is also currently proposing a new BAS system in the Central Utility Plant building to monitor the status of the energy within the building more proficiently. These systems equate to the Monitoring-Based Commissioning (MBCx) which can help to facilitate the operations and tracking of energy performances and benchmarking reports.

Building Controls

Reporting on EMS/BMS/Controls Building Capability

Table 3.11: Building Controls

Equipment Controls	% of Buildings Controlled Remotely Offsite	% of Buildings with Controls Onsite	% of Total Buildings
Lighting	NO DATA	NO DATA	NO DATA
HVAC: EMS/BMS	NO DATA	100	100
HVAC: Smart Thermostats	NO DATA	NO DATA	NO DATA
Other: _____			

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

DSH has installed BMS systems in most of its facilities in buildings over 5,000 square feet. The facilities, in general, are proficient in the use of their BMS systems, except for the occasional issue of a sensor failure or controllers/detector not performing well. Some of the BMS/ EMS/ BAS systems will also be replaced, upgraded and or installed as a part of the DGS ESCO project.

For buildings that do not have these control systems in them are often buildings that are old and historical which changes cannot be made to them or they are not feasible to implement. The DSH IMP will also address these issues as the 50-year plan will incorporate numerous upgrades and potential new builds to all hospitals. BMS/ EMS/ BAS and systems of similar will be implemented for all these planned projects that are a part of the IMP. DSH is working on implementing processes to keep track and counts of their equipment controls for future reporting.

Energy Reduction Strategies - Best Management Practices (BMPs)

Planning Narrative for Energy Reduction Strategies in Department Buildings Best Management Practices (BMPs)

With the challenges of an aging infrastructure DSH continues to invest in energy reduction to meet the State's sustainability goals. Each hospital provides patient care 24 hours a day and 7 days a week, which drives energy usage within a limited infrastructure. The department plans to work with the hospitals, DGS and utility companies to upgrade the existing grids and interconnections. Currently the department is working on battery storages with DGS which will help reduce the peak loads on site. A power purchased agreement (PPA) is currently in process for Coalinga State Hospital. The hospitals Plant Operation teams also have their own policies and procedures on energy use/ shut off which aids the team in managing the overall power at each facility.

CHAPTER 4- WATER EFFICIENCY AND CONSERVATION

Department Mission and Water Use

This water efficiency and conservation report highlights the progress the Department has made towards meeting the Governor's goals. This report identifies successful accomplishments, ongoing efforts, and outstanding challenges.

California experiences the most extreme variability in yearly precipitation in the nation. In 2015, California had record low statewide mountain snowpack of only 5% of average and 2012-14 were the four driest consecutive years of statewide precipitation in the historical record. The 2017 water year (October 1, 2016-September 30, 2017) surpassed the wettest year of record (1982-83) in the Sacramento River and San Joaquin River watersheds and was close to becoming the wettest year in the Tulare Basin (set in 1968-69). These potential wide swings in precipitation from one year to the next demonstrate why California must be prepared for either flood or drought in any year.

Using water wisely is critical. The EOs and SAM sections listed previously demonstrate the connection between water and energy use, (the water-energy nexus), water and climate change, and water and landscaping. The impact of water uses by state agencies is not within the scope outlined in EOs, SAM sections or DGS management memos. These policies and guidelines do not address other issues such as water runoff from landscaping and various work processes, the potential for water pollution or the benefits of water infiltration, soil health and nutrient recycling. By using holistic water planning, a well-crafted water plan can not only meet all state requirements but add considerable value and benefits to the organization and surrounding communities.

Best Management Practices
Developing Best Management Practices (BMPs) statewide are ongoing to establish and maintain building water use efficiency. Water management plans are in place or being finalized at all DSH facilities. These plans will ensure consistent water quality testing.

Department Mission and Built Infrastructure
The built infrastructure of the five hospital facilities encompasses roughly 2,600 acres of land and 6.6 million gross square feet of space in 474 buildings.

DSH Facility Square Footage (Total Areas)

Facility	Total Square Footage
DSH-Atascadero	903,748
DSH-Coalinga	1,185,312
DSH-Metropolitan	1,218,276
DSH-Napa	1,565,915
DSH-Patton	1,307,884

Sustainable water management practices strategically align with DSH's mission as fiscal and environmental stewardship goals drive internal water conservation priorities.

Continuous improvement of water efficiency programs including development of strategies to maximize use of surface run-off, collection of rainwater, and preservation of treated domestic water for critical campus uses is a continuous goal for DSH. In addition, DSH continues to improve water efficiency in existing buildings through maintenance and retrofits, and by providing education and awareness on the need and benefits of proactive water conservation.

Water main systems are designed to provide adequate flows for domestic, commercial, and fire protection uses. Departmental water conservation measures also consider the various sources of water supply systems at DSH's five facilities:

DSH Water Conservation Measures by Facility

Hospital	Source
DSH-Atascadero	Uses well water at campus, no recycled water available
DSH-Coalinga	Buys potable and irrigation water from City of Coalinga
DSH-Metropolitan	Buys potable water from City of Norwalk and recycled water from the local sanitation district
DSH-Napa	Buys potable and irrigation water from City of Napa, including limited quantity of recycled water from Napa Sanitation district
DSH-Patton	Buys potable and irrigation water from local municipality

Reporting on Total Purchased Water

Table 4.1: Total Purchased Water

Purchased Water	2021 Quantity	2022 Quantity	2021 Cost ($/yr.)	2022Cost ($/ yr.)
Potable	502,369,084	476,144,328	$2,513,611.41	$2,239,073.29
Recycled Water (Metro & Napa Only)	45,004,000	45,004,000	N/A	N/A

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
DSH-Atascadero	**903,748**	**2,922**	**77,209,000**	**Unknown**	**26,423**
DSH-Coalinga	**1,190,689**	**3,253**	**84,314,560**	**Unknown**	**25,919**
DSH-Metropolitan	**1,233,932**	**2,377**	**87,188,376**	**Unknown**	**36,680**
DSH-Napa	**1,565,915**	**3,370**	**94,449,212**	**Unknown**	**28,026**
DSH-Patton	**1,307,200**	**3,793**	**132,983,180**	**Unknown**	**35,060**
Total for Buildings in This Table	**6,201,484**	**15,715**	**476,144,328**	**Unknown**	**---**
Total for All Department Buildings	**6,201,484**	**15,715**	**476,144,328**	**Unknown**	**---**
% of Totals	**100%**	**100%**	**100 %**	**Unknown**	**---**

Reporting on Properties with Largest Landscape Area Using Purchased Water

DSH has been diligent in its efforts to conserve water usage at its facilities by using low flow fixtures and appliances where possible, through continued installation of new plumbing technologies in all renovated and new construction projects, and through prompt repair of building leaks. Examples of water efficiency measures commenced by DSH facilities include installation and use of the following:

- High efficiency, low-flush urinals and toilets
- Efficient low-flow shower heads
- Proactive leak detection and repairs
- Drip irrigation with smart controllers
- Shut off timers.

All showers are equipped with timers to help with water reduction, and shower heads include a flow restrictor installed by the manufacturer. Aerators are also in use to control the amount of water that flows through the tap without affecting the water pressure in employee areas. However, aerators cannot be installed in patient areas due to ligature risk to patients. Anti-ligature items are currently being installed in patient areas as following the guidelines and requirements from the Joint Commission.

Table 4.3: Properties with Largest Landscape Area Using Purchased Water

Building Name	Landscape Area (ft2)
DSH-Atascadero	**290,180**
DSH-Coalinga	**100,000**
DSH-Metropolitan	**1,218,276**
DSH-Napa	**390,139**
DSH-Patton	**1,307,884**
Total Landscaping area for Buildings in This Table	**3,306,479**
Total Landscaping for All Department Buildings	**3,306,479**
% of Totals that is large landscape (area over 20,000 ft2)	**100%**

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

Recycled water is mostly used for non-potable purposes such as agriculture, landscape, and irrigation. Other non-potable applications include its use in cooling water for power plants, toilet flushing, dust control, construction activities, and water features. Recycled water costs about half as much as potable water and its use helps preserve potable supplies and local water tables.

DSH is taking steps to utilize recycled water for landscape and irrigation purposes wherever available:

- DSH-Metropolitan makes optimal use of recycled water for maintenance of its grounds by utilizing over 45 million gallons annually
- DSH-Napa is currently connected to one of the five available meters that provide approximately 4,000 gallons of recycled water annually and relies on this recycled water for outdoor purposes

DSH will evaluate options for the design, installation, and operation of on-site recycled water systems at its remaining facilities as recycled water is made available by local municipalities and plumbed directly to DSH's facilities.

DSH's commitment to promote the Governor's water efficiency and conservation goals is further demonstrated by installing landscaped areas that incorporate drought resistant plants, drip irrigation, and walkways. DSH-Coalinga installed drought-tolerant plants and replaced lawns with drought resistant landscape to reduce water dependency.

Table 4.4: Department Wide Purchased Water Use Trends

Year	Total Occupancy /year	Total Amount Used (Gallons/year)	Per capita Gallons per person per day
Baseline Year 2010	15,715	519,807,124	≈90.62
2018	15,715	451,973,891	≈78.80
2019	15,715	477,993,596	≈83.33
2020	15,715	519,999,500	≈90.66
2021	15,715	502,369,084	≈87.58
2022	15,715	476,144,328	≈83.01
2024 Goal (15% reduction from 2022)	15,715	380,915,462	≈66.41

Reporting Narrative on Purchased Water Use Trends from 2010 to Present

As referenced in Table 4.4, DSH has been diligent in its efforts to conserve water usage at its facilities by ensuring water fixtures are equipped with low flow appliances where possible, by striving to continue installing new plumbing technologies in all renovated and new construction projects and promptly repairing building leaks.

Relevant strategies to minimize water use across DSH's built environment focus on the design, implementation, and evaluation of facilities and outdoor water efficiency practices and equipment such as the following:

- Water Management
- Proactive leak detection and repair
- Landscape practices

- Specialty use buildings, including patient treatment and housing facilities, central utility plants, laundry facilities, and main kitchens

Reporting on Total Purchased Water Reductions from 2010 to Present

Table 4.5: Total Purchased Water Reductions Achieved in Gallons

2010 Baseline totals (Gallons) X	2021Totals (Gallons) Y	2022 Totals (Gallons) Z
519,807,124	**502,369,084**	**476,144,328**
+ or -Gallons Compared to Baseline Year	**17,438,040**	**43,662,796**
Department- Wide Reduction as a % from 2010 baseline	**3.35%**	**8.4%**

Department Indoor Water Use

DSH implemented a series of measures to mitigate drought challenges. Landscaping measures:

- Assessed and modify irrigation of essential and non-essential areas
- Implemented minimal landscape irrigation practices to sufficiently irrigate and keep vegetation alive (i.e., multiple, short-duration watering at night)
- Lawn reduction/utilization of water-efficient landscaping
- Replaced sprinkler times with earth moisture sensing devices

Facilities Operation measures:

- Increase chill water temperature and reduce steam pressure (reducing make up water)
- Inspect all closed loop heating and cooling systems for leaks.
- Plant Operations employee take a proactive approach to water conservation with regular inspections, maintenance, and repairs underground water services supply lines.
- Replace tube and shell heat exchangers with instant heat exchangers.
- Replaced faucets, shower heads, and toilets with low-flow fixtures as facilities progress through the anti-ligature project.

Employee and Kitchen Measures:

- Onsite employee numbers have been reduced by having certain employees telework as operationally feasible, thus reducing water consumption by less employee using bathroom facilities on site.
- Due to COVID-19, kitchens limited in-person dining and temporarily transitioned to feeding patients on the units, as a means to prevent the spread of COVID-19.
    - This has resulted in a reduction in dish washing as recyclable paper products are used in this process.
    - This saves on both fresh-water usage and soft water production which has a high-water consumption for regeneration of soft water systems.

DSH will explore funding via the California State Water Conservation Grant administered by the Department of General Services Sustainability team. This grant program will allow DSH to purchase needed water conservation tools, such as water meters and irrigation controllers, to allow DSH to work towards reducing the pressure on the state's water table.

Tracking water project savings and trends for DSH is extremely difficult due to the lack of water meters at the hospital facilities. Acquiring financing via the California State Water Conservation Grant is a critical step forward in DSH's water management plans.

General Water Management

DSH continues to practice general water management by:

- Tracking monthly water use manually.
- Checking leak indicators on water meters when water is not in use.
- Reliance on DGS water uses tracking data derived from utility bills.
- General water management by pursuing water conservation projects.
- Drought water landscape: general reduction of water usage as mandated by the State.
- Installation of low flow water fixtures and/or meters

Leak Detection and Repair

DSH hospital employee perform monthly visual leak detection surveys on all water use fixtures:

- Plumbing fixtures are (i.e., toilets, urinals, sinks) routinely visually inspected on a rotating Preventative Maintenance (PM) schedule.
    - In the interim, employee are responsible for reporting leaking, damaged, or clogged fixtures via the Work Order system, or by calling Plant Operations directly.
- Faucets are checked for proper aerators (kitchen faucets 2.2 gpm and lavatory faucets 0.5 gpm) and aerators or laminar flow devices are installed, if necessary
- Showerhead flow rates are checked and new showerheads that use no more than 2.0 gpm with trickle flow controls are installed, if necessary

Kitchens

- Replacing any broken or damaged dishwasher racks and run dishwasher only when full to maximize capacity.
- Checking all equipment water temperatures and flow rates against the manufacturer recommendations.
- Use the recommended minimum temperature and flow to maximize savings.
- Turning off the continuous flow used to wash the drain trays of the coffee/milk/soda beverage island and clean thoroughly, as needed.
- Adjusting ice machines to dispense less ice if ice is being wasted.
- Reducing the flow to dipper wells (troughs) for ice cream, butter scoops, and other frequently used utensils.
- Presoaking utensils and dishes in basins of water, rather than in running water.
- Do not using running water to melt ice in bar sink strainers.
- Not using running water to defrost food.
- Not allowing water to flow unnecessarily.

Laundry Facilities

- Running washer only when full to maximize capacity.
- Setting water level and water temperature appropriately according to the load

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
675	99	100	323	35	0	10

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

As a result of the hospital-wide building inventory, a total of 1,242 items were identified as potentially needing replacement. DSH-Napa recorded the greatest need, followed DSH-Metropolitan and DSH-Atascadero. The aggregated total replacement cost is $1,387,000. The financing will be primarily covered by ESCO at DSH-Napa, and the remaining facilities will utilize possible grant funding from DGS.

Water Conservation and Water Efficiency Projects for Purchased Water

Reporting on Current Indoor Water Efficiency Projects 2020- Present

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

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

2021	**-**	**No projects Completed**	**-**
2022	**-**	**No projects Completed**	**-**

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

Planning Outline PO4:a: Building Indoor Water Efficiency Priority Projects for the Next 5 Years

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

Planning Narrative for Future Indoor Water Efficiency - Building Priority Projects

At present, DSH has no projects on schedule, or in development specifically related to increasing water efficiency in indoor settings. All future projects and projects currently in design are being developed with indoor water efficiencies included. DSH will continue to review all hospital projects to include new future projects for indoor water efficiencies.

Planning Narrative on General Water Management BMP

At this time the projects in development are in the very early stages and are awaiting funding for further prioritization. Funding opportunities that DSH is pursuing include grants, realignment of excess funds from completed projects, as well as COBCPs.

Planning Narrative on Leak Detection and Repair BMP

There is no formal plan in place, however employees can easily spot water leaks by visually seeing pools of water and follow appropriate protocols to report to local Plant Operations when repairs issues arise. The Plant Operation teams at each hospital often conduct building checkups, provide maintenance and preventative measures for safety.

Planning Narrative on Kitchen Water Conservation BMPs, Fixtures

- Surface water is investigated, excavated and repairs are performed.

- Condensate is chemically measured for hardness indicating a leak in the closed loop hydronic systems, provoking heat exchanger investigation.
- Monitor close loop chemicals for fluctuation. This is an indicator of lost water.
- Reports for water leaks such as fixtures are received either through the work order management system or a phone call to the work order desk.
- Cooling towers are visited weekly at a minimum for spray or any other leakage.
- Monthly water consumption is reviewed relative to previous month(s). Investigation is performed for add normal water consumptions.

Planning Narrative on Laundry Facilities Water Conservation BMPS

Some Laundry is done on-site, but the majority is sent off-site to the to the California Prison Industry Authority (CalPIA) for cleaning and returned. Water temperature is set to appropriate levels and washers are ran when at appropriate capacity to reduce water waste.

Department Total Non-Purchased Water

Reporting on Total Non-purchased Water Excluding Water Reuse or Recycling

Table 4.8: Department-Wide Non-purchased 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	0	0	89,906,100	0	89,906,100
2021	0	0	83,801,000	0	83,801,000
2022	0	0	77,209,000	0	77,209,000

Reporting Narrative for Non-purchased Water

Currently DSH Atascadero utilizes 100% of their water from an onsite groundwater well. As a result, DSH does use non-purchased water everyday as part of our day-to-day operations. DSH-Atascadero uses less water in the winter months as does our other hospitals due to the decreased watering of exterior grass and plants during that time. DSH-Atascadero is considered a "Public Water Provider" and requires DSH-Atascadero to comply with special federal regulations which at the time of this report DSH-Atascadero is in compliance.

Public Water Provider Information Located here.

Reporting Narrative for Non-purchased Water Use Trends

DSH-Atascadero along with the other hospitals have tracked reduced usage in water consumption.

Planning Narrative for Non-purchased Water Unavailability

As stated in the previous narrative section for non-purchased Water Use Trends, only DSH-Atascadero location uses non-purchased water for day to day operations. There currently is no plan outside of continual work on installing water reducing appliances and fixtures.

Department 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)	NO DATA	NO DATA
Amount of Water Currently Reused. (Gallons)	NO DATA	NO DATA
Remaining additional water suitable for other purposes (Gallons)	NO DATA	NO DATA
Totals for all Facilities	NO DATA	NO DATA

Planning Narrative on Boiler Water Reuse Opportunities

DSH is currently not tracking boiler water reuses. The IMP will look into energy/ water savings and efficiencies for all hospitals. Some hospitals use boiler water on a closed loop to maximize efficiency.

Planning Narrative for Boiler Efficiency

DSH is currently not tracking boiler efficiency. The IMP will look into energy/ water savings and efficiencies for all hospitals.

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)	NO DATA	NO DATA
Totals for all Facilities		

Planning Narrative on Cooling Tower Water Use.

DSH is currently not tracking this data. The IMP will look into energy/ water savings and efficiencies for all hospitals.

Planning Narrative for Cooling Tower Water Reuse

DSH is currently not tracking this data.

Planning for Narrative for Cooling Tower Efficiency

The future installation of an automated blowdown control system allows for active monitoring of the boiler conductivity and optimizes the volume of blowdown based on fluctuating steam loads. A well-designed automated blowdown system will lead to increased boiler efficiencies and promote improved water conservation.

Additionally, maximizing condensate return, by returning pressurized condensate will reduce the flash losses and increase the overall water savings. Improved Insulation of the return piping, heat exchangers will also minimize water loss.

The planned install of pretreatment equipment will alter or remove the minerals in the make-up water can significantly reduce the required blowdown and the consumption of water. Examples of this equipment include softeners, de-alkalizers, de-ionizers and reverse osmosis units (ROs).

DSH is also looking into installing equipment necessary to return more condensate such as new modern steam traps or repair any failures in the existing condensate return lines that are leading to condensate losses. Replace boilers with high efficiency boilers or replace the Steam Plant with remote localized instant hot water generators.

Barriers: All the above-mentioned planned improvements are relative to funding and resource availability.

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 DATA**	**NO DATA**

Planning Narrative for Boilers Needs

DSH-Coalinga Boilers were upgraded in 2023. DSH-Metropolitan also has an active project currently in bid for their boiler replacement.

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 DATA
Water Treatment	NO DATA
Other	NO DATA

Planning Narrative for Cooling Systems Needs

DSH-Coalinga chillers have been upgraded and they only need Condenser upgrade. At DSH-Patton, there are seven cooling towers: three have been replaced; four have deteriorated, two of which are in need of replacement. The IMP will outline critical systems and upgrade needs for all campuses.

Reporting on Efficiency Projects for Boilers and Cooling Systems 2020-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	**0**	**0**	**0**
2021	**0**	**0**	**2**
2022	**0**	**0**	**4**

Planning Narrative for BMPs for Building Boilers and Cooling Systems

DSH's ESCO and IMP projects will contribute to the best management practices (BMPs) for all hospitals. When assessing water use, it is important to identify and

analyze all water-intensive processes for potential efficiency improvements. DSH will evaluate water-saving operational and maintenance actions as well as retrofit and replacement options for these equipment types.

Water softeners are often used to remove minerals and provide purification to water and its systems. Boilers and cooling systems are also used to remove minerals from water that are used to supply the entire campuses. DSH's daily operation and maintenance care for these systems include but not limited to:

- Locate and repair leaks in plumbing connections.
- If applicable, ensure procedures are in place to turn off the water supply when equipment is not in operation.
- Check flow rates to ensure they are within manufacturer recommendations. Flow rate should be near the minimum allowed by the manufacturer.

The ESCO and IMP projects also provide retrofit and replacements to some of the existing systems at the hospitals. Such as installations of new water supply systems and water consumption. DSH Metropolitan, for example, has currently added to their ESCO project's scope of work to replace some control buttons for their water supply systems. These new controls will contribute to water savings because they can track the usages. There is also a Central Utility Plant (CUP) project set to replace the entire systems. This is currently in design and full implementation will take multiple year.

Department 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	123
Irrigation controllers required with weather or soil moisture adjustment and flow sensing capabilities	945
Backflow prevention devices	20
Flow sensors to be purchased and installed	200
Automatic rain shut-off devices	180
New pressure regulators	20
New hydro-zones	3000

Irrigation Hardware Type	Total Hardware Needed
New valves	300
Filter assemblies	0
Drip irrigation emitters	661296
Booster pumps	5
Rotary nozzles or other high efficiency nozzles	2900

Planning Narrative for Outdoor Irrigation Hardware Needs

DSH follows Executive Order B-29-15, Model Water Efficiency Ordinance (MWEO), that mandates statewide water reductions to make the state more resilient to drought.
DSH facilities, where appropriate, replaced the landscape with native plants and ground covering with desert rock, as well as using water as follows:

- Traffic patterns are clearly identified with use of drought tolerant plants and ground covering to reduce the use of water.
- DSH is in the process of performing an irrigation audit that includes reviewing the following items:
  - Inspection of irrigation systems
  - System test with distribution uniformity
  - Precipitation rates
  - Deficiencies in the system
  - Preparation of an irrigation schedule to shut down the system during precipitation.
- Facilities report usage of recycled water against savings goals.
- All facilities, except for DSH-Coalinga, use recycled water provided by the local Water District for landscape watering.
  - DSH-Coalinga replaced ground covering with desert rock.
  - Plants were reduced and converted to drought tolerant species.
  - DSH-Napa uses limited amounts of recycled water.
- Backflow prevention devices are maintained and inspected annually.
- Inspections for leaks in the irrigation systems, run-offs, standing water, and over/under usage are monitored daily.
- Facility landscapes are maintained by in-house personnel.
- Drought tolerant plants and/or climate appropriate plants meet the water ranking of low or very low per the region requirements established by the California Department of Water Resources
- DSH follows the amount of annual applied water established by the Public Utilities requirements for new landscape projects or replanting.

- DSH uses the Water Use Classification of Landscape Species (WUCOLS) when selecting plants based on the region and water needs.

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 frequently surrounds historic places and public memorials and 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, and water and energy efficiency and water conservation.

Urban forests are vital to improve site conditions for occupants and visitors to buildings and the surrounding community. Large shade trees should be considered valuable infrastructure and given priority over other plants to maintain tree health.

Reporting on Outdoor Irrigation Hardware Water Efficiency Projects

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

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

Planning Narrative for Irrigation Hardware Water Efficiency Projects

One project, currently in the study phase, is the DSH-N Recycled Water Project. This project will establish a connection to the City of Napa's recycled water supply line. In doing so, DSH-N will be able to purchase recycled water for non-potable uses.

All other projects that may result in water use reduction will happen and will be funded by the hospitals individually. These projects include minor landscape refreshes to utilize smart irrigation technology and water-wise planting themes.

Planning Narrative on Irrigation Hardware Maintenance BMPS

DSH-Coalinga is installing faucet timers as needed, etc., approx. 68k in 2022, 80k sq ft of lawn removed and high drought-tolerant shrubbery installed.

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)
5	3306497	NO DATA	NO DATA	Yes	Yes

Reporting Narrative on Living Landscape Inventory

All infrastructure projects are implemented with preservation of any living landscape in mind. DSH understands the importance of water efficiency, heat rises and climate change and how preserving its greeneries at all facilities is crucial.

Reporting on Living Landscape Upgrades for the Next 5 Years

Planning Outline PO4:b: Planned Projects for Living Landscape Upgrades for the Next 5 Years

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

Metropolitan – Employee Park Design	**-**	**-**	**43,310**	**In Progress**

Planning Narrative on Living Landscape Upgrades for the Next 5 Years

DSH has the IMP in place for infrastructure upgrades that will also investigate providing, planning, preserving and implementing greeneries to the campuses. DSH-Metropolitan is also in the process of addressing deferred maintenance issues with an employee park which will add living plants and landscapes near the 100's buildings.

Planning Narrative for Remaining non MWELO Compliant Living Landscape Upgrades

DSH's plan is to preserve as much living landscape as possible on each facility. Understanding the importance of how plants can keep nearby areas cooler, the department will continue to keep safe its greeneries and will continue to explore opportunities involving landscape and irrigation projects. DSH is looking to complete projects that are MWELO compliant by 2027/28.

Reporting on Living Landscape Water Efficiency Projects 2020 – 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	NO DATA	NO DATA	NO DATA
2021	NO DATA	NO DATA	NO DATA
2022	NO DATA	NO DATA	NO DATA

Planning Narrative on Living Landscape BMPs

DSH is currently assessing the total living landscape square footage as this is a new metric to this cycles Sustainability Roadmap Report. DSH will have this data compiled and available in time for the 2023-24 Roadmap.

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

DSH is currently assessing the total living landscape square footage as this is a new metric to this cycles Sustainability Roadmap Report. DSH will have this data compiled and available in time for the next Roadmap.

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
Metropolitan – Employee Park Design	Pending completion of plans	NO DATA	NO DATA

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
NO DATA	NO DATA	NO DATA	NO DATA	NO DATA	NO DATA

Planning Narrative on Achieving Large Living Landscape Requirements

Nothing to report at this time.

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	NO FACILITIES	NO DATA	NO DATA

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
NO FACILITIES	NO DATA	NO DATA

Planning Narrative for Urban Water Shortage Contingency Plans

The DSH Health and Safety team developed a comprehensive three-phase plan in the event of a water shortage:

DSH-Atascadero Water Conservation Plan:

PHASE I (≤ 10% conservation)

- Initiate Department wide messaging via email and Everbridge notification system.
  - Notify employee of the proclamation and link to the official document
  - Provide recommendations to reduce water use and promote conservation.
    - Shut off faucet while washing hands, etc.
    - Encourage employee to promptly report all water leaks so repairs can be conducted in a timely and efficient manner to minimize waste.
    - Eliminate use of water to wash down hardscaped surfaces such as concrete and asphalt.
    - Limit washing of vehicles to the minimum necessary.
    - Reduce overall use of water for both production and clean up in all kitchen and dining areas.

- Utilize Therapeutic Community meetings to share information with patients and include tips to reduce water use.
  - Shut off faucet when brushing teeth or washing hands.
  - Reduce shower times if possible.
- Initiate Water Conservation Campaign
  - Post water conservation flyers near sinks and faucets

PHASE II (≤ 20% conservation)
If water reduction targets are not met in Phase I of this plan, DSH shall implement the following measures.

- Assess and modify irrigation of essential and non-essential areas.
- Implement deficit landscape irrigation practices to sufficiently irrigate and keep vegetation alive (i.e., multiple, short watering at night)
- The Executive Director issues a moratorium to all departments to reduce water consumption (See recommendations in Phase I)
- Lawn reduction/utilize water-efficient landscaping.

PHASE III (≤ 20-30% conservation)
All prohibitions and restrictions noted in Phase 1 and Phase 2 shall be in effect.

- There shall be no outdoor use of water at any time, except the minimal amount by handheld hose equipped with a shut-off nozzle. If no further water reduction can be made without compromising patient care and facility needs, an exemption will be requested.

Hospitals (excluding Atascadero) Drought Plan:

Hospital	Link to Plan
Coalinga	City of Coalinga
Napa	City of Napa
Metropolitan	City of Norwalk
Patton	East Valley Water District

Reporting Narrative for Department's Contingency Plan

All hospitals have water management plans in place. DSH also worked on a water conservation master plan as part of the 2022 Water Conservation Grant Program. The Department hopes to implement the Master Plan to all the hospitals in the future.

With the current water management plan, the program teams at the hospitals regularly monitor the water quality parameters to ensure the building systems are functioning under conditions that minimize hazardous conditions and that there are appropriate water supplies available to supply the entire facilities.

The hospitals have emergency water supply plans to maintain daily operations and patient care services in the event of water restrictions, shortages or reductions. Some activities that will impact the reduction of water at the facilities are food preparation, handwashing, drinking fountains, patient care (emergency, bathing, wound care, etc.), HVAC and toilet flushing. The care of the patients will need to be planned in case of such reductions as their safety is the priority at the hospitals.

Planning Narrative on Department's Contingency Plan

DSH is currently planning to implement a Water Conservation Master Plan that pertains to all five hospitals. The goal for this is to develop a comprehensive management plan for the hospitals that will serve as the central linking document specifically for the roadmap. The outcome of this is estimated to be a 3-year plan which will identify the specific projects that will contribute to the conservations of water at each of the hospitals. The plan is separated into five steps below:

Step 1: Assess current water use and costs
Step 2: Estimate water end uses
Step 3: Develop the water balance
Step 4: Assess water efficiency opportunities and economics
STEP 5: Develop an implementation plan

Some potential projects that are identified for the master plan are:

Hospital	Improvement Category	Estimated Savings (Annual Gallons)	Gallons Saved per Dollar	Estimated Project Cost	Project Scope
DSH-A	Water Treatment	700,000	2.59	270,000	Cooling tower optimization, utilizing dynamic water technologies.
All	Equipment	256,600	0.06	45,000,000	Decommission Steam Plant and replace with remote on-demand water heaters for domestic and heating hot water. Eliminate

					consistent make up water due to steam.
DSH-N	Infrastructure, recycled water	4,000,000	0.74	5,422,000	Recycled water system- expand infrastructure throughout entire campus for utilization of recycled water which is readily available through the county.
DSH-P	Equipment	2,000,000	0.10	20,000,000	Replace 80+ years old underground water supply line.

Subject to the availability of funding, DSH plans to participate in these grant programs to fund these projects for the next coming years.

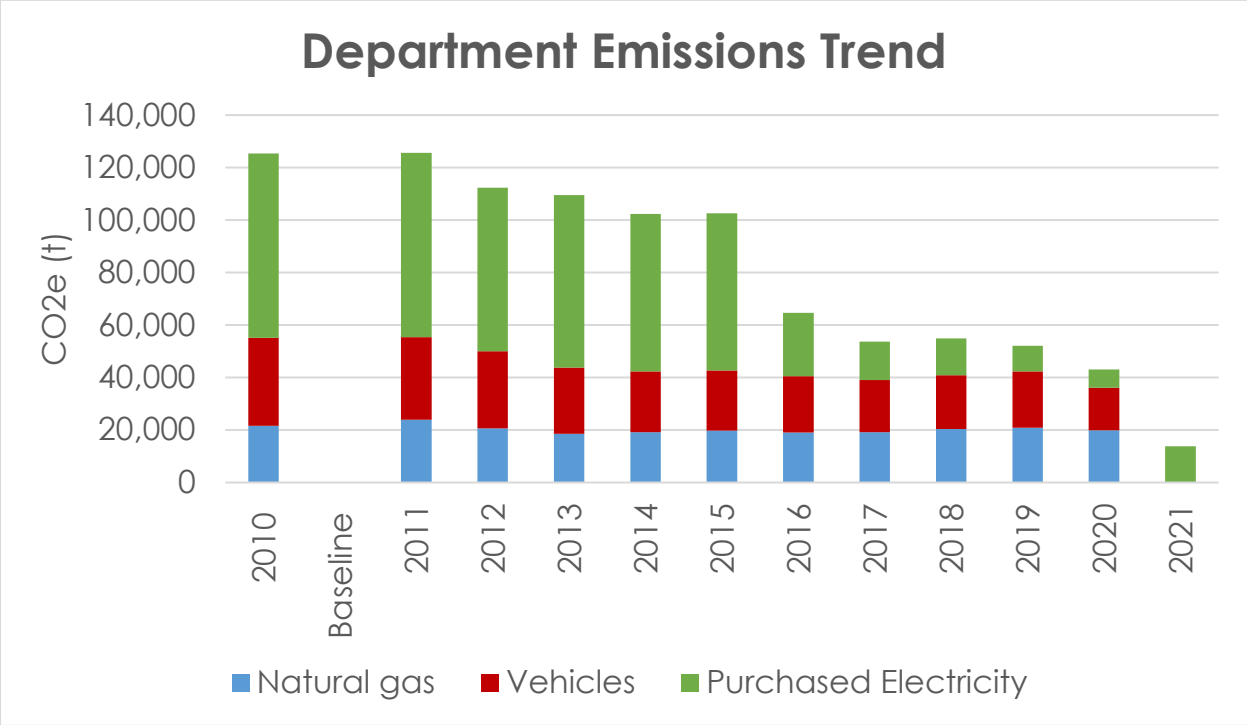
CHAPTER 5- SUSTAINABLE OPERATIONS

Greenhouse Gas Emissions

Table 5.1: GHG Emissions since 2010 (Metric Tons)

Emissions Source	Natural gas	Vehicles	Purchased Electricity	Total
2010 Baseline	21,556	33,588	70,272	125,416
2011	23,962	31,380	70,225	125,567
2012	20,587	29,461	62,340	112,388
2013	18,516	25,251	65,778	109,545
2014	19,233	23,165	59,956	102,354
2015	19,741	22,954	59,870	102,565
2016	18,996	21,460	24,234	64,690
2017	19,210	19,901	14,570	53,681
2018	20,361	20,533	13,956	54,850
2019	20,841	21,533	9,717	52,091
2020	19,906	16,214	6,938	43,058
2021	29,832	2,032	13,758	45,622
2022	29,378	1,094	13,524	43,996
Percent Change since Baseline	36%	-97%	-81%	-65%

Graph 5.1: GHG Emissions since 2010



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

DSH's five hospitals encompass nearly 6.2 million gross square feet of space in 832 buildings and roughly 2,600 acres of land. DSH carefully manages the GHG emissions generated by its facilities and equipment while continuously working to optimize and minimize energy use. DSH has been working with DGS and contracted ESCOs to conduct comprehensive energy audits of DSH facilities that will result in documented solutions for achieving energy cost reductions. ESCOs offer turn-key services for all of phases of energy efficiency retrofit projects through a single contract and assume performance risks for installed measures.

DSH has implemented energy efficiency projects to reduce plug load and consumption. Grid-based energy purchasing reduction is achieved through the installation of LEDs, photovoltaic solar panels, and modernized HVACs in various buildings at the five hospitals.

DSH will continue to monitor and actively track the effectiveness of its energy retrofit projects and its reduction of grid-based energy purchases for buildings by utilizing the statewide data entries submitted to ESPM and compliance with the following sustainability policies:

- California Department of Technology Policy 4819.31 related to power management practices.
- Management Memo 14-07 - Standard Operating Efficiency Procedures
- Management Memo 14-09 - Energy Efficiency in Data Centers and Server Rooms
- Management Memo 15-04 - Energy Use Reduction and Reporting for New, Existing, and Leased Buildings

DSH is looking to participate in regional demand response programs to obtain financial incentives for reducing peak electrical loads when called upon. These programs will be explored and considered to the extent that cost-effectiveness and assurances are in place to avoid adversely affecting hospital operations and patient care. The Department will work with DGS and utility vendors like PG&E to explore further options.

DSH is also promoting the use of renewable, clean energy throughout DSH facilities by installing additional ground mounted solar units and construction of solar PV canopies in parking lots in all facilities. New or major renovated buildings over 10,000 square feet shall use clean, on-site power generation and clean back-up power supplies, if economically feasible. DSH purchases electricity generated by the on-site solar plants at its DSH-Atascadero, DSH-Coalinga, and DSH-Patton facilities under agreements signed with DGS and third-party vendors who operate and maintain the plants. Additionally, several potential projects with DGS on solar are currently in the planning and study phase and Coalinga is awaiting a purchase plan agreement (PPA) from Forefront Power.

DSH is currently working with DGS to implement more EVSE/ EVs projects as more plans to purchase ZEVs in the work for the next five years. The expanded range of green vehicles available by state contract, ease of access to charging infrastructures, and reduced maintenance costs compared to vehicles using fossil-fuels, will continue to increase DSH's investments in eco-friendly green vehicles. DSH does not own or operate any biofuel vehicles in the fleet. DSH has achieved a collective 66% reduction in GHG emissions in the usage of gas, purchased electricity, and vehicles since 2010.

Carbon Inventory Worksheet

Planning Narrative for Carbon Inventory Worksheet

An initial step in preparation for planning details of efforts toward zero emissions is to take an inventory of all department carbon emitting equipment and systems. This allows the department to see which building systems will need to be electrified by 2035, and help strategize on upcoming renovations, equipment

condition (and need for replacement anyway), future facility obsolescence, and planning for upgrades. DSH has no data and had not complete a Carbon Inventory Worksheet for this roadmap. Moving forward, the department will coordinate with each hospital to keep track of these data/ inventories.

Building Design and Construction

New Building LEED Certification

Table 5.2: New Building Construction since July 1, 2012

Building Name	LEED Certification Type & Level Achieved	Commissioning Performed (Y/N)
Napa State Hospital – New Kitchen	LEED-NC Silver	Y
Patton State Hospital – New Kitchen	LEED-NC Silver	Y
Metropolitan State Hospital – New Kitchen	LEED-NC Gold	Y

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

Napa State Hospital - New Main Kitchen (Completed November 2017)

The DSH-Napa New Main Kitchen project consists of a new single-story, 29,000 gross square foot central kitchen facility. The project scope included abatement and demolition of existing structures, site clearing and grubbing, earthwork, excavation, and underground utilities. Site improvements included landscape and irrigation, walks, curbs, gutters, and parking. The building is a concrete slab on grade, steel structure, with plaster exterior and a single-ply roof with skylights. Special features include new kitchen equipment, high-capacity food storage racks, large refrigerator, and freezer walk-ins, and loading docks with overhead coiling doors. Surface finishes include epoxy flooring, ceramic tile, carpet tile, gypsum board, and acoustical ceilings. Additional features include a card key access system, CCTV, and diesel power engine generator. According to the Code Analysis in the Construction Documents, building design exceeded Title 24 by 10% and is rated "Silver" in Leadership in Energy and Environment Design (LEED).

Patton State Hospital - New Main Kitchen (Completed September 2019)

The project consisted of a new single-story, 36,500 gross square foot central kitchen facility. With similar site improvements and amenities as the DSH-Napa New Main Kitchen, its design exceeded Title 24 by 10% and achieved LEED Silver.

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
25	0	0

Planning Narrative for Table 5.3 Large Building LEED Certification

EBOM surveys at DSH facilities are costly and could exceed millions of dollars to complete. Most of DSH's buildings are too old to effectively meet LEED requirements. The cost of meeting requirements in most cases would likely exceed the cost to design, build, and occupy a new sustainably designed building. Most of the existing buildings on site that are 50,000 SF or over (and may be eligible for LEED EBOM) are the Skilled Nursing Facilities (SNF), patient treatment buildings and housing.

Based on its aging infrastructure, DSH has extensive capital improvement needs including seismic retrofits, security improvements, fire-life-safety upgrades, infrastructure replacement, and new construction projects. DSH, however, is working with DGS, through their ESCO program, to conduct energy audits at its five campuses for identification of potential retrofit projects which will help boost the energy performance at all DSH facilities. The IMP will also account for further studies to implement LEED into all new buildings moving forward.

Indoor Environmental Quality (IEQ)

Daylighting in New Construction

DSH will incorporate the idea of maximizing daylighting to all future potential projects. Though it can be challenging to provide maximum natural lighting to areas where the patients are, the hospital will work with its retained architecture and engineering firm and DGS to explore potential options. Typically to maximize natural lighting, numerous of glazing/ windows are used. Materials like reflective surfaces and light paint colors are also to be considered to eliminate glares and heating. The department will work with the facilities to research and implement what is allowed and required.

Planning Narrative for CALGreen Tier 1 Indoor Environmental Quality Measures

Agencies are to comply with the requirements of Management Memo 14-05, which ensures healthy indoor environments for occupants of new and major renovated buildings by implementing relevant and practical CALGreen code Indoor Environmental Quality (IEQ) measures. IEQ relates to the livability conditions inside a facility that encompass air quality, access to daylight and views, acoustic conditions, and thermal comfort.

DSH has extensive capital improvement needs, including seismic retrofits, security improvements, fire-life-safety upgrades, infrastructure replacement, and new construction projects. Achieving significant advancement toward IEQ measures hinges on the Department's ability to pursue new construction and major renovation projects to replace older infrastructure and expand capacity. The IMP will evaluate the performance and suitability of DSH's buildings for efficient continued use.

Planning Narrative for IEQ-New Buildings and Renovation Measures

DSH currently facilitates quality IEQ through high-quality designs, construction, and its operating and maintenance practices. For example, DSH is currently in the process of several roof replacement projects at DSH-Metropolitan, DSH-Atascadero, and DSH-Napa, including an upgrade of the affected air handling units (AHU). CALGreen and all applicable IEQ requirements have been factored into the plans and specifications of these projects.

IEQ standards are also prerequisites to achieving LEED certification, and DSH will factor in CALGreen and commissioning requirements as standard considerations for new construction and renovation projects. For example, the IEQ measures that meet the Volatile Organic Chemical (VOC) content limits specified in CALGreen are incorporated into construction specifications for new projects and a component of DSH's Five-Year Capital Outlay plan, including:

- Adhesives
- Fabrics
- Sealants
- Caulking
- Paints
- Coatings
- Aerosol paints
- Carpet systems
- Carpet cushions
- Wall panels

- Resilient flooring
- Thermal insulation
- Acoustical ceilings
- Composite wood products

All new building and renovation projects as stated earlier will be evaluated and studied to meet IEQ requirements and other CALGreen/ LEED requirements are met and incorporated into all DSH's projects now and moving forward.

Planning Narrative for Compliance with Furnishing Standards

Employee comfort, health, and work performance goes hand in hand IEQ. Furniture affects IEQ through the availability of ergonomics, the air contaminants or toxins produced, and its adaptability to absorb organizational churn. DSH promotes sustainable workplace standards by incorporating furniture that is adjustable and flexible enough to support multiple tasks and users. Furniture layouts are intended to optimize daylight, views, and air flow for occupants, while furniture/fabric selections focus on products that allow DSH to earn points towards future LEED certification by using the following:

- Low VOC emitting materials.
- Recycled content
- Local or regional materials
- Forest Stewardship Council (FSC) certified wood products

DSH's practices rely on the DGS "Buying Green Guide" for information, tools, and tips on the state's best practices related to the procurement of green products and services. The DSH designated Procurement and Contracting Officer (PCO) is responsible for confirming DSH's statewide compliance with the DGS EPP program and all other state contracting guidelines and statutes that govern the acquisition process, including but not limited to, the California Environmental Quality Act (CEQA) guidelines, executive orders, and industry best-practices.

Planning Narrative on Using Green Seal Cleaning Products

Eco-friendly cleaning products and services play a critical role in DSH's Green Building Cleaning program. SAM Section 1825.4 requires agencies to use indoor products and materials that emit little or no harmful chemicals and meet Green Seal (GS) Standard GS-37 related to "Cleaning Products for Industrial and Institutional Use", including general-purpose, restroom, glass, carpet cleaners, and biologically active cleaning products used for routine cleaning.

DSH practices rely on EPA recommendations, the DGS EPP "Buying Green" guidelines, and Department of Toxic Substances Control (DTSC) "Safer Consumer Practices" for assistance in meeting environmental green cleaning performance

standards and understanding eco-labels. All products are checked against the Green Seal criteria to ensure compliance before purchase. DSH hospitals also ensure safe, convenient, and secure spaces are created for storage of housekeeping chemicals.
DSH remains an active participant in DGS' Sustainable Purchasing Stakeholder Forum to ensure DSH policies and procedures contribute to future LEED certification, are strategically aligned with industry best practices, executive orders for green cleaning, and State EPP goals.

Planning Narrative for Cleaning Procedures – Various Standards

Green cleaning procedures minimize the environmental and health concerns associated with conventional cleaning practices. Cleaning products can also contribute to indoor air quality problems as VOCs evaporate and are circulated through the building's ventilation system.

DSH also recognizes that its standard operating procedures must be effective to protect vulnerable building occupants, especially during the COVID-19 pandemic. The development of requirements for staffing and training of maintenance personnel must be appropriate for the needs of the building and comply with California Code of Regulation (CCR), Title 8 Section 3362 related to the standards for sanitation.

Provisions for continuous improvement are critical as procedures, processes, and housekeeping manuals at all DSH facilities must consider the following:

- Building exterior and site maintenance programs (including reviewing plans for preventing water intrusion and managing hazardous spills/incidents)
- Efficient and optimized use of energy and water
- Purchase of sustainable cleaning equipment
- Purchase of environmentally preferred products
- Waste stream management
- Integrated pest management
- Ongoing IEQ and LEED goals
- Green cleaning best practices
- Promoting hand hygiene and availability of hand sanitizers

Planning Narrative for HVAC Operations

DSH facilities operate 24 hours per day, seven days per week, 365 days per year. DSH relies on its Plant Operations teams to ensure heating, ventilating, and air-conditioning (HVAC) systems are compliant with the provisions of SAM 1825.4 and operate as design-intended, to:

- Prevent infectious disease transmission.
- Maintain comfortable indoor climates among patient occupied areas and employee workspaces.
- Prevent premature equipment failure.
- Avoid poor IEQ and increased energy and maintenance costs.

AHUs are central air conditioners that handle the air supplied into the buildings by the ventilation ductwork. Most units operate with minimum outdoor air as allowed for energy efficiency per Title 24 section 120 related to energy efficiency and Cal OSHA's Title 8 regulations, section 5142 related to minimum building ventilation. Energy Management Systems (EMS) are also installed at each of DSH's facilities, which ensures that minimum outdoor air requirements, set per design criteria, are provided in unison with exhaust and return air ratios.

Maintenance is scheduled at various intervals for different equipment depending on manufacture's recommendations. HVAC ducts, filters, and auxiliary equipment are routinely inspected and maintained. Periodic duct cleaning also ensures prevention of microbial growth. Dampers and actuators are checked during regularly scheduled inspections along with heat exchangers. Most DSH facilities contract out for maintenance of the cooling towers, the water chemistry, and control of microbial growth. Additionally, all DSH facilities have Building Automation Systems (BAS) in place, which monitor facility-wide HVAC systems and components as part of the program.

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
DSH-A: Pestmaster Services, Inc.	Y	Current contract expires 06/30/2026
DSH-N: EagleShield Pest Control, Inc.	Y	09/30/2026
DSH-P: A Tovar Termite and Pest Control	Y	Expected early January 2024

Planning Narrative for Pest Control Contracts

The key elements of DSH's pest management strategies rely on standard operating procedures that focus on the following proactive measures:

- Regular site inspections to determine the types and infestation levels of pests.
- A record-keeping system to document trends and patterns in pest outbreaks.
- Establishment of action plans for specific pests.
- Preventive measures as the primary means of pest control.
- Criteria to identify the least-toxic material to be used.
- Regular evaluation to determine the effectiveness of the program.

DSH's Integrated Pest Management (IPM) program preferentially requires non-chemical approaches. Higher-tiered pesticides are used only after monitoring indicates they are needed (according to established guidelines and treatments) to remove the target organism. Pest control materials are selected and applied in a manner that minimizes risks to human health, beneficial and nontarget organisms, and the environment.

DSH-Coalinga and DSH-Metropolitan rely on Vector Control Technicians (VCT) to manage IPM programs at some of its facilities. VCTs are civil service classifications that hold a professional license issued by the California Structural Pest Control Board which requires IPM compliance and continuing education. VCTs train maintenance employees and contractors on identification, treatment, and prevention of pests, techniques for establishing and maintaining a written program, and instituting green practices using IPM preferred techniques.

Fossil Fuel Landscaping Equipment Replacement with Low Emitting Landscaping Equipment

Planning Narrative for Replacing Fossil Fuel Landscaping Equipment

DSH does not utilize 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

All recycling efforts are examined by the recycling teams at each hospital. DSH utilizes Govdeals to recycle items and reduce material going into the landfill. DSH has contracts for recycled items, such as metal, e-waste, organic food waste and textiles. DSH also has a mattress and pillow recycle contract at each hospital, reports regarding tonnage are compiled by using the waste and recycle billing reports from contracted vendors.

Planning Narrative on Designated Waste and Recycle Coordinator and Program Basics

All recycling efforts are examined with by the recycling teams at each hospital. DSH utilizes Govdeals to recycle items and reduce material going into the landfill. The hospitals also have contracts for recycled items, such as metal, e-waste, organic food waste and textiles. They also have a mattress and pillow recycling contract. Reports regarding tonnage are compiled by using the waste and recycle billing reports from contracted vendors.

Waste and slop bins are picked up weekly or bi-weekly by the vendors. As standards change and contracts are due, the language is incorporated into the new contract.

All DSH hospitals are meeting the target standards.

SARC Report

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

Site	Total Waste 2021	Total Waste 2022	% Change from 2021/2022
DSH-A	681.00 tons	704.54 tons	3.5%
DSH-C	1,594.94 tons	1,629.99 tons	2.2%
DSH-N	1,044.00 tons	997.97 tons	4.4%
DSH-M	1,120.58 tons	1,066.17 tons	4.8%
DSH-P	1,418.52 tons	1,157.76 tons	18.4%

Reporting Narrative on SARC Report on Total Waste per Capita

In October 2014, Governor Brown signed AB 1826 Chesbro (Chapter 727, Statutes of 2014), requiring State Agencies to recycle organic waste on and after April 1, 2016. Each state agency and large facility must submit an annual report to CalRecycle and their yearly progress in meeting the 50 percent waste diversion mandate.

Looking at the past two years data for all hospitals above, three of the hospitals were able to lower their disposal rate from 2021. DSH is and will continue its recycling and organics recycling efforts to minimize waste. DSH is also researching solutions and further ways to increase recycle/ reuse of waste.

Planning Narrative on SARC Report on Total Waste per Capita

State Agency Waste Management Annual Reports (SARC) (ca.gov)
PER CAPITA DISPOSAL RATE ACHIEVED

Recycling Program and Practices

Reporting Narrative on Recycling Program and Practices

DSH facilities makes every effort to recycle items such as beverage containers, glass, paper products, plastics, etc. Some items that are recycled by the hospitals include:

- Beverage containers
- Glass plastics
- Cardboard

- Papers
- Copier/ toner cartridges
- Metals
- Wood
- Textiles
- Mattresses
- Tires
- White goods
- Construction materials
- Rendering

Planning Narrative on Recycling Program and Practices

Below are some recycling practices by all the facilities:

- **DSH-Atascadero**
  - Utilizes a hauling company for recycled paper, cardboard, plastics, miscellaneous metals, and organics
  - E-Waste and toner cartridges are recycled by PIA
  - GovDeals is utilized to sell unused or end of life surplus property to avoid being discarded into the landfill
  - Mattress and pillows are recycled
  - All towels, washcloths, blankets, and sheets are given to Plant Operations to be utilized as rags
  - 100% of all remaining textiles are recycled
  - Rendering is recycled
  - Hazardous waste is picked up and hauled away.
  - Office supplies and property are re-utilized throughout the facility
  - Standard language is used to purchase goods to vendors providing the recycle content of items.

- **DSH-Coalinga**
  - Contracts are in place to pick up e-waste and hazardous materials
  - Automobiles are sent to state auctions
  - Major equipment is sent to DGS for sale online
  - Items no longer needed are sent to other facilities or schools
  - Mattresses are recycled

- **DSH-Metropolitan**
    - Surplus property is used whenever feasible
    - Equipment is reutilized internally or General Services either recycles or donates items to be used elsewhere
    - Records are stored and archived electronically
    - Boxes, pallets, and packing materials are reused by warehouse.
    - Employee throughout the facility
    - Retreaded tires and used vehicle parts are used whenever price and availability are comparable
    - Recycled content products are used, and suppliers are required to certify the minimum post-consumer recycled content

- **DSH-Napa**
    - Recycling program in place to divert e-waste and hazards to
    - the appropriate recycling centers
    - Blue recycle bins are set up throughout the facility to collect paper materials to be recycled regularly
    - Towels from the laundry department are recycled into cleaning rags for janitorial employee
    - Materials exchange is promoted by reusing and checking with State surplus prior to purchasing
    - Procurement consults with the Property department for available furniture prior to purchasing
    - Emphasis is on obtaining green products that meet the recycle percentage requirement
    - State Agency Buy Recycle Campaign (SABRC) information is reported on FI$Cal for all purchases that contain recycle materials

- **DSH-Patton**
    - Collection sites and contracts with outside service providers are utilized for collection, recycling, and disposal
    - Universal waste items such as electronic devices, microwaves, batteries, and fluorescent lightbulbs are disposed by the e-waste contractor
    - Hazardous wastes, including medical and pharmaceutical waste, antifreeze, cooking oil, and motor oil, are collected and disposed of by outside contractor

One of the biggest barriers affecting DSH hospitals' ability to recycle materials has been the COVID-19 pandemic. Many companies utilized by the hospitals ceased the pick-up of materials, forcing the facilities to utilize outside contractors. Here is a list of options and challenges the hospitals are working on to ensure compliance with recycling program mandates:

- **DSH-Atascadero**
  - Continue to research recyclers for food soiled paper for disposable trays for the dining areas
  - Paper trays, bowls, and cups increased in 2020 due to COVID as all patients were served 3 meals per day for approximately 8-9 months in their units rather than in the dining areas
  - PIA ceased pick-up of e-waste and toner cartridges

- **DSH-Coalinga**
  - The location of the hospital makes it difficult to find vendors to bid or come out to the facility
  - Employees needed to properly sort, and separate recyclable or disposable materials
  - Training and education of existing staff will help reduce waste and ensure staff are aware of the recycling program mandates

- **DSH-Metropolitan**
  - Seek best practices from other hospital recycling programs consistent with SB 1383 including exploration of equipment to support organic waste recycling

- **DSH-Patton**
  - Local solid waste contractors have not provided a reasonable solution or cost benefit to reuse or repurpose these types of materials such has motor oil, anti-freeze, cooking oils, etc.

Organics Recycling

Reporting Narrative on Organic Recycling Program and Practices

It is required that all state agencies implement AB 1826 (Chesbro, Chapter 727, Statues of 2014) and SB 1383 (Lara, Chapter 395, Statutes of 2016) to meet the mandatory statewide recycling program and practices.

DSH has and continues to abide by AB 1826, which requires that state agencies arrange for recycling services for the following types of organic material:

- Food Waste
- Green Waste
- Landscape and pruning waste.
- Non-hazardous wood waste
- Food-soiled paper

In late 2022 and early 2023, the department also implemented SB 1383, which required all state agencies to properly maintain mandatory commercial recycling and organic recycling programs. This include proper labeling of recycle containers that are available to collect bottles, cans, paper, cardboard, food waste, and other recyclable materials. Each hospital is provided with containers for landfill, compost and recycle to properly sort different types of waste into the correct containers.

DSH building management and plant operation employees are key players to ensure DSH's organic recycling program is met at each hospital. They provide trainings to employees and make sure all wastes are disposed of properly in their proper waste containers. These wastes are then sorted and hauled by contracted vendors and haulers to be properly disposed or recycled of. Each hospital has a recycle coordinator who keeps track of these waste data and report them annually to CalRecycle.

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
N/A	N/A	N/A	N/A	N/A

Reporting Narrative on Edible Food Recovery Program

DSH does not currently have an Edible Food Recovery Program id.

Planning Narrative on Edible Food Recovery Program

DSH is currently not participating in any food recovery program due to the nature of its occupancy type. The way the hospitals serve food to patients is not eligible for any type of food recovery because no leftovers are being stored and kept for later use and consumption. The main course is cooked and prepared from scratch at the kitchen. Some other items served with the main course may be pre-packaged food like bread, yogurt, fruits, snacks, tuna, assorted sauces, etc.. All main courses are served fresh daily, and any remaining are disposed of afterward. Though the main courses are not recoverable, items like pre-packaged and concealed items are and are stored for later use.

Some vendors that supply pre-packaged food items like pudding, bread, fruits, apple sauce, condiment, coffee, cheese, etc. are Prison Industry Authority (PIA), Meridian Food Services Inc., Performance Food Group Inc., Bimbo Bakeries USA Inc., and San Joaquin Distributors.

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
NO FOOD SERVICES	NO FOOD SERVICES	NO FOOD SERVICES	NO FOOD SERVICES

Planning Narrative on Food Service Items Program

This section falls under the SB 1335 which aims to ensure food service packaging fits into the state's recycling and composting systems, encourage packaging design improvements to protect public health and wildlife, create more takeback and reuse options at state facilities, and reduce contamination in recycling and composting streams.

DSH foodservice operations currently include cook/chill systems to ensure that food is delivered and served within health and safety standards. To prevent waste, none of the main course meals are prepackaged. As mentioned in the previous recycled sections, when there are opportunities for recycling and waste preventions, the facilities will do its best to implement that into their requirements.

Hazardous Waste Materials

Reporting on Hazardous Waste Materials

Table 5.8: Hazardous Waste Materials

Department -Wide Hazardous Material Name	Department Total Hazardous Material Amount (lbs.)
Alkaline Solutions	8.34
Asbestos-Containing Waste	63,509
Inorganic Solid waste	78,660
Waste Oil, Mixed Oil, Unspecified Oil	11,846
Oil/ Water Separation Sludge	42
Latex Waste	2,380
Pharmaceutical Waste	37,810
Q2, 2012/ 2013	1,631
Q3, 2011	38,451
Off-spec, Aged, or Surplus Organics	6,790
Off-spec, Aged, or Surplus Inorganics	249
Other Organic Solids	7,257
Other Inorganic Waste	646
Empty Containers < 30 Gallons	386
Laboratory Waste Chemicals	2,328
Unspecified Organic Liquid Mix	1,239
Unspecified Aqueous Solution	304
Liquid w/ Halog Organic Comp.	516
Liquids w/ PH <= 2 w/o Metals	29
AQ Solutions w/ Organic Residue	8,576
Polychlorinated Biphenyls & Materials	353
Pesticides Waste	1,455
Household Waste	553
Oxygenated Solvent	397
Hydrocarbon Solvent	1,226
Ignitable	11,316
Chromium	10,398
Corrosives	58
Arsenic	529
Barium	543
Cadmium	543
Lead	5,769
Mercury	9,991
Selenium	10,416
Silver	10,060

m-Cresol	17,174
Nicotine, Warfarin and Salts	26,507
Nitroglycerin	465
Melphalan	419
Epinephrine	26,026
Phenol	7
Mitomycin C	6,768
Benzene	1,102

Reporting Narrative for Hazardous Waste Materials

Hazardous waste is a waste with properties that make it potentially dangerous or harmful to human health or the environment. Hazardous wastes can be liquids, solids, or contained gases. They can be the by-products of manufacturing processes, discarded used materials, or discarded unused commercial products, such as cleaning fluids (solvents) or pesticides. These types of wastes are dangerous and disposal of them require licensed hazardous waste disposal vendors.

For all hazardous wastes like medical and pharmaceutical waste, antifreeze, cooking oil, and motor oil, those are collected and disposed of by outside contractors at each hospital. DSH uses the Department of Toxic Substance Control's Waste Reporting System (WRS) which is specifically designed for hazardous waste generators and facilities to enter and report their hazardous waste activities for the Annual Facility Report or Biennial Hazardous Waste Report.

DSH goal is to reduce waste and appropriately dispose of hazardous materials. Each hospital has different units and employees in their respective units are responsible for arranging proper disposal and tracking of the different types of hazardous materials and waste produce. For example, the Plant Operations team keeps record of construction waste like lead, asbestos, solvents, etc. The Pharmacy/ medical groups are responsible for reporting of all medical and biohazard waste.

Planning Narrative for Hazardous Waste Materials

Looking at the above waste manifested over the past two years, the amount of waste for each item listed above has gone down. For example, at DSH Patton, in 2021 the total amount of asbestos waste generated was roughly eight tons but in 2022, the same type of waste has gone down to two tons. This decrease may be attributed to the number of active constructions at the hospital and the number of hazardous materials that were removed/ disposed of each year. As shown on the number above, asbestos waste is the second largest waste manifested due to the ongoing construction projects at all the hospitals.

DSH will continue to work on minimizing and using less hazardous materials. The challenge with this is that DSH is a medical facility that requires the use of products that may generate waste (I.e. pharmaceuticals). However, with the upgrade of infrastructures and construction renovations that are ongoing and planned for the hospitals, any hazardous construction materials like asbestos will become less likely to be reported as the facilities work to upgrade its buildings.

Universal Waste

Reporting on Department-Wide Universal Waste Materials

Table 5.9: Reporting on Department- Wide Universal Waste Materials

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

Planning Narrative for Department-Wide Universal Waste Materials

Universal wastes are hazardous wastes that were determined to pose a lower immediate risk to people and the environment compared to other hazardous wastes. Universal wastes must be either transported out or sent out to universal waste handler so they can recycle the waste accordingly to the universal waste standards and regulations. Universal wastes are also handled by outside contractors like for hazardous waste materials. The department wide universal waste materials disposal is achieved under these contracts.

Material Exchange

Reporting Narrative on Department-Wide Material Exchange

DSH uses state-offered reutilization programs, managed, and maintained by DGS, to promote the exchange and reuse of unwanted or surplus materials and fleet assets. The exchange of surplus materials reduces the cost of materials/products for the receiving agency and results in the conservation of energy, raw resources,

landfill space, the reduction of greenhouse gas emissions, purchasing costs, and disposal costs.

Planning Narrative on Department-Wide Material Exchange

DSH will continue to utilize the above programs with the help of DGS to maximize its material exchange programs and participations.

Waste Prevention Program

Reporting Narrative on Department-Wide Waste Prevention

The state-offered programs in this section support DSH as (a) waste prevention: actions or choices that reduce waste and prevent the generation of waste in the first place; and (b) reuse: using an object or material again, either for its original purpose or for a similar purpose, without significantly altering the physical form of the object or material.

Planning Narrative on Department-Wide Waste Prevention

DSH will continue to participate in state-offered programs to improve waste. The hospitals are also reusing any equipment and or materials during any of its construction projects when necessary to prevent waste. For example, on projects where demolition occurs and sinks need to be taken out for any construction work to start, the hospital and the design team will access the existing fixtures to determine reusability. This is to contribute to the reuse and recycle programs and to help keep the cost of the project low if applicable.

Reuse Program

Reporting Narrative for Department-Wide Material Reuse

As described above, DSH makes every effort to participate and recycle and/or reuse any of its materials as deemed appropriate. Some challenges the hospitals may face with reusing materials and or existing fixtures/ equipment is if the materials and/ or equipment is outdated and not code compliant. For example, if the hospital wants to reuse an existing fixture but the fixture is not in complaint with ADA, Energy Star performance requirements and or other types of restrictions, then the item cannot be reuse and therefore the hospital must find a way to recycle it.

Planning Narrative for Department-Wide Material Reuse

To enhance the Department's material reuse program, DSH will continue to

participate in material reuse and recycling programs as well as educating more employee statewide and not just employee that are onsite at the hospitals.

Employee Waste and Recycling Training and Education

Reporting Narrative for Employee Waste and Recycle Training and Education

Pursuant to AB 2812 (Gordon, Chapter 530, Statutes of 2016), each state department is required to provide 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. Below is a quick breakdown at each hospital and how employees ensure the requirements are met.

DSH-Atascadero

- Hospital General Services Administrator (HGSA) II and Housekeeping supervisors educate employees on how to separate recycling.
- Vendor and procurement information is included as standard language when purchasing goods and services.
- Recycling meetings are held to discuss logistics and recycling efforts.
- Employee Appreciation BBQ is used as a recycling event for all water bottles, soda cans, organic food waste, and cardboard to promote recycling.

DSH-Coalinga

- Education is provided to employees on the benefits of recycling.
- Suppliers are educated and trained on how important it is to use recycled materials and that, as a state agency, it helps them to get more agencies to buy from them.
- Hazardous waste specialist holds monthly presentations for new employee during orientations.

DSH-Metropolitan

- Dedicated recycling employees onsite
- There are waste and recycling signages posted throughout the facility (signs, posters, labels for recycling bins)
- Employee trainings are provided to appropriate employees.
- Adequate number and condition of receptacles
- Web page - intranet and internet are used to inform and update employees on waste and recycle requirements
- Distribution of brochures, flyers, newsletters, publications, newspaper, articles/ ads

- Automated Procurement Training Tracking System
- Employee Recycled-Content Procurement training.
- Requirements in place for the Recycled-Content Product Certification for all purchases

DSH-Napa

- The recycling receptacles and signage at the facility clearly indicate the separation of products that can, or cannot, be recycled.
- Employee have attended the CalRecycle webinar to gain knowledge of
  current recycling regulations
- Dedicated employees in place to collect recyclable materials and organizes them for recycling.
- Procurement employees have business contracts with vendors who can provide green products and services.

DSH-Patton

- Recycling coordinator onsite is researching solutions and strategies to increase awareness and trainings.
- All collection receptacles are in areas where maximum collection of recyclables are achieved.
- All receptacles are clearly marked with either a designated color or signage stating the type of recyclables accepted in each container.

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

Reducing Impacts

DSH is committed to reducing the environmental impact of goods and services purchased. DSH's designated PCO is responsible for promoting statewide compliance with the DGS EPP and all other state contracting guidelines that govern the procurement process, including but not limited to, the California Environmental Quality Act (CEQA) guidelines, executive orders, other policies and standards.

DSH is committed to reducing the environmental impact of the goods and services purchased statewide. DSH promotes EPP by purchasing items that are cost effective, competitively priced, and primarily made with post-consumer recycled content as reflected in Tables 5.5. Table 5.6 details departmental efforts to buy paint, IT goods, janitorial supplies and cleaners, paper products, desk

lamps, office equipment, and toner cartridges under EPP guidelines. In addition, DSH utilizes the DGS "Buying Green Guide" for information, tools, and tips on the state's best practices related to the procurement of green products and services.

Measure and Report Progress

Executive Order B-18-12 and the Green Building Action Plan directs agencies to use environmentally preferable products when compared with competing goods that serve the same purpose whenever they are applicable, perform well, and are cost-effective per Public Contract Code 12400. DSH facilities are vigilant in reviewing purchases and, when appropriate, buyers direct the selection of postconsumer content products. Additionally, DSH is buying recycled products in bulk to meet hospitals' emergent needs, further promoting EPP compliance. Each DSH facility individually tracks the reportable and compliant dollars for State Agency Buy Recycled Campaign (SABRC) category items purchased by on-site maintenance personnel and other hospital employees.

To date, the top commodities procured for hospital usage are:

- PC desktops/printers/copiers
- Paper
- Recycled paint
- Paper products

For continuous improvement opportunities, DSH will conduct an analysis of all its acquisition activities to identify environmental, social, and economic impacts by purchasing category. This future spending analysis will enable DSH to prioritize strategies to improve sustainable purchasing practices. DSH will further incorporate EPP in its statewide procurement processes by resolving any technical barriers, negative perceptions of purchasers, and end-users of green products. Statewide policies and standard operating procedures will be developed that are aligned with this goal.

Planning Narrative for Measure and Report Progress on EPP Spend

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Goods and Services Categories with the Greatest Potential to Green:

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

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 (%)
Antifreeze	**136.06**	**100**	**100**
Tired-derived Products	**10,990.15**	**100**	**100**
Paint	**36,118.27**	**99**	**100**
Glass Products	**43,333.77**	**98**	**100**
Compost, Co-compost & Mulch	**6,217.00**	**97**	**100**

EPP BMPs

Reporting Narrative for EPP BMPS

To enhance efforts in minimizing the impact on energy, water and natural resources during purchasing decisions, DSH utilizes the DGS "Buying Green Guide" to adhere to best practices in the procurements of environmentally friendly products and services. DSH procurement employees review purchases and materials and products that will be purchases. For infrastructural projects, DSH will often have DGS and or its retained A/E firm study and recommend products that will help reduce energy, water and comply with the Energy Star requirements as necessary. The department also tracks the reportable and compliant dollars for State Agency Buy Recycled Campaign (SABRC) category items purchased.

Planning Narrative for EPP BMPs

EPP BMPS achieved.

Reporting on EPP Training and Outreach

Table 5.11: 2022 EPP Basic Training Completions

Classification	Total number of staff	EPP Basic Training Completions	Percent Trained	2023 EPP Training Goal (%)
Office Technician (OT)	DSH-A: 0 DSH-C: 0 DSH-N: 0 DSH-M: 1 DSH-P: 0 DSH-S: 0	DSH-A: 7 DSH-C: 0 DSH-N: 6 DSH-M:2 DSH-P: 6 DSH-S: 2	53%	100%
Staff Services Analyst (SSA)	DSH-A: 3 DSH-C: 2 DSH-N: 3 DSH-M: 2 DSH-P: 2 DSH-S: 2			
Associate Governmental Program Analyst (AGPA)	DSH-A: 3 DSH-C: 3 DSH-N: 3 DSH-M: 1 DSH-P: 3 DSH-S: 6			
Management Staff (SSMI, SSMII, etc.)	DSH-A: 1 DSH-C: 1 DSH-N: 1 DSH-M: 2 DSH-P: 1 DSH-S: 3			

Table 5.12: 2022 EPP Intermediate Training Completions at DSH

Classification	Total number of staff	EPP Intermediate Training Completions	Percent Trained	2023 EPP Training Goal (%)
NO BUYERS HAVE COMPLETED TRAINING	NO BUYERS HAVE COMPLETED TRAINING	NO BUYERS HAVE COMPLETED TRAINING	NO BUYERS HAVE COMPLETED TRAINING	NO BUYERS HAVE COMPLETED TRAINING

Table 5.13: 2022 EPP Executive Training Completions for Executive Members at DSH

Executive Member	Title	Date Completed
NO BUYERS HAVE COMPLETED TRAINING	NO BUYERS HAVE COMPLETED TRAINING	NO BUYERS HAVE COMPLETED TRAINING

Reporting Narrative on EPP Training and Education

EPP training is designed to teach and inform purchasing professionals with the knowledge to select goods and services that have minimal impacts on both the environment and human health. The above charts shows that DSH had some employees that are trained and knowledgeable with the basic procurement process of EPP, report goods and materials within the SABRC category, EPP goods and identifications. There is no further data on whether those employees or any other employee within the department had taken the intermediate and or executive level courses. To ensure that education and trainings are available to the employees, DSH will look into providing trainings and make aware the offered EPP courses by CALPCA and other organizations to necessary employee to maximize awareness and promote EPP within the department.

Planning Narrative on EPP Training and Education

EPP TRAINING AND EDUCATION ACHIEVED

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	$136	$136	100%
Compost and Mulch	$6,217	$6041	97%
Glass Products	$43,333	$42,511.8	98%
Lubricating Oils	$14,801	$11,608.9	78%
Paint	$36,118	$35,878.3	99%
Paper Products	$1,905,008	$1,503,832.5	78%
Plastic Products	$2,392,857	$1,686,286.1	70%
Printing and Writing Paper	$331457	$295,832.1	89%
Metal Products	$3,134,112	$2,817,847.6	89%
Tire Derived Products	$10,990	$10,990.2	100%

Planning Narrative for Measure and Report SABRC Progress

Similar to the plan to implement sustainable purchasing, DSH will prioritize strategies to improve procurements of the state agency buy recycled campaign (SABRC) compliant products, SABRC practices and incorporate EPP in its statewide procurement to aligned with this goal.

Reducing Impacts

Reporting Narrative for Reducing Impacts

DSH is committed to reducing the environmental impact of goods and services purchased. DSH's designated Procurement and Contracting Officer (PCO) is responsible for promoting statewide compliance with the DGS EPP and all other state contracting guidelines that govern the procurement process, including but not limited to, the California Environmental Quality Act (CEQA) guidelines, executive orders, other policies and standards.

DSH is committed to reducing the environmental impact of the goods and services purchased statewide. DSH promotes EPP by purchasing items that are cost effective, competitively priced, and primarily made with post-consumer recycled content. Items range from IT goods, janitorial supplies and cleaners, paper products, desk lamps, office equipment, and toner cartridges under EPP guidelines. In addition, DSH utilizes the DGS "Buying Green Guide" for information, tools, and tips on the state's best practices related to the procurement of green products and services.

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
NO NEW LEASES	NO NEW LEASES

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
NO LEASED BUILDINGS	NO LEASED BUILDINGS

CHAPTER 6-**FUNDING OPPORTUNITIES**

Funding Opportunity Climate Change Adaptation

The Department of State Hospitals (DSH) manages a multitude of projects in conjunction with DGS and understands the importance of both energy efficiency and waste reduction. While no specific projects are in progress outside of the ESCO program, DSH is nearing completion of its 50-year infrastructure master plan, also known as the IMP. This plan will serve as a comprehensive blueprint for Capital Outlay and Deferred Maintenance/Special Repair projects across DSH's five campuses. By developing and adhering to this plan, DSH will be well positioned to further energy saving upgrades to its grounds, equipment, buildings, and fleet vehicles.

Table 6.1: Climate Change Priority Projects

Building Name	Project	Funding Source	Est. Begin Date	Est. Completion Date
N/A				

Funding Opportunities for ZEVs and EV Infrastructure

Three EV Charging projects currently underway for DSH are listed in the table below. Of the three, the project at DSH-Atascadero is in the procurement phase with DGS working to purchase the equipment necessary to begin the installation. The remaining two, DSH-Metropolitan and DSH-Patton are still in the A/E phase with Working Drawings at 20% and 45% complete, respectively. DSH attends regular stakeholder meetings pertaining to EVs and will begin working with DGS on developing charging policies for employees and public use.

Table 6.2: EV Priority Projects

Building Name	Project	Funding Source	Est. Begin Date	Est. Completion Date
Atascadero	**EV Charging Stations**	**ESCO Funding**	**7/01/22**	**1/31/24**
Metropolitan	**EV Charging Stations**	**ESCO Funding**	**6/01/22**	**TBD**
Patton	**EV Charging Stations**	**ESCO Funding**	**2/01/23**	**TBD**

Funding Opportunities for Building Energy Conservation and Efficiency

Outside of the annual state budget process, ESCO projects, funded through GSmart Loans are the only means available to DSH to finance large-scale energy-saving or renewable energy projects.

At the time this document is being created, there are no new ESCO, or energy-savings related projects being considered or prioritized by DSH.

Table 6.3: Building Energy Conservation and Efficiency Priority Projects

Building Name	Project	Funding Source	Est. Begin Date	Est. Completion Date
DSH-A Energy Retrofits		**ESCO Funding**	**In Construction**	**5/1/24**
DSH-C Energy Retrofits		**ESCO Funding**	**In Construction**	**3/1/24**
DSH-C EV Charging		**ESCO Funding**	**Complete**	**Completed November 2023**
DSH-N EV Charging		**ESCO Funding**	**Complete**	**Completed December 2021**
DSH-N Energy Retrofits		**ESCO Funding**	**In Construction**	**2/6/24**
DSH-P Energy Retrofits		**ESCO Funding**	**In Construction**	**3/30/24**

Funding Opportunities for Water Conservation and Efficiency

DSH currently has no projects in design or construction designed to specifically target and/or reduce water use across its campuses. All projects and statewide initiatives with the intent of upgrading equipment, fixtures, and transfer lines may increase the overall conservation of water. Each campus implements various water saving measures, as listed in Chapter 4, based on its geographical area.

Table 6.4: Water Conservation and Efficiency Priority Projects

Building Name	Project	Funding Source	Est. Begin Date	Est. Completion Date
DSH-A	**Water Reservoir Repairs**	**Existing Maintenance Budget**	**In Construction**	**3/1/24**
DSH-C	**Hydronic Loop Repair**	**BCP**	**In Working Drawings**	**7/15/24**
-	**-**	**BCP-**		

Funding Opportunities for Sustainable Operations

For DSH, funding opportunities for Sustainable Operations include G$mart Loans as part of ESCO projects and funds made available through the States Capital Outlay process. DSH currently has several Electrical Infrastructure Upgrade projects in the Study Phase. These projects will not only afford hospital campuses the systems longevity needed to carry our mission into the future but will also reduce energy consumption and/or waste by installing modern equipment, wires, and controlling devices.

Table 6.5: Sustainable Operations Priorities

Building Name	Project	Funding Source	Est. Begin Date	Est. Completion Date
NO PRIORITIES	**Choose an item.**			
NO PRIORITIES	**Need Special Equipment**			
NO PRIORITIES	**Need Staff Training**			
NO PRIORITIES	**Need Signage**			
NO PRIORITIES	**Need Department Wide Outreach**			

Full Life Cycle Cost Accounting

Reporting on Life Cycle Cost Accounting

At present, DSH does not use or incorporate LCCA into its building or site management when forecasting or building narratives for projects. As the majority of its buildings have reached an age greater than 60 years, and DSH records retention requires maintenance of associated project files for seven years, or in the case of Lease-Bond Funded projects, for the life of the bond plus three years, determining the initial cost of each building, when constructed is largely not possible.

Likewise, DSH's IMP, under development, does not emphasize new construction as a baseline, but rather repair and renovation. There are exceptions to this rule, and the next section will cover the methodology used in determining the repair of build new approach.

Planning for Implementing Life Cycle Cost Accounting

As previously mentioned, DSH does not use, nor does it have plans to incorporate LCCA into its building and site management plans. Below is a snapshot of the methodology used during the development of the IMP.

Building Rough Order of Magnitude (ROM) Cost Estimates Summary

A selective building analysis was used to limit unnecessary evaluations performed on buildings that were determined to have disqualifying conditions.
Initially each building was triaged using the screening criteria listed below:

- Buildings scheduled for demolition.
- Buildings or structures intended only for non-essential use and occupied by persons for less than two hours per day.
- Leased buildings, unless identified as a potential for future development.
- Buildings under 1,000 square feet, unless designated for an essential occupancy.

Facilities Condition Index (FCI) Scoring

The FCI is the ratio of long-term renovation costs plus yearly Operations & Maintenance (O&M) costs to the current replacement value of the building. The O&M costs included in the FCI scoring are $3/SF for patient housing buildings and $2/SF for support buildings. The O&M amounts are based on industry standards for the two types of buildings. The long-term renovation ROM cost is the cost to completely gut and remodel the existing building and systems to meet the latest

design recommendations for Acute Psychiatric Hospitals and current code requirements. The formula used for the FCI scoring is shown below:

$$FCI = \frac{\text{Long-Term Renovation Cost + O\&M Cost}}{\text{Building Replacement Cost}} \qquad \text{Building 100s Example: } \frac{\$81,216,310 + \$250,410}{\$115,772,890}$$

In new or well-maintained condition, with no visual evidence of wear, soiling or other deficiencies.	**Good**	**0% to 5%**
Subjected to wear and soiling but still in a serviceable and functioning condition.	**Fair**	**6% to 10%**
Subjected to hard or long-term wear. Nearing the end of its useful or serviceable life.	**Poor**	**11% to 65%**
Subjected to hard or long-term wear. Has reached the end of its useful or serviceable life. Replacement is now necessary.	**Very Poor**	**>65%**

CHAPTER 7– PUBLIC EDUCATION AND OUTREACH

APPENDIX A – SUSTAINABILITY LEADERSHIP

Appendix B - Sustainability Milestones &Timeline

APPENDIX C – ACRONYMS

AB	Assembly Bill
ADR	Automated Demand Response
AMB	Asset Management Branch (at DGS)
BMP	Best management practices
CA	California
CALGREEN	California Green Building Code (Title 24, Part 11)
CEC	California Energy Commission
DGS	Department of General Services
DWR	Department of Water Resources
EHT	Extreme heat threshold
EMS	Energy management system (aka EMCS)
EMCS	Energy management control system (aka EMS)
EO	Executive Order
EPP	Environmentally preferable purchasing
ESCO	Energy service company
ESPM	Energy Star Portfolio Manager
ETS	Enterprise Technology Solutions (a division at DGS)
EUI	Energy use intensity (source kBTU/sq. ft.)
EVSE	Electric vehicle supply equipment (charging equipment)
FMD	Facilities Management Division (a division at DGS)
GCM	Global circulation model
GHG	Greenhouse gas
GHGe	Greenhouse gas emissions
GSP	Groundwater Sustainability Plan
IEQ	Indoor environmental quality
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 - is the undesirable reversal of the flow of water or mixtures of water and other undesirable substances from any source (such as used water, industrial fluids, gasses, or any substance other than the intended potable water) into the distribution pipes of the potable water system.

Back flow prevention device – a device that prevents contaminants from entering the potable water system in the event of back pressure or back siphonage.

Blowdown, boilers - is the periodic or continuous removal of water from a boiler to remove accumulated dissolved solids and/or sludge. Proper control of blowdown is critical to boiler operation. Insufficient blowdown may lead to deposits or carryover. Excessive blowdown wastes water, energy, and chemicals.

Blowdown, cooling towers – Is the water discharged to remove high mineral content system water, impurities, and sediment.

Building Best Management Practices (BMPs) - are ongoing actions that establish and maintain building water use efficiency. BMPs can be continuously updated based on need and tailored to fit the facility depending on occupancy and specific operations.

Compost – Compost is the product resulting from the controlled biological decomposition of organic material from a feedstock into a stable, humus-like product that has many environmental benefits. Composting is a natural process that is managed to optimize the conditions for decomposing microbes to thrive. This generally involves providing air and moisture, and achieving sufficient temperatures to ensure weed seeds, invasive pests, and pathogens are destroyed. A wide range of material (feedstock) may be composted, such as yard trimmings, wood chips, vegetable scraps, paper products, manures and biosolids. Compost may be applied to the top of the soil or incorporated into the soil (tilling).

Cooling Degree Day (CDD) - is defined as the number of degrees by which a daily average temperature exceeds a reference temperature. The reference temperature is also typically 65 degrees Fahrenheit, and different utilities and planning entities sometimes use different reference temperatures. The reference temperature loosely represents an average daily temperature below which space cooling (e.g., air conditioning) is not needed.

Critical overdraft - a condition in which significantly more water has been taken out of a groundwater basin than has been put in, either by natural recharge or by recharging basins. Critical overdraft leads to various undesirable conditions such as ground subsidence and saltwater intrusion.

Ecosystem services - are the direct and indirect contributions of ecosystems to human well-being. They support directly or indirectly our survival and quality of life. Ecosystem services can be categorized in four main types:

- Provisioning services are the products obtained from ecosystems such as food, fresh water, wood, fiber, genetic resources, and medicines.

- Regulating services are the benefits obtained from the regulation of ecosystem processes such as climate regulation, natural hazard regulation, water purification and waste management, pollination, or pest control.

- Habitat services provide living places for all species and maintain the viability of gene-pools.

- Cultural services include non-material benefits such as spiritual enrichment, intellectual development, recreation, and aesthetic values.

Grass cycling - refers to an aerobic (requires air) method of handling grass clippings by leaving them on the lawn when mowing. Because grass consists largely of water (80% or more), contains little lignin, and has high nitrogen content, grass clippings easily break down during an aerobic process. Grass cycling returns the decomposed clippings to the soil within one to two weeks acting primarily as a fertilizer supplement and, to a much smaller degree, mulch. Grass cycling can provide 15 to 20% or more of a lawn's yearly nitrogen requirements.

Heating Degree Day (HDD) - is defined as the number of degrees by which a daily average temperature is below a reference temperature (i.e., a proxy for when heat would be needed). The reference temperature is typically 65 degrees Fahrenheit, although different utilities and planning entities sometimes use different reference temperatures. The reference temperature loosely represents an average daily temperature *above which* space heating is not needed. The average temperature is represented by the average of the maximum and minimum daily temperature.

Hydrozone – is a portion of a landscaped area having plants with similar water needs that are served by one irrigation valve or set of valves with the same schedule.

Landscape Coefficient Method (LCM) - describes a method of estimating irrigation needs of landscape plantings in California. It is intended as a guide for landscape professionals.

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

Lifecycle cost accounting - includes initial investment costs, as well as lifetime operation and maintenance costs under changing climate conditions, including changing average conditions and increases in extreme events. It may involve applying non-market evaluation methods such as travel cost, avoided costs or contingent valuation to capture hard to quantify benefits and costs.

Make Up Water - Makeup water, or the water replacing evaporated or leaked water from the boiler, is first drawn from its source, whether raw water, city water, city-treated effluent, in-plant wastewater recycling (cooling tower blowdown recycle), well water, or any other surface water source.

Model Water Efficient Landscape Ordinance (MWELO) - The Water Conservation in Landscaping Act was signed into law on September 29, 1990. The premise was that landscape design, installation, and maintenance can and should be water efficient. Some of the provisions specified in the statute included plant selection and groupings of plants based on water needs and climatic, geological, or topographical conditions, efficient irrigation systems, practices that foster long term water conservation and routine repair and maintenance of irrigation systems. The latest update to MWELO was in 2015. MWELO applies to all state agencies' landscaping.

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

Natural infrastructure - is the "*preservation or restoration of ecological systems or the utilization of engineered systems that use ecological processes to increase resiliency to climate change, manage other environmental hazards, or both. This may include, but need not be limited to, flood plain and wetlands restoration or preservation, combining levees with restored natural systems to reduce flood risk, and urban tree planting to mitigate high heat days*" (Public Resource Code Section 71154(c)(3)).

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

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

Sprinkler system backflow prevention devices – are devices to prevent contaminants from entering water supplies. These devices connect to the sprinkler system and are an important safety feature. They are required by the California Plumbing Code.

Submeter- a metering device installed to measure water use in a specific area or for a specific purpose. Also known as dedicated meters, landscape submeters are effective for separating landscape water use from interior water use, evaluating the landscape water budget and for leak detection within the irrigation system.

Urban heat islands - are areas with localized spikes in temperature, which impact human health, increase pollution, and increase energy demand. Urban heat islands occur during the hot summer months in areas with higher percentages of impervious surface and less vegetation. This is likely in areas with large parking lots, dense development, and lower tree density and shading. Urban heat islands can be mitigated (i.e., reduced) through tree planting and other greening measures, cool roofs (e.g., lighter roofing materials that reflect light), cooler pavements, and other measures.

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

Water-energy nexus - Water and energy are often managed separately despite the important links between the two. 12 percent of California's energy use is related to water use with nearly 10 percent being used at the end water use. Water is used in the production of nearly every major energy source. Likewise, energy is used in multiple ways and at multiple steps in water delivery and treatment systems as well as wastewater collection and treatment.

Water Shortage Contingency Plans - Each urban water purveyor serving more than 3,000 connections or 3,000 acre-feet of water annually must have an Urban Water Shortage Contingency Plan (Water Shortage Plan) which details how a community would react to a reduction in water supply of up to 50% for droughts lasting up to three years.

WUCOLS - Water Use Classification of Landscape Species. WUCOLS are used to help determine water budgets and irrigation schedules. Use this link to access the necessary information for your landscaping needs. 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, Planning, Construction & Management (FPCM)

Understanding Climate Risk at Planned Facilities
Facilities, Planning, Construction & Management (FPCM)

Integrating Climate Change into Department Planning and Funding Programs
Facilities, Planning, Construction & Management (FPCM)

Measuring and Tracking Progress
Facilities, Planning, Construction & Management (FPCM)

Zero Emission Vehicles

Incorporating ZEVs Into the Department Fleet
Fleet & Asset Management (FAM)

Telematics
Fleet & Asset Management (FAM)

Public Safety Exemption
Facilities, Planning, Construction & Management (FPCM) Fleet & Asset Management (FAM) State Hospitals Plant Operations

Outside Funding Sources for ZEV Infrastructure
Facilities, Planning, Construction & Management (FPCM) Fleet & Asset Management (FAM)

Hydrogen Fueling Infrastructure
Facilities, Planning, Construction & Management (FPCM)

Comprehensive Facility Site and Infrastructure Assessments
Facilities, Planning, Construction & Management (FPCM)

EVSE Construction Plan
Facilities, Planning, Construction & Management (FPCM) Fleet & Asset Management (FAM)

EVSE Operation
Facilities, Planning, Construction & Management (FPCM) Fleet & Asset Management (FAM) State Hospitals Plant Operations

Energy

Zero Net Energy (ZNE)
Facilities, Planning, Construction & Management (FPCM) State Hospitals Plant Operations

New Construction Exceeds Title 24 by 15%
Facilities, Planning, Construction & Management (FPCM) State Hospitals Plant Operations

Reduce Grid-Based Energy Purchased by 20% by 2018
Facilities, Planning, Construction & Management (FPCM) State Hospitals Plant Operations

Server Room Energy Use
State Hospitals Plant Operations

Demand Response
Facilities, Planning, Construction & Management (FPCM) State Hospitals Plant Operations

Renewable Energy
Facilities, Planning, Construction & Management (FPCM) State Hospitals Plant Operations

Monitoring-Based Commissioning (MBCx)
Facilities, Planning, Construction & Management (FPCM) State Hospitals Plant Operations

Financing
Facilities, Planning, Construction & Management (FPCM)

Water Efficiency and Conservation

Indoor Water Efficiency Projects In Progress First initiative
Facilities, Planning, Construction & Management (FPCM) State Hospitals Plant Operations

Boilers and Cooling Systems Projects In Progress
Facilities, Planning, Construction & Management (FPCM) State Hospitals Plant Operations

Landscaping Hardware Water Efficiency Projects In Progress
Facilities, Planning, Construction & Management (FPCM) State Hospitals Plant Operations

Living Landscaping Water Efficiency Projects In Progress
Facilities, Planning, Construction & Management (FPCM) State Hospitals Plant Operations

Buildings with Urban Water Shortage Contingency Plans In Progress
Facilities, Planning, Construction & Management (FPCM) State Hospitals Plant Operations

Green Operations

Greenhouse Gas Emissions
Facilities, Planning, Construction & Management (FPCM) Fleet & Asset Management (FAM) State Hospitals Plant Operations

Building Design and Construction
Facilities, Planning, Construction & Management (FPCM) State Hospitals Plant Operations

LEED for Existing Buildings Operations and Maintenance
Facilities, Planning, Construction & Management (FPCM) State Hospitals Plant Operations

Indoor Environmental Quality
Facilities, Planning, Construction & Management (FPCM) State Hospitals Plant Operations

Integrated Pest Management
Procurement & Contract Services Section (PCSS) State Hospitals Plant Operations

Waste Management and Recycling
Procurement & Contract Services Section (PCSS) State Hospitals Plant Operations

Environmentally Preferable Purchasing
Procurement & Contract Services Section (PCSS) State Hospitals Plant Operations

Location Efficiency
State Hospitals Plant Operations

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

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

Executive Orders

The governor issued the following executive order relevant to chapters of this roadmap:

- **Executive Order B-16-12**

  EO B-16-12 directs state agencies to integrate zero-emission vehicles (ZEVs) into the state vehicle fleet. It also directs state agencies to develop the infrastructure to support increased public and private sector use of ZEVs. Specifically, it directs state agencies replacing fleet vehicles to replace at least 10 percent with ZEVs, and by 2020 to ensure at least 25 percent of replacement fleet vehicles are ZEVs.

- **Executive Order B-18-12**

- EO B-18-12 and the companion *Green Building Action Plan* require state agencies to reduce the environmental impacts of state operations by reducing greenhouse gas emissions, managing energy and water use, improving indoor air quality, generating on-site renewable energy when feasible, implementing environmentally preferable purchasing, and developing the infrastructure for electric vehicle charging stations at state facilities. The Green Building Action Plan also established two oversight groups – the employee -level Sustainability Working Group and the executive-level Sustainability Task Force – to ensure these measures are met. Agencies annually report current energy and water use into the Energy Star Portfolio Manager (ESPM).

- **Executive Order B-29-15**

  EO B-29-15 directs state agencies to take actions in response to the ongoing drought and to the state of emergency due to severe drought conditions proclaimed on January 17, 2014. Governor Brown directed numerous state agencies to develop new programs and regulations to mitigate the effects of the drought and required increased enforcement of water waste statewide. Agencies were instructed to reduce potable urban water use by 25 percent between 2013 and February 28, 2016.

- **Executive Order B-30-15**

  In 2015, the governor issued EO B-30-15, which declared climate change to be a "threat to the well-being, public health, natural resources, economy

and environment of California." It established a new interim statewide GHG emission reduction target of 40 percent below 1990 levels by 2030 and reaffirms California's intent to reduce GHG emissions to 80 percent below 1990 levels by 2050. To support these goals, this order requires numerous state agencies to develop plans and programs to reduce emissions. It also directs state agencies to take climate change into account in their planning and investment decisions and employ life-cycle cost accounting to evaluate and compare infrastructure investments and alternatives. State agencies are directed to prioritize investments that both build climate preparedness and reduce GHG emissions; prioritize natural infrastructure; and protect the state's most vulnerable populations.

State Administrative Manual & Management Memos

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

- **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 EVSE Infrastructure Requirements

Recent Legislative Actions

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

- **Assembly Bill (AB) 1482** (Gordon, 2015): Requires that the California Natural Resources Agency (CNRA) update the state's adaptation strategy safeguarding California every three years. Directs state agencies to promote climate adaptation in planning decisions and ensure that state investments consider climate change impacts, as well as the use of natural systems and natural infrastructure. (Public Resources Code Section 71153)
- **Senate Bill (SB) 246** (Wieckowski, 2015): Established the Integrated Climate Adaptation and Resiliency Program within the Governor's Office of Planning and Research to coordinate regional and local efforts with state climate adaptation strategies to adapt to the impacts of climate change. (Public Resources Code Section 71354)
- **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

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

- **AB 32 Scoping Plan**: The scoping plan assumes widespread electrification of the transportation sector as a critical component of every scenario that leads to the mandated 40 percent reduction in GHG by 2030 and 80 percent reduction by 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 percent reduction or displacement by Jan. 1, 2012, and a 20 percent reduction or displacement by Jan. 1, 2020.

- **AB 75** – Implement an integrated waste management program and achieve 50 percent 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 percent reduction in the level of the statewide disposal of organic waste from the 2014 level by 2020, a 75 percent reduction by 2025, and 20 percent of currently disposed edible food is recovered for human consumption by 2025.
    - Agencies already in compliance with AB 1826 may need to further expand their organic waste recycling service to comply with the new requirements.
    - Jan. 1, 2024, Tier 2 Commercial Edible food Generators will be required to donate edible food to a recovery organization.

- **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 percent of state-owned parking spaces by 2022. It also advances the ZEV procurement target to 50 percent of light-duty vehicles by 2025.

State Resources and Guidance Documents

California has invested significant resources in understanding the risks of climate change, water efficiency, strategic growth, and state actions available to respond to and reduce these risks. These include the following:

- **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 percent 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