

Water Action Plan

CSU DOMINGUEZ HILLS

Strategic water action plan to reach 2030 (Adopted April 22, 2023)

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Campus Information

Background

California State University, Dominguez Hills (CSUDH) is located in Carson, California and manages a landscape footprint of 161 acres (excluding the leasehold with Dignity Sports Health Park), of which 60 acres are actively irrigated, landscaped and maintained by Facilities Services. As a campus in a drought-prone region, CSUDH needs to carefully monitor and manage its water resources. CSUDH also has an ambitious building project schedule with several new buildings and developments to be completed in the next 10-20 years. As a sustainability leader in higher education, CSUDH takes water conservation seriously, and encourages staff, faculty, and students to do their part to use water responsibly. As a member of the California State University system, CSUDH is also beholden to support system-wide water conservation goals in addition to ongoing reporting and performance within the Association for the Advancement of Sustainability in Higher Education (AASHE)'s Sustainability Tracking and Rating System (STARS). To continue to carefully steward campus water consumption in the face of a growing campus population, CSUDH is committed to conducting thorough assessments of its current water usage in all areas of its operations and aggressively pursuing opportunities to reduce water usage over the course of the next ten years.

Overall Usage- Baseline

Per the current California State University (CSU) Sustainability Policy (effective March 23, 2022), CSUDH is adopting the 2019-20 fiscal year as its baseline for potable water conservation activities through 2030 as well as 10% potable water conservation goal which is also consistent with AB 1668.¹

In alignment with AASHE STARS, CSUDH will also be applying gross square footage for buildings as well as weighted campus users as factors in establishing potable water consumption goals.

Also, in alignment with AASHE STARS, irrigation (reclaimed water) consumption will factor in the acreage of vegetated grounds on campus at the time of this report. Due to great seasonal variations over the past decade resulting in large swings in need for applied water to landscape, CSUDH will adopt a ten-year historical consumption average (2013-2022 FY's) of 62,171 CCF as its baseline for reclaimed water conservation activities through 2030. It will also voluntarily apply a 10% reduction goal in irrigation applied per acre to match the potable water consumption conservation goal and enhance performance under AASHE STARS to support the institution's efforts towards a Platinum rating.

¹ <https://calstate.policystat.com/policy/11699668/latest/>

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In conformance with the campus standards set forth in the CSUDH Sustainable Landscape Plan, the campus will also evaluate reclaimed water usage in landscape against the Maximum Allowable Water Allowance (MAWA) water budget determined by Model Water Efficient Landscape Ordinance (MWELO) principles.² This will serve as litmus test metric to ensure landscape is being irrigated in conformance to MWELO standards (which will also assist progress towards the water conservation goal of 10% reduction in gallons of reclaimed water applied per acre by 2030).

Potable Water Usage- 2019-20 FY Baseline & Targets

Potable water on campus is mostly used for indoor applications, with the exception of 7.43 acres of landscaping in Housing Phase I & II, CAMS High School, the Child Development Center (CDC)/Infant Toddler Center (ITC), Physical Plant, and Parking Lot 7.

Potable Water Usage Targets:

- Potable water usage in the 2019 FY was 11,880 CCF. A 10% reduction represents an institutional commitment to achieving **10,692 CCF** or less annually by 2030.
- Weighted campus users (using AASHE STARS methodology) were 11,593.83 in the 2019 FY. This equates to a per capita consumption of **766.46 gallons/weighted campus user** in the baseline year.
- There was 1,344,407 GSF of building space in the 2019 FY. This means a baseline consumption rate of **6.61 gallons/GSF**.

Based on these baseline metrics, CSUDH should attempt to reach the following potable water consumption goals by 2030:

Total Annual Potable Water Consumption by 2030	Annual Potable Water Gallons/Weighted Campus User by 2030 (10% reduction)	Annual Potable Water Gallons/GSF (10% reduction)
10,692 CCF	689.81 gallons/weighted campus user	5.95 gallons/GSF

² <https://water.ca.gov/Programs/Water-Use-And-Efficiency/Urban-Water-Use-Efficiency/Model-Water-Efficient-Landscape-Ordinance>

Reclaimed Water Usage- Ten-Year Average Baseline

As landscaping is currently the exclusive use for reclaimed water on campus, conservation targets related to reclaimed water need to focus on measures related to Grounds. In landscape, the campus irrigates 60.4 acres of its grounds. Of those acres, all is watered with reclaimed water except for 7.43 acres using potable water via turf and/or planters as follows:

- Housing Phase I and II (4.45 acres)
- CDC/ITC (0.24 acres)
- Lot 7 (0.78 acres)
- CAMS (1.81 acres)
- Physical Plant (0.16 acres)

This results in a breakdown of 51.91 acres being irrigated with reclaimed and 7.43 acres being irrigated with potable water (86% reclaimed). However, while this landscaping is reflective of the current conditions/baseline of maintained grounds, this acreage does not include nearly 23.46 acres of additional permeable and not currently irrigated surfaces that could begin to require irrigation in conjunction with upcoming building development projects over the next one to two decades.

Reclaimed Water Usage Targets:

- Reclaimed water usage across a ten-year average of consumption (2013-2022 FY's) was 62,171 CCF.
- Using MWELo principles, the MAWA for reclaimed water that should have been applied to the landscape in the baseline year (using MWELo Special Landscape Area allowances for approved athletic and recreational turf only) was **65,551 CCF**. **Annual consumption should continue to be at or below MAWA levels based on that year's annual Eto (which is affected by precipitation levels).**
- There were 51.91 acres irrigated by reclaimed water in the 2022-23 FY. This means a baseline of **895,856 gallons/acre** in reclaimed water used. A 10% reduction represents an institutional commitment to bringing this value down to **805,920 gallons/acre** (or **55,930 CCF** if landscape does not expand) by 2030.

Based on these baseline metrics, CSUDH should attempt to reach the following reclaimed water consumption goals by 2030:

Annual Reclaimed Water CCF at or Below MAWA levels (All Years)	Reclaimed Water Gallons Applied Per Acre (10% reduction from baseline) by 2030
<i>Consumption= or < MAWA for landscape irrigated by reclaimed water</i>	805,920

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Water Recommendations & Performance Targets:

Using a more responsive set of metrics based on campus population and gross square footage for potable water and responsibly managed acreage of irrigated grounds for reclaimed water, CSUDH should aim to reduce water consumption in all areas by 1.5% annually over the next seven years to ensure a 10% reduction by 2030.

Performance Year	Annual CCF (Potable)	Gallons/Weighted Campus User (Potable)	Gallons/GSF (Potable)	Gallons/Acre (Reclaimed)
<i>Baseline (2019-20 for potable, 10 year historical average for reclaimed)</i>	11,880	766.46	6.61	895,856
<i>2023-2024 FY</i>	11,702	754.97	6.51	882,419
<i>2024-2025 FY</i>	11,526	743.64	6.41	869,182
<i>2025-26 FY</i>	11,353	732.49	6.32	856,145
<i>2026-27 FY</i>	11,183	721.50	6.22	843,302
<i>2027-28 FY</i>	11,015	710.68	6.13	830,653
<i>2028-29 FY</i>	10,850	700.02	6.04	818,193

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2029-30 FY (Performance by 2030)	10,692 or less	689.81 or less	5.95 or less	805,920 or less
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Table 1- Targeted campus water consumption by future fiscal year in relation to water conservation targets.

Potable Water Strategies:

Indoor potable water use performance is determined by the efficiency of the water fixtures on campus as well as proactive management of indoor water leaks. To that end, Facilities Services has completed multiple campus-wide inventories of all indoor water fixtures on campus over the last five years. Based on the results, Facilities Services has been proactively upgrading older fixtures to water-saving models that meet current CalGreen standards for efficiency. Simultaneously, new building projects have been incorporating highly efficient water fixtures (e.g. CalGreen, LEED Silver or higher equivalency in all buildings per CSU Sustainability Policy, etc.) as well as contributing additional gross square footage which will continue to help boost performance in this area.

Additionally, the campus has installed WaterScope metering software and sub-meters on all major campus buildings which combined provide comprehensive leak detection alerts to Facilities Services. This has allowed Facilities plumbers to proactively address leaks and water waste from user behaviors (i.e. leaving taps on intentionally) to reduce water waste.

As part of these sub-metering tracking efforts, it has been established that Central Plant is the largest user of potable water consumption for the institution due to its role in providing heating and cooling to the majority of the buildings on campus. While the percentage contribution to the overall consumption of potable water on campus from Central Plant ranges from 60-80% each year, it is nevertheless highly significant. Continued improvements to the delivery of heating and cooling within buildings as well as water consumption by Central Plant assets shall continue to be a priority, not only for the institution's energy efficiency efforts, but for its water efficiency performance as well.

As a strategy to further inform and improve potable water performance in the context of this Water Action Plan, Facilities Services shall strive to expand sub-metering and retrocommissioning of existing meters to be able to track all potable water sources going to buildings. This will enable further data analytics and management to be able to isolate the contribution of potable water usage on landscape specifically (referenced in "Potable Water Usage" section above). Currently there is no way to sub-meter for that usage specifically given all of Housing Phase I and II's data is tied to the central shared loop for all potable water. The Office of Sustainability shall also include water conservation as part of its ongoing sustainability education efforts for the campus.

Planned Activities

To achieve the potable water goals set forth in this plan, CSUDH plans on completing the following activities and initiatives prior to 2030:

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Measure	Implementation Notes
<ul style="list-style-type: none"> • Complete comprehensive sub-metering of water in all campus buildings. 	Be able to identify the amount of potable water being applied to landscape vs. buildings in order to better inform indoor water conservation efforts.
<ul style="list-style-type: none"> • 24-hour response to all leak reports for fixtures (including WaterScope alerts and placed Work Orders). • Promote Work Control telephone number for reporting leaks to the campus via educational efforts. 	Reduce and/or eliminate unnecessary water waste due to leaks and/or user behavior inside campus buildings.
<ul style="list-style-type: none"> • Enforce most up-to-date CalGreen standards for interior water fixtures on all new installations and retrofits. 	Ongoing based on new construction and retrofit projects.
<ul style="list-style-type: none"> • Office of Sustainability to conduct water conservation education campaigns as part of Race to Reduce Month 	May also incorporate additional water-themed signage, educational campaigns, etc. throughout year to further modify user behavior.

Reclaimed Water Strategies:

As reclaimed water is applied exclusively on landscape at this time, conservation measures will need to focus on water efficiency opportunities within Grounds. While the use of reclaimed/recycled water is highly encouraged on a state-wide level, AASHE STARS still evaluates water consumption performance based on applied water gallons per acre. Thus, in support of the institution's progress towards AASHE STARS Platinum status as well as to demonstrate stewardship over the resource costs associated with reclaimed water, conservation around reclaimed water usage is still important.

As part of ongoing preventative maintenance, Grounds shall continue to support staff positions, programs, and initiatives to continue irrigation efficiency efforts. This includes measures to improve the ongoing effectiveness of the existing CalSense irrigation controls system to match watering to local precipitation patterns, fix leaks, and retrofit older irrigation systems for improved efficiency.

Additionally, CSUDH commissioned an update to the campus master landscape plan in 2023 which provides a comprehensive re-design and future planning for all the campus' landscape. This re-design includes MWELo principles, sustainability, and improved water performance as core guiding elements to the plan. Therefore, converting existing landscape to the landscape palettes and irrigation standards set forth in the master landscape plan will naturally improve irrigation performance in future landscape projects.

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Furthermore, as part of the CSUDH Sustainable Landscape Plan, MWELO is adopted as a campus standard for all landscape projects (new landscape as well as rehabilitation projects greater than 2,500 square feet).³ To ensure ongoing performance of all campus landscape based on the natural water balance (local evapotranspiration rate), an annual analysis of reclaimed water usage against the allowable MAWA for all acreage using reclaimed water for irrigation in conformance to MWELO standards shall be conducted.

Planned Activities

To achieve the reclaimed water goals set forth in this plan, CSUDH plans on completing the following activities and initiatives prior to 2030:

Measure	Implementation Notes
<ul style="list-style-type: none">• 24-hour response policy to all leak reports for irrigation.• Continued support for the Irrigation Specialist Grounds position to ensure ongoing inspection and maintenance of all campus irrigation to address and fix irrigation issues related to spray blockage, overspray, and broken sprinkler heads.• Pursue opportunities to improve the efficiency of existing irrigation systems and fine-tune existing CalSense irrigation control systems.	Part of preventative measures for maintenance.
<ul style="list-style-type: none">• Annual analysis of reclaimed water usage on campus landscape against MWELO standards for commercial properties as established by current Title 24 code.	Annual check to ensure reclaimed water usage meets or is below MAWA levels for landscape type in conformance to MWELO standards and MWELO plan check for new landscape projects meeting threshold per Sustainable Landscape Plan/campus standard.
<ul style="list-style-type: none">• Implement the planting palette, irrigation standards, and other elements of Campus Master Landscape Plan when rehabilitating landscape.	Standards will be applied to both new landscape as well as landscape being rehabilitated.

³ https://www.csudh.edu/Assets/csudh-sites/sustainability/docs/landscaping/CSUDH%20Sustainable%20Landscape%20Plan_2022.pdf

Contact Information



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Information on the Office of Sustainability

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California State University, Dominguez Hills and other state institutions are major consumers of energy and natural resources. The university has a responsibility to be a wise steward of scarce resources by reducing the use of non-renewable resources, increasing energy efficiency, and as part of the larger CSU system, promoting continued economic and ecological viability in California. CSU Dominguez Hills is on the cutting edge of sustainability efforts by an urban campus, and is actively providing leadership in engaging faculty, students and staff in on-campus sustainability efforts. We are looking at ways to increase partnerships and funding to support the educational, research, and public service missions of the university as they relate to sustainability.



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