Districtwide Water Conservation Efforts

Board of Trustees Meeting
May 16, 2016

Prepared by: Facility Planning, District Construction & Support Services

RANCHO SANTIAGO
Community College District

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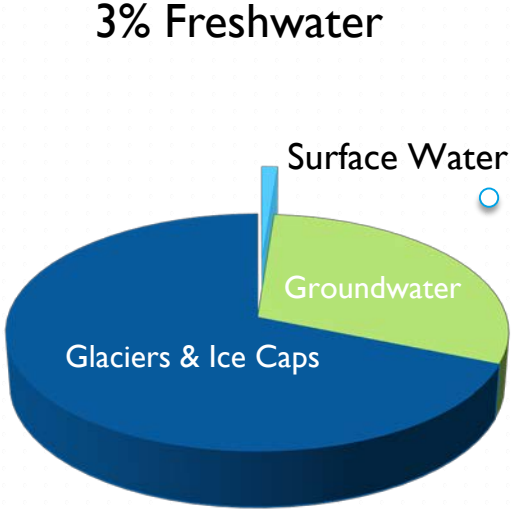
EARTH'S TOTAL WATER

97% Ocean

3% Freshwater

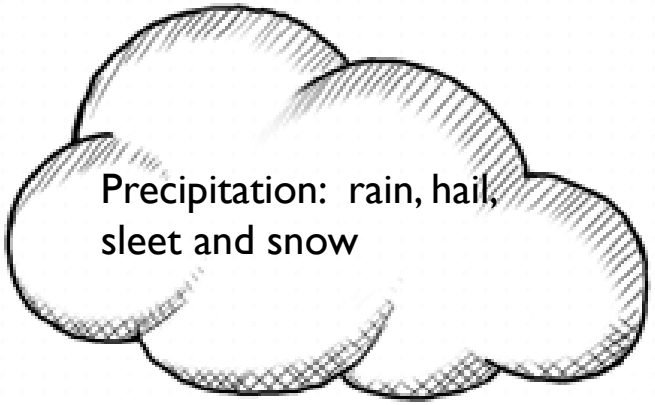


Surface Water includes streams, rivers, lakes, and reservoirs

Data Source: Igor Shiklomanov's Chapter "World Fresh Resource" in Peter H. Gleick (Editor), 1993 Water in Crisis: A Guide to the World's Fresh Water Resources. Note numbers are rounded.

WHY IS THERE A DROUGHT?

A drought condition occurs when there is below-average precipitation over an extended and prolonged period of time.



<u>Drought</u>
Depleted freshwater supply
Diminished food production
Increased degradation to the natural habitat

<u>Freshwater Supply is Replenished</u>
Aquifers
Lakes
Ponds
Reservoirs
Rivers

CALIFORNIA DROUGHT PERIOD

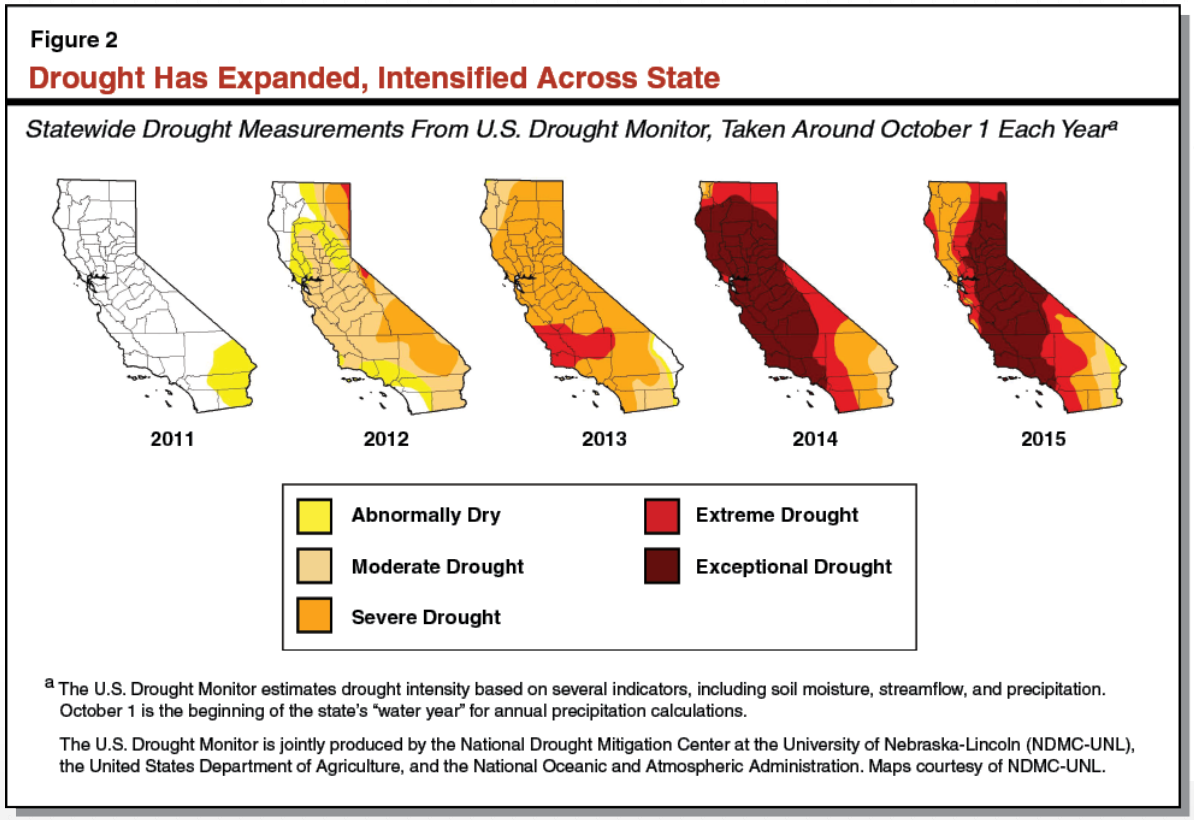
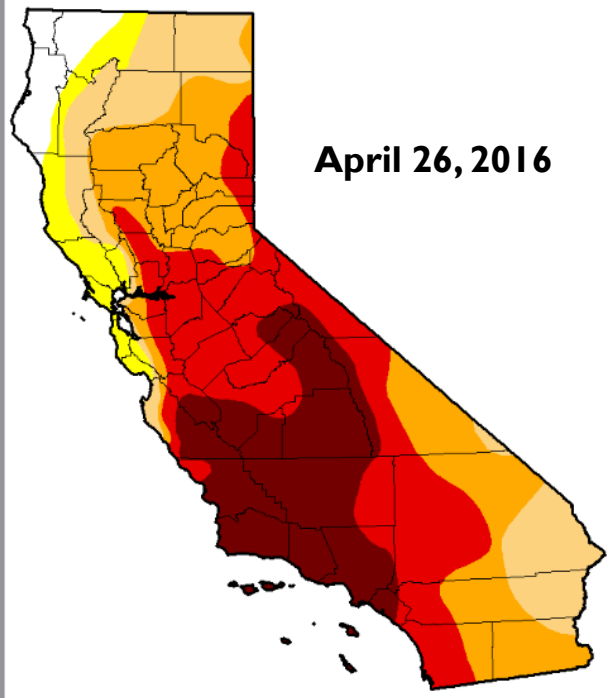


Image Source: U.S. Drought Monitor for California
www.droughtmonitor.unl.edu



April 26, 2016

In 2014, the average precipitation record was the lowest of 119 years of official California water monitoring records.

SERIOUS DROUGHT STATE WIDE

OVERVIEW

- State of Emergency was declared on January 2014, April 2014, April 2015 and November 2015.
- Governor's Executive Orders B-26-14, B-28-14, B-29-15, and B-36-15 remain in full force and in effect except as modified by Executive Order B-37-16 (May 9, 2016).
- Executive Order B-37-16: directs the State Water Resources Control Board to adjust and extend its emergency water conservation regulations through the end of January 2017 in recognition of the differing water supply conditions for many communities. Water use in communities was reduced at unprecedented levels by 23.9% between June 2015 and March 2016.
  - "Make Conservation a California Way of Life" and "Manage and Prepare for Dry Periods".
  - By January 2017, Water Board to develop a proposal to achieve a mandatory reduction in potable urban water usage that builds off the 25% reduction called for in Executive Order B-29-15.
  - Department of Water Resources work with the Water Board to develop new water use targets as a permanent framework for urban water agencies. New water use targets shall build upon the existing state law requirements that the state achieve a 20% reduction in urban water usage by 2020 (SB No.7, 2009-2010). Draft framework to be released by January 2017.

WATER CONSERVATION GUIDANCE

- DSA developed emergency regulations for the 2013 California Green Building Standards (CALGreen) Code (*for new construction*). The new regulations reduce the use of potable water at schools by requiring:
  - Strict outdoor irrigation measures.
  - Separate water meters.
  - Automatic controllers that adapt to changes in weather and soil moisture.
- Executive Order B-18-12 directed State agencies reduce overall water use at the facilities they operate by 10% by 2015 and by 20% by 2020, as measured against a 2010 baseline.

**As an educational entity the District is encouraged to target reductions commensurate with local agency reductions and implement best management practices but is not mandated or regulated to reduce by a fixed percent.*

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BEST MANAGEMENT PRACTICES FOR WATER USE IN CALIFORNIA

The Department of General Services (DGS) has suggested Best Management Practices under two categories:

1. Maximize Water Efficiency
2. Minimize Water Use

Best Management Practices (BMPs) include the following steps and are aligned with the District's adopted Sustainability Plan:

1. Water Management Planning
2. Information & Education Programs
3. Leak Repairs/ Plumbing Fixtures with high efficient or low flow water use
4. Water Efficient Landscaping & Irrigation

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Source: U.S. Department of Energy
www.energy.gov/eere/femp/best-management

RSCCD Sustainability Plan

sustainable rsccd Adopted by the Board of Trustees on March 9, 2015

8 Goals

- Campus & Community Engagement
- Curriculum Development
- Energy
- Solid Waste Management
- Facilities Design & Operation
- Sustainable Procurement
- Transportation
- Water Management

Section 4. Programs & Projects for Implementation

4.1 Management & Organizational Structure
4.2 Energy Efficiency
4.3 Facilities Operation
4.4 Sustainable Building Practices
4.5 On-Site Generation & Renewable Energy
4.6 Transportation, Commuting, and Campus Fleet & Travel
4.7 Water, Wastewater, & Sustainable Landscaping
4.8 Solid Waste Reduction & Management
4.9 Green Purchasing
4.10 Student & Curriculum Outreach & Awareness
4.12 Create a Climate Action Plan

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RSCCD SUSTAINABILITY PLAN

Section 4.7: WATER, WASTEWATER, AND SUSTAINABLE LANDSCAPING

Excerpt from Plan: "Water conservation is an important component of sustainability and is aggressively pursued by both Santa Ana College and Santiago Canyon College. The current drought makes water conservation imperative. The District strives to reduce potable water use as well as waste water discharges to both the sewer and storm water systems. In addition, the District reduces waste water pollution by minimizing chemical fertilizers and pesticide use in association with landscaping practices."

EVALUATING WATER USAGE

- Most accurate method to evaluate water usage is by installing meters and sub-meters (i.e. buildings, irrigation, field/athletic use).
- Other methods: a percent of water use estimated based off of the total gross square feet (gsf) of area for landscaping, athletic fields, buildings divided by the total gsf of the campus, rounded and multiplied by 100 for the percentage.

Example:

Santiago Canyon College

- Landscaping approximately 46% of potable water use.
- Athletic Fields approximately 13% of potable water use.
- Buildings approximately 41% of potable water use.

Santa Ana College

- Landscaping approximately 16% of potable water use.
- Athletic Fields approximately 26% of potable water use.
- Buildings approximately 58% of potable water use.

EVALUATING WATER USAGE

Typical Major Sources of Water Use in Educational Facilities:

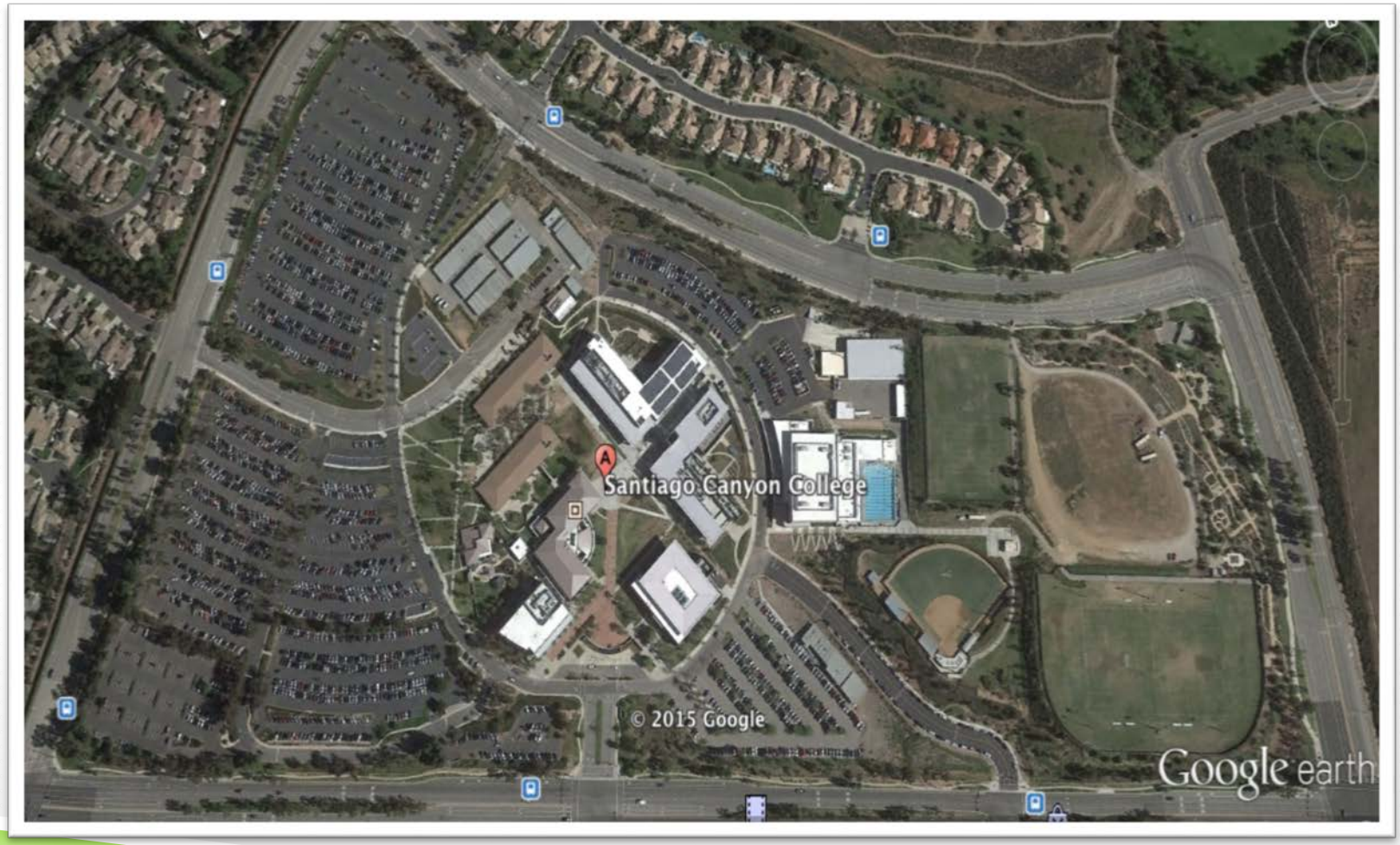
- In educational institutions, more than 40% of water use is typically due to restrooms. Colleges and buildings are required by code to maintain a minimum number of fixture counts in restrooms.
- Landscaping is typically a high source of water use at over 20%.
- Athletic fields/facilities can be another source of higher water use but are required to be maintained.
- Cooling and heating of HVAC/mechanical equipment.

Typical Minor Sources of Water Use in Educational Facilities:

- Medical equipment or other lab equipment washing stations, classrooms/labs.
- Drinking fountains.
- Kitchen facilities depending on type of service provided.

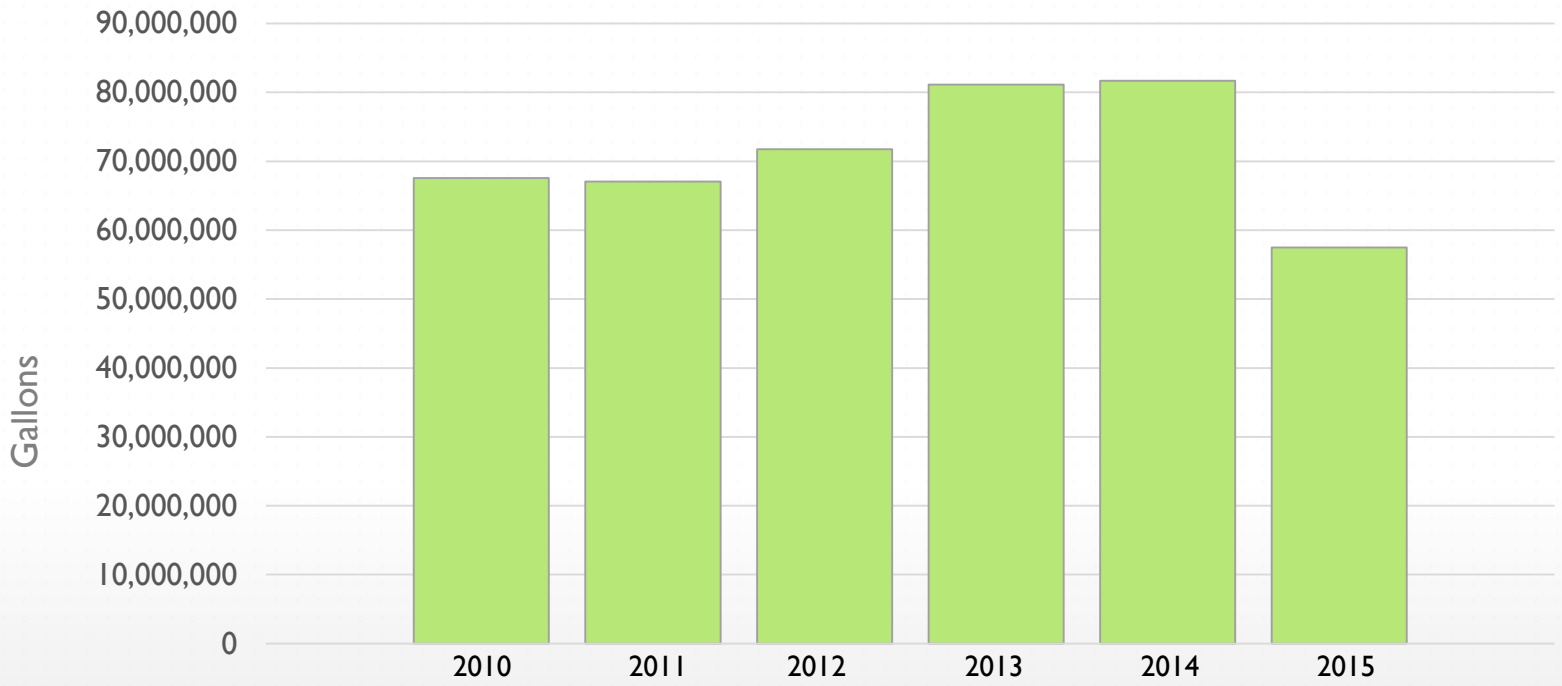
Reference: Tackling WaterSense, EPA, webinar 1/28/16

SANTIAGO CANYON COLLEGE



SANTA ANA COLLEGE

Districtwide Water Use 2010-2015



Source: Utility Bills 2010-2015 City of Santa Ana, City of Orange, Irvine Ranch Water District

WATER USE BY SITE 2010-2015

Site	2010	2011	2012	2013	2014	2015
Santa Ana College	32,670,396	31,932,120	34,615,944	36,268,276	34,545,632	27,335,660
Santiago Canyon College	26,780,644	26,835,248	29,765,164	38,084,420	40,698,680	24,507,472
Centennial Education Center	1,482,536	1,620,168	1,262,624	1,524,424	1,455,608	1,224,476
Digital Media Center	444,800	661,980	549,032	360,536	496,672	445,060
OCSRTA	2,424,268	2,354,704	1,876,732,	2,068,220	1,954,524	1,788,468
Orange Education Center	1,536,392	1,419,704	1,697,960	898,348	686,664	447,304
District Office	2,234,276	2,237,268	1,994,168	1,935,824	1,867,756	1,761,540
TOTAL GALLONS	67,577,312	67,061,192	71,761,624	81,140,048	81,705,536	57,501,752

Notes:

Units converted to gallons.

Source: Utility Bills 2010-2015 City of Santa Ana, City of Orange, Irvine Ranch Water District

WATER USAGE: COST PER CCF*

Campus	Provider	Meters per campus	Cost per CCF (2015) **
Santa Ana College	City of Santa Ana	10	$2.79 - $3.36
Santiago Canyon College	City of Orange	5	$1.28 - $2.28
District Office	City of Santa Ana	1	$2.79 - $3.36
Centennial Education Center	City of Santa Ana	2	$2.79 - $3.36
Digital Media Center	City of Santa Ana	2	$2.79 - $3.36
Orange Education Center	City of Orange	3	$1.28 - $2.28
Orange County Sheriff's Regional Training Academy	Irvine Ranch Water District	5	$1.62 - $14.53 ***

Notes:

* CCF is one hundred or centum cubic feet, which is the measurement utilized by utilities for volume of water. 1 CCF is equal to 748 gallons.

** Each agency utilizes billing tier structures, which vary based on the CCF per meter.

*** Irvine Ranch Water District typically charges the District at the low volume and base rate tier, not the highest tier of $14.53 per CCF.

WATER UTILITY COST BY YEAR

Site	2010	2011	2012	2013	2014	2015
Santa Ana College	$ 143,661.28	$ 140,138.13	$ 158,273.01	$ 166,311.33	$ 150,838.72	$ 139,816.60
Santiago Canyon College	$ 85,232.56	$ 98,427.11	$ 113,051.71	$ 155,753.28	$ 168,723.80	$ 116,728.68
Centennial Education Center	$ 7,675.00	$ 7,677.69	$ 7,232.95	$ 7,327.49	$ 7,728.97	$ 8,118.69
Digital Media Center	$ 2,577.62	$ 3,454.48	$ 2,989.77	$ 2,201.76	$ 2,754.74	$ 3,129.30
OCSRTA	$ 19,267.73	$ 22,700.32	$ 19,992.58	$ 23,354.43	$ 19,594.54	$ 16,292.01
Orange Education Center	$ 4,628.07	$ 4,836.87	$ 6,283.71	$ 3,945.79	$ 3,271.98	$ 2,883.01
District Office	$ 9,700.86	$ 11,185.86	$ 10,004.69	$ 9,731.78	$ 9,413.35	$ 9,408.90
Total Water Fees Per Year	$ 272,743.12	$ 288,420.46	$ 317,828.42	$ 368,625.86	$ 362,326.10	$ 296,377.19

Source: Utility Bills 2010-2015 City of Santa Ana, City of Orange, Irvine Ranch Water District.

NEW BUILDINGS AND IMPROVEMENTS 2010-2014

SANTA ANA COLLEGE

- New Early Childhood Education Center
- New Maintenance and Operation Building
- New Synthetic Soccer Field
- New restrooms and upgrades at Planetarium
- New landscaping/beautification perimeter improvements

SANTIAGO CANYON COLLEGE

- New Athletics and Aquatics Center
- New Science Center and parking lot with landscaping
- New Humanities Building
- New Maintenance and Operations Building

RSCCD ACTION PLAN

The Rancho Santiago Community College District has taken action to align with the statewide mandate in several ways. The Action Plan includes four (4 categories) **Recognize, Reduce, Repair and Replace.**

RECOGNIZE: Signs

- Brown is the New Green
- Every Drop Counts
- Please Conserve Water
- Others as applicable

REDUCE: Irrigation & Other

- Reduce watering landscape to the maximum of 2 days per week
- Only water between the hours of 6pm- 6am
- Turn off irrigation to non-essential/decorative areas
- Install electronic sensors/timers for sinks, toilets where feasible
- Allow sports fields to be used by campus only

REPAIR: Existing Irrigation Systems

- Inspect/Maintain systems to ensure proper working order
- Repair leaks within 48 hours when feasible

REPLACE: New Irrigation Systems & Fixtures

- Repair/upgrade irrigation controllers to weather sensing
- Repair/replace spray heads with drip or other low flow irrigation
- Replace turf and landscaping with native, drought tolerant or other low watering materials
- Ensure new designs meet or exceed efficient landscaping standards
- Explore feasibility of reclaimed water where applicable
- Replace plumbing fixtures with low flow, high efficiency types

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COMPLETED WATER CONSERVATION EFFORTS

Santiago Canyon College:

- The new Humanities and Gymnasium buildings at SCC were designed with low-flush volume toilets with automatic operation resulting in reduced water usage.
- Synthetic turf has also been installed on the softball field to reduce the need for water, fertilizer, and pesticides.

Santa Ana College:

- Installed new efficient, low-flow irrigation systems in all of its new perimeter landscaping as well as efficient irrigation valves to reduce its water use on campus.
- A new tournament quality artificial turf soccer field was installed in 2013 to reduce the use of water, fertilizer, and pesticides, as well as green house gas emissions related to lawn mowers.
- Installed 2 new storm water retention basins in softball fields to slowly disperse excess storm water at Santa Ana College.

District Office:

- Removed and grinded the site perimeter shrubs and replaced with mulch to reduce watering. Repaired leaks in irrigation lines.
- Installed low-flow urinals, toilets & faucets.

CONTINUED PLANNING WATER CONSERVATION EFFORTS

Santa Ana College:

- Central Plant project includes the removal and replacement of landscaping with drought tolerant and sustainable low water landscaping to meet new DSA regulations effective October 1, 2015. New changes to the 2013 California Green Building Standards Code for new construction and landscaping rehabilitations.
- Scheduled Maintenance Water Conservation Projects(2015-2016) to change irrigation controls and irrigation systems to new weather stations with water sensing technologies.
- On-going repairs and replacement of older urinals, toilets and faucets.
- Installation of water meters for certain areas of the campus (i.e. buildings, irrigation, fields).

Santiago Canyon College:

- Scheduled Maintenance Water Conservation Projects (2015-2016) to remove roughly 22,000 square foot of turf, install new drought tolerant planting as well as new irrigation retrofits to convert water bubblers to drip irrigation. Installation of new weather stations with water sensing technologies.
- On-going repairs and replacement of older urinals, toilets and faucets.
- Installation of water meters for certain areas of the campus (i.e. buildings, irrigation, fields).

QUESTIONS