

# SUSTAINABILITY REPORT



Period Covering Fiscal Years  
2016-2017 and 2017-2018

Approved by the Sustainable RSCCD Committee  
October 17, 2018



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## **INTRODUCTION**

On March 3, 2015, the Rancho Santiago Community College District (RSCCD) Board of Trustees approved a District Sustainability Plan (“Plan”). The Plan outlined eight (8) goals in areas of sustainability: Campus & Community Engagement, Curriculum Development, Energy, Facilities Design & Operation, Solid Waste Management, Sustainable Procurement, Transportation and Water Management.

This report was compiled on behalf of the Sustainable RSCCD Committee (SRC) by the Facility Planning, District Construction and Support Services Department and covers a two year fiscal period. The information was compiled through a collaborative effort between the colleges, District and members of the SRC. The report highlights the last two fiscal year achievements, projects, programs, and plans completed as well as the work currently in progress in various phases of planning and implementation.

The SRC’s primary goal over the last several years has been to establish additional recycling programs at the colleges and District facilities by contracting with a new waste hauling management service provider who can assist the District in allowing for more sorting options in collection of waste, and by providing more detailed recycling data for the various sites. The desire is to have the waste hauler provider incorporate recycling activities best suited to the needs of each facility and report recycling outcomes. On-going efforts in this area are still underway and making progress in the solicitation and procurement phases.

Many sustainable activities are on-going and several projects have been completed to meet the goals of the plan. This year, the committee has reorganized the reporting method for the activities, programs, and projects to align the report outcomes with the identified eight (8) goals of the Plan. This reorganization of the reporting format allows for easier collection of information by members of the SRC and is easily comprehensible to interested individuals. The SRC will continue to focus on implementing programs and projects outlined in Section 4 of the Plan: Sustainable Programs and Projects for Implementation.

The SRC continues to strive towards implementing the goals of the Sustainability Plan and is proud to present the attached report covering the fiscal year period of 2016-2018.

### **Achievements:**

- Compiled Utility Data Use for the last 8 years and established the baseline year as 2012-2013.
- Districtwide utility use has gone down by 5% for electricity, gas, and water in comparison to 2012-2013.
- A new central chiller plant and replacement of underground utilities were completed at Santa Ana College, along with new sustainable landscaping.
- Santa Ana College’s new Science Center building is under construction and is LEED Silver equivalent, and is 28% more energy efficient than required by code.
- Santiago Canyon College has been utilizing the new Energy Management System (EMS) and making operational adjustments for both HVAC and exterior lighting with the new controls provided.
- A standard set of guidelines for building operators was set for building temperature set points (for heating and cooling) and continues to be implemented across all buildings.

### **Goals established by the Committee for the next two years are as follows:**

- Retain a new waste hauler and start additional recycling programs.
- Add standards for procurement (products).
- Add more water hydration stations at Santa Ana College and Santiago Canyon College.

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## ***SUSTAINABLE RSCCD COMMITTEE MEMBERS: 2016-2018***

### **Santa Ana College**

Michael Collins, Ed. D., Vice President, Administrative Services (2016-2017)  
Adam O'Connor, Interim Vice President, Administrative Services (2018)  
Bart Hoffman, Interim Vice President, Administrative Services (2018-Current)  
James Kennedy, Ed.D., Vice President, Continuing Education Centennial Education Center (2016-Current)

Lisa McKowan-Bourguignon, Faculty (2016-2017)  
Marty Moreno, Faculty (2017-2018)  
Kimo Morris, Ph.D., Faculty (2016-Current)  
Kelly Ro, Faculty (2018-Current)

Angie Kellett, Classified Staff (2018-Current)

Brandon Vu, Student (2018)  
Luis Ortiz, Student (2018-Current)

### **Santiago Canyon College**

Arleen Satele, Ed. D., Vice President of Administrative Services (2016-Current)  
Jose Vargas, Vice President of Continuing Education Orange Education Center (2016-Current)

Jim Isbell, Faculty (2016)  
Doug Deaver, Faculty (2016-2017)  
Angela Guevara, Faculty (2017-Current)

Kelsey Bains, Classified Staff (2016-2017)  
Claudia Vidal, Classified Staff (2017-2018)  
Ambar Nakagami, Classified Staff (2018-Current)

Summer Marsh, Student (2017-2018)  
Nicholas Valle, Student (2018-Current)

### **District Office**

Raúl Rodríguez, Ph.D., Chancellor (2016-Current)  
Carri Matsumoto, Assistant Vice Chancellor, Facility Planning, District Construction & Support Services (2016-Current)

Leanna Nolan, Classified Staff (2018-Current)

## GOALS OF THE SUSTAINABILITY PLAN

The Sustainable RSCCD Committee (SRC) has identified the following sustainability goals and priorities. The goals and priorities for the Sustainability Plan reflect campus needs, interests, and available resources.

### Goal 1- Campus & Community Engagement

Encourage participation in and awareness of sustainability issues through effective education and engagement. Integrate sustainability into all facets of student life, including student government, clubs, and organizations.

### Goal 2- Curriculum Development

Facilitate the inclusion of environmental sustainability and social responsibility into existing curriculum and develop new curricula and career-oriented certificate and training courses with an emphasis on sustainability.

### Goal 3- Energy

Utilize 2012-2013 benchmark study to establish annual energy use and demand reduction goals (target 5% reduction). Plan appropriate energy efficiency, demand reduction, or clean self-generation measures by mid-2015 to meet reduction goals.

### Goal 4- Facilities Design & Operation

Design and construct all major capital projects and renovations to meet LEED Silver “equivalent” standard and operate facilities to meet solid waste, energy, and water use reduction goals. Employ sustainable landscaping practices.

### Goal 5- Solid Waste Management

Continue to implement the landfill diversion program, expand it to include all sectors of recycling and waste reduction to landfills, and strive to meet the statewide landfill recycling goal of 75% by 2020.

### Goal 6-Sustainable Procurement

Implement efforts to source campus food, materials, supplies, information technology, equipment, and resources from organizations committed to social responsibility and environmental sustainability.

### Goal 7- Transportation

Reduce the reliance of students, faculty, and staff on single occupancy vehicle commutes by 5% within the next five years, and encourage the use of low and zero emissions vehicles.

### Goal 8- Water Management

Perform water use benchmarking studies at both campuses and the District Office to better understand usage as compared to similar facilities and community college peers. Based on the results, establish annual water use reduction goals and plan appropriate measures to achieve goals.

The goals described above will apply to both Santa Ana College and Santiago Canyon College, the education centers, and the District Office. The goals are listed in numerical order, and are not necessarily listed by priority.

#### Vision Statement

*The Rancho Santiago Community College District holds sustainability to be a foundational principle in its current and future development. As a responsible steward of natural resources and the environment, the District will endeavor to minimize its impact on the environment by implementing best practices for conserving resources, reducing waste, implementing energy reduction and alternative energy generation strategies, constructing efficient buildings, and by developing partnerships that will further these activities.*

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## GOAL 1: CAMPUS & COMMUNITY ENGAGEMENT

### Goal Description

Encourage participation in and awareness of sustainability issues through effective education and engagement. Integrate sustainability into all facets of student life, including student government, clubs, and organizations.

### ACHIEVEMENTS:

#### A. Created a Sub-Committee in the Associated Student Government Devoted to Sustainability

##### Santa Ana College:



**Mission Statement:** The Associated Student Government of Santa Ana College (ASGSAC) advocates on behalf of students on issues that affect students and ensures a student voice in the decision-making processes of the college. The ASGSAC ensures that a variety of clubs and organizations are available for students to join and is committed to ensuring that students have a fun and eventful learning environment on campus. Also, ASGSAC hopes that all students have an opportunity to participate in extra and co-curricular activities and to enhance their college experience.

The Associated Student Government (ASG) has created a Sustainability Commissioner position and this position serves on the Sustainable RSCCD committee and promotes sustainability efforts within ASG as well as provides a student voice for sustainability advocacy for the students. The position leads the student effort for the annual Earth Day event.

##### Santiago Canyon College:



**Mission Statement:** Our mission is to develop student leaders who will represent, protect, and defend the rights of every student at Santiago Canyon College. It is our duty to research and advocate for new and innovative pathways to improve student success, as well as enhance the overall environment for our students on campus.

Santiago Canyon College Associated Student Government established a “Green Operations Committee and the committee continues to be active.

#### B. Sustainability Events

Both colleges have had successful Earth Day and Sustain-a-Palooza events on campus. Each year, the events are continuously growing with the participation of students, faculty, staff, and vendors (See Exhibit A-Sustainability Pamphlet; a pamphlet created by the District to highlight various sustainability goals).

##### Santa Ana College:

The college hosted the annual Sustain-A-Palooza, which is a program dedicated to environmental awareness and action. The event has taken place for five (5) consecutive years.

## Santiago Canyon College:

The College has hosted the annual Earth Day festivities which included the following activities:

- Planted two (2) trees in the Quad area.
- Site One Landscape Supply of Laguna Niguel demonstrated how to reduce water usage in residential areas.
- Kubot Eberhart Equipment of Santa Ana brought equipment to demonstrate new technologies available to control emissions and protect the environment.
- Southwest Boulder & Stone of Escondido displayed rock scape materials for landscaping.
- Toyota of Corona showcased five (5) energy-efficient vehicles.
- Irvine Campus Housing Authority, Inc. and Adams Streeter Civil Engineering discussed careers in Design and Engineering/Environmental.
- Partnered with Enriched Farms, a local farmers market organization that brought local vendors on campus to sell a variety of goods for Earth Day guests from 9 A.M. to 2 P.M.



Figure 1. Energy Efficient Vehicles On Display



Figure 2. Participating Vendors



Figure 3. Tree Planting



Figure 4. District Participating

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## GOAL 2: CURRICULUM DEVELOPMENT

### Goal Description

Facilitate the inclusion of environmental sustainability and social responsibility into existing curriculum and develop new curricula and career-oriented certificate and training courses with an emphasis on sustainability.

### ACHIEVEMENTS:

#### A. Utilize Different Pathways to Integrate Sustainability in the Curriculum

##### Santa Ana College:

3-D Printing/Advance Manufacturing Class uses sustainable filament. Daniel Oase, Assistant Professor/Coordinator of CTE/Business Skills, created a new non-credit Certificate of Completions called 3D Printing/Advance Manufacturing. One of the classes required for this certificate is Introduction to 3D Printing. The PLA filament used to create these models is compostable and recyclable. All objects are corn starched based.

#### B. Training Opportunities for Students


##### Santa Ana College:


- Engineering, Biology, Geology field trips.
- Sustainable design elements in engineering and automotive programs.
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##### Santiago Canyon College:

- The Water and Wastewater Technology received the Bronze award from the State Chancellor's Office for improving student employment and water outcomes (April 2018).
- Advocate for Change at the Statewide Level.

#### C. Enhance Student Distance Learning

 **ONLINE CLASSES** – Look for the ONLINE class symbol in the schedule

 **HYBRID CLASSES** – Look for the HYBRID class symbol in the schedule.

Students enrolling in online courses will have the opportunity to complete their course work outside of the classroom, although some classes combine on-site testing with online instruction. Students may access course materials via the internet either at home or using an on campus computer.

Hybrid (blended) courses are courses that combine face-to-face classroom instruction with online learning. Students will have required instructional on-campus meetings. On campus required meeting dates, time and place, and instructor contact information can be found on WebAdvisor <http://webadvisor.rscdd.edu>.

##### Santa Ana College:

As of Fall 2018, Santa Ana College is currently offering 288 online and hybrid courses of various subjects including English, Math, Science, and Economics. Among the 288 courses, 79 courses use OER (Open Educational Resources) and 7 of those OER courses implement ZTC (Zero Textbook Cost).



## GOAL 3: ENERGY

### Goal Description

Perform energy use benchmarking studies at both campuses and the District Office to better understand District energy use as compared to similar facilities and community college peers. Based on the results, establish annual energy use and demand reduction goals and plan appropriate energy efficiency, demand reduction, or clean self-generation measures to achieve goals.

### ACHIEVEMENTS:

#### A. Energy Consumption Goal (Electricity and Gas)

“The District performed an energy benchmark study in 2012-13 using the Chancellor’s Office Energy Calculator” (Sustainability Plan). This became the baseline year for establishing the annual energy use reduction goals, and targeting an overall annual reduction of 5%.

- The District has met the original goal stated in the Sustainability Plan 2015 to reduce energy consumption by 5 % from baseline year (2012-13).
- Districtwide there has been a reduction by 5% over the last 5 years.
- Districtwide there is a steady decrease in electricity usage.
- Districtwide there has been a significant decrease in gas usage.

#### B. Conduct Comprehensive Facility Energy Audits

- Prepared report of energy and gas consumption for all sites, using fiscal year 2012-2013 as a baseline year of measurement (See Exhibit E for the electricity and gas use summary).
- The District conducts an annual review of electricity and gas use from a detailed billing summary generated by Southern California Edison (SCE) and Southern California Gas Company (SoCalGas).
- District compares the summary to the actual billing statements.
- District reviews the trends with the campus to discuss use and changes.

#### C. Summary of Current Accounts

##### 1. Electricity

Table of Summary Accounts

Site	Number of Accounts, And number of meters	Service Period
District Operations Center	1 account; 1 meter	Mid-month
Santa Ana College	2 accounts; 2 meters	Mid-month
Santiago Canyon College	5 accounts; 5 meters	Mid-month
Orange Education Center	1 account; 1 meter	
Orange County Sheriff’s Regional Training Academy	1 account; 1 meter	Mid-month
Digital Media Center	1 account; 1 meter	Beginning of the month
Centennial Education Center	1 account; 1 meter	Mid-month

- The electricity consumption summary 2010 to 2018 (Exhibit E) includes 12 active accounts, as well as 3 de-activated accounts that are no longer in use.
- The Central Plant service began in March of 2017, and there are two separate accounts and two meters for this building.

2. Gas

Table of Summary Accounts

Site	Number of Accounts, And number of meters	Service Period
District Operations Center	1 account; 1 meter	Beginning of the month
Santa Ana College	3 accounts; 3 meters	Mid-month
Santiago Canyon College	2 accounts; 2 meters	End of the month
Orange Education Center	1 account; 1 meter	Mid-month
Orange County Sheriff's Regional Training Academy	1 account; 1 meter	Beginning of the month
Digital Media Center	1 account; 1 meter	Beginning of the month
Centennial Education Center	1 account; 1 meter	Beginning of the month

The gas consumption summary 2010 to 2018 (Exhibit E) includes 10 active accounts, as well as 1 account that was de-activated since March of 2011 that was no longer in use.

**D. Energy Summary Account Details by SCE & SoCalGas**

1. Electricity:

SCE provided the detailed electricity usage history summary and it includes the following information:

- Customer's Name (for all sites, it is Rancho Santiago Community College District)
- Customer Number
- Service Account Number
- Customer Service Account Number
- SIC Code
- Current Rate
- Meter Number
- Service Street Address
- City Name
- Zip Code
- Billing Month and Year
- Meter Read Date (this is the end date of service)
- Statement Rate
- Billed Amount
- Kwh Usage
- City Tax and State Tax
- Maximum Kw
- Billing Date
- 34 columns of a complete breakdown of Summer Peak vs Winter Peak

The detailed summary includes all 12 active accounts and site, address, customer service account number or service account number. For tracking and trending purposes, some of the information is extracted from the detailed summary.

## 2. Gas

The gas use history report is available on the SoCalGas on the website, which provides up to 25 months of billing history and it includes the following information:

- Date Mailed (billing statement)
- Billing Period; beginning date and end date (service period)
- Billed Days (number of days of service)
- Total of Therms
- Current Charges
- Total Amount Due

## E. Methodology for Maintaining and Monitoring Electricity and Gas Consumption

To track consumption/use history for each site and accounts, a separate spreadsheet has been developed by the District for both electricity and gas. Each spreadsheet tracks individual accounts with the history from 2010 to current (2018). The District continues to collect the data consumption history to generate trending reports and summarize the overall total use of each account.

The District has obtained copies of the electricity and gas billing statements for comparisons and verification of the reports. SoCalGas offers copies of the billing statement online and it is only limited to 25 months. Previous billing history prior to 2015 was from the actual billing statements obtained from the Accounts Payable Department.

SCE billing statements were not available online. Therefore, copies of the billing statements were obtained from the Accounts Payable Department and these were only available from 2015 to current.

## F. Electricity and Gas Consumption Trends (See Exhibit E Electricity, Gas and Water Consumption History FY2010-2018)

The District has collected utility sites as noted in attached Exhibit E and can now be evaluated for trends on a monthly, quarterly, annually and seasonal basis.

### 1. Electricity

Typically, for all the sites, the electricity consumption begins to increase in June and gradually increases through October. Summer months demand more kilowatts due to an increase use in cooling for buildings.

### 2. Gas

Gas use typically begins to increase around September through March. These winter months will demand more therms for the use of the heating system.

## G. Recommendations to Improve Consumption Management

To improve and enhance the management of utility consumption at sites, the District and the Colleges need to continue to review utility bills on a regular basis (i.e. monthly, quarterly, annually) to monitor consumption and any anomalies in billing.

- Once a billing statement has been received by the Accounts Payable Department at the District office, it is very important that the department reach out to the campus and inquire if there was a reason for an increase of the service.
- A note to the actual billing statement shall be annotated for future reference.
- The District summarizes the usage history on an annual basis and reviews this with the colleges.

## H. Grants and Incentive Programs

- Leveraged state funding Scheduled Maintenance and Proposition 39 to complete multiple energy efficiency projects.
- District Office replaced existing boiler with new high efficiency boiler providing more efficient means of heating the building.
- The District has received the following rebates;
  1. Year 1- \$342,514
  2. Year 2- \$216,100
  3. Year 3- \$89,113
  4. Year 4- Zero
  5. Year 5- Pending
- The following table summarizes the Proposition 39 projects and rebates/incentives received over the years.

### Rancho Santiago Community College District: PROP 39 REPORT

Revised: 10/16/18

Site	Project	Status	Prop 39 Allocation	Total Project Cost (Based on GL Summary 5/30/18)	Rebates/ Incentives	KWH Savings (Yearly)	Therm Savings (Yearly)	On-Site Hours (Energy Jobs)	
Yr 1 - SAC	Santa Ana College - Interior LED Lights	Closed out	\$ 706,034	\$ 1,056,715	\$ 125,023	520,844	-	2,374	
Yr 1 - SAC	Santa Ana College -Exterior LED Lights	Closed out	\$ 106,933	included above	\$ 83,380	347,418	-	528	
Yr 1 - SCC	Santiago Canyon College Science Cntr RCx	Closed out	\$ 204,572	\$ 630,420	\$ 134,111	383,323	21,428	2,496	
			<b>Subtotal</b>	<b>\$ 1,017,539</b>	<b>\$ 1,687,135</b>	<b>\$ 342,514</b>	<b>1,251,585</b>	<b>21,428</b>	<b>5,398</b>
Yr 2 - SCC	Santiago Canyon College Interior LED Lights	Closed out	\$ 503,160	\$ 826,614	\$ 135,340	559,750	-	2,310	
Yr 2 - SCC	Santiago Canyon College-Exterior LED Lights	Closed out	\$ 237,481	included above	\$ 50,042	208,507	-	292	
Yr 2 - DO	District Office- Interior LED Lights	Closed out	\$ 75,429	\$ 154,203	\$ 30,718	127,993	-	624	
			<b>Subtotal</b>	<b>\$ 816,070</b>	<b>\$ 980,817</b>	<b>\$ 216,100</b>	<b>896,250</b>	<b>-</b>	<b>3,226</b>
Yr 3 - SAC	SAC- DMC and OCRSTA LED Lights (Exterior and Interi	Closed out	\$ 831,201	\$ 338,450	\$ 60,193	227,820	-	355	
Yr 3 - SAC	SAC- Building I and Z (Interior and Exterior)	Closed out	included above	\$ 72,075	\$ 6,040	53,808	-	80	
Yr 3 - SCC	SCC- Building D Chiller and Pumps	Closed out	included above	\$ 488,830	\$ 22,881	87,183	-	1,744	
			<b>Subtotal</b>	<b>\$ 831,201</b>	<b>\$ 899,355</b>	<b>\$ 89,113</b>	<b>368,811</b>	<b>-</b>	<b>2,179</b>
Yr 4 - SAC	SAC-DMC-OCRSTA EMS Upgrades	Closed out	\$ 1,096,152	\$ 1,236,854	\$ -	151,250	-	415	
			<b>Subtotal</b>	<b>\$ 1,096,152</b>	<b>\$ 1,236,854</b>	<b>\$ -</b>	<b>151,250</b>	<b>-</b>	<b>415</b>
Yr 5 - SCC	SCC LED Lighting	In Close Out	\$ 399,608	\$ 593,658	PENDING	PENDING	-	1,657	
Yr 5 - SCC	SAC, DMC, OCRSTA, DOC LED Lighting	In Close Out	\$ 593,720	included above	PENDING	PENDING	-	806	
			<b>Subtotal</b>	<b>\$ 993,328</b>	<b>\$ 593,658</b>			<b>2,463</b>	
			<b>TOTALS</b>	<b>\$ 4,754,290</b>	<b>\$ 5,397,819</b>	<b>\$ 647,727</b>	<b>2,667,896</b>	<b>21,428</b>	<b>13,681</b>

Figure 5. Prop 39 project list

## Santa Ana College:

- Proposition 39 Year 5: District-wide Exterior LED Lighting replacement completed.
- Closeout Proposition 39 Years 1, 2, 3, and 4 projects with the State.



Figure 6. Exterior Lighting at Quad Area, Santa Ana College



Figure 7. Exterior Lighting at Santiago Canyon College

- Participated in Central Plant Load Shifting Program (rebate is still pending from SCE).
- Proposition 39 Year 4: Santa Ana College, Digital Media Center and Orange County Sheriff's Regional Training Academy EMS upgrade project was completed.
- Conversion from gas power carts for Maintenance and Operation to electric carts with incentives for conversion.

## New Central Plant Building & Cooling Tanks



Figure 8. New Central Plant Building



Figure 9. Cooling Tanks for Central Plant

- The construction of the new Central Plant building and replacement of all underground utilities (domestic water, sewer, fire water, storm drain, gas, electric and data).
- A reduction of electrical loads during peak demand periods, a new chilled water loop system, connection to seven (7) existing buildings to the HVAC equipment to provide cooling.
- A new Energy Management System (EMS) to control building temperatures and the capability to monitor the system remotely.
- The Central Plant project is based on permanent load shifting through thermal ice storage facilities for cooling.
- Implemented staggered starts for the electrical utilities and equipment (such as HVAC) to reduce electrical consumption. This allows for lower peaks during high demand electrical events.

- 
- Replaced existing constant volume single package HVAC units with more efficient variable air volume units.
  - Installed occupancy sensors to reduce energy consumption during occupied hours of operation.
  - Replaced and Repaired Heating Fan Coil Valves in Dunlap Hall, Building D.
  - New buildings (Science Center, Johnson Center, and Health Sciences) are designed per Code to accommodate future addition of photovoltaic panels to the roof.

**Santiago Canyon College:**

- Installed variable frequency drives to adjust pool pump speeds and reduce energy consumption at the Athletics building at Santiago Canyon College. Received rebate from SCE.
- Future assessments to replace constant volume HVAC equipment with more efficient variable air volume equipment. The project also includes occupancy-based equipment operation using occupancy sensors to reduce energy consumption during occupied hours of operation.
- Completed the replacement of 42 fan coil units in Building D.

## GOAL 4: FACILITIES DESIGN & OPERATION

### Goal Description

Design and construct all major capital projects and renovations to meet LEED Silver “equivalent” standard and operate facilities to meet solid waste, energy, and water use reduction goals. Employ sustainable landscaping practices.

### ACHIEVEMENTS:

#### A. Facilities Design

##### Santa Ana College:

- The Central Plant (image of building is shown on the front cover of this report) project is designed to meet Leadership in Energy and Environmental Design (LEED) Silver equivalence by United States Green Building Council. The energy efficient elements include water-efficient landscaping, plumbing fixtures, high efficient HVAC units, and daylighting.
- The Johnson Student Center building is designed to meet Leadership in Energy and Environmental Design (LEED) Silver equivalence by United States Green Building Council. Some of the efficient elements include water-efficient landscaping and plumbing fixtures, highly efficient HVAC units, daylight harvesting, controlled electrical outlets, and separate building metering.



Figure 10. Future Johnson Student Center

- The Science Center building is designed to meet Leadership in Energy and Environmental Design (LEED) Silver equivalence by United States Green Building Council. Some of the efficient elements include water-efficient landscaping and plumbing fixtures, highly efficient HVAC units, daylight harvesting, controlled electrical outlets, separate building metering. The building is 28% more energy efficient than required by code.



Figure 11. Future Science Center

- The Health Sciences building is designed to meet Leadership in Energy and Environmental Design (LEED) Silver equivalence by United States Green Building Council. Some of the efficient elements include water-efficient landscaping and plumbing fixtures, highly efficient HVAC units, daylight harvesting, controlled electrical outlets, and separate building metering.



Figure 12. New Health Sciences



## B. Install Energy Management System (EMS)

Santa Ana College, Santiago Canyon College, Orange County Sheriff’s Regional Training Academy, Digital Media Center, and District Operations Center now have interior corridor and exterior lighting controlled by an EMS under a predefined schedule using automatic daylight savings programming.

Standardized HVAC set point ranges, according to American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) standards 68 -76, maintain consistent temperatures for cooling and heating, and removed ability for users to adjust temperature to provide better control of HVAC equipment.

The site has the capabilities to adjust temperature set points and schedule operating times using the EMS. These guidelines are used by building operators as they make adjustments where, needed based on use and occupancy.

### Santa Ana College:



Figure 13. Santa Ana College EMS

- Proposition 39 Year 4 project implemented a new EMS system, as well as the Digital Media Center and Orange County Sheriff’s Regional Training Academy.

## Santiago Canyon College:



Figure 14. Santiago Canyon College EMS

- Exterior lighting controls have been improved so the lights turn off and on based on local weather station sunrise and sunset data.
- Implemented the sequences into EMS Systems to allow the campus to automatically make set point adjustments at all the buildings when there is an all-call for energy reduction.
- Optimized HVAC building occupancy hour across all the buildings to take advantage of optimal start sequences.
- The Humanities Building at Santiago Canyon College has step dimming and automatic continuous dimming (daylight harvesting) at all classrooms and office spaces.

### C. Encourage and Support Energy Efficiency Training of Staff

#### Santa Ana College:

- Ongoing EMS training and analytics software training as part of the campus-wide EMS upgrades.
- Reviewed commissioning agent's EMS operation and system user manual was reviewed with the college after EMS system turnover. Reviewed air balance report and trained staff on air balance inefficiency corrections.
- Commissioning agent's Central Plant operation and system user manual was reviewed with the college after system turnover. Reviewed air balance reports and trained staff on air balance inefficiency corrections.

### Santiago Canyon College:

- Standardized EMS Systems to ensure consistency with user friendly HVAC management.
- Provided new laptops to Maintenance and Operations (M&O) staff to better utilize EMS system
- Provided in-depth EMS training to the M&O staff as part of EMS installation
- Reviewed systems manual and air/water balance reports for all commissioned projects with the maintenance staff to help them better understand system operations and system status.

### D. Optimize Building Occupancy Scheduling

#### District Office and Santiago Canyon College:

- As part of the EMS sequences, all HVAC has been optimized via new sequence programming to start and stop whenever there is a certain number of cooling and heating calls, thereby, eliminating the need for the equipment to run continuously.

### E. Optimize Equipment Scheduling

#### District Office:

- The chiller and boiler plant have been optimized via new sequence programming to start and stop whenever there is a certain demand of cooling and heating. Thereby, eliminating the need for the equipment to run continuously.



Figure 15. District Operation System EMS (view of Penthouse Hot Water System)

### Santa Ana College:

- Coordinate scheduling of internal and external events with HVAC team and college facilities coordinator to limit operation of HVAC systems when buildings are not being fully utilized.

## Santiago Canyon College:

- All new energy efficient projects have undergone commissioning and staff has been trained on EMS operations to maintain operations as originally commissioned.

## F. Pursue Monitoring-Based Commissioning (MBCX) Retro-Commissioning (RCX)

- The District assessed energy meters districtwide and installed analytics software at selected buildings to monitor system performance and make system corrections for Santa Ana College.

## G. Implement Sustainable Design Practices

- District standards have been developed with sustainability in mind. For example, all new light fixtures are required to be LED type to reduce energy waste.
- All projects are required to be enrolled in SCE's 'Savings by Design' program to maximize energy savings, all irrigation systems must have "smart controller" to reduce water waste, and all new buildings must have daylighting systems to dim indoor lighting based on outdoor natural lighting.
- Repairs and maintenance projects by the colleges also incorporate and implement these standards. The standards files are updated on a regular basis and available to access by the colleges and the district via a shared directory file and available to design consultants if needed

## H. Commission New Buildings & Maintain Appropriate Operations to Support Functionality

- The following systems, at a minimum, shall be commissioned for all new buildings: HVAC; lighting controls (including daylight harvesting); plumbing; energy management system; life safety systems (fire alarm, egress pressurization, fire protection); security system; uninterruptible power supply system; and smart irrigation systems.
- Onuma Work Order System: A new building work order system has been deployed districtwide and is available for all sites to utilize and track work orders. Additionally, this system can eventually assist the colleges with inputting data for managing and tracking preventative maintenance and repairs.

### *How It works:*

1. The requestor signs into the Onuma Work Order System.
2. Selects the campus or site in which the work order is to be performed.
3. Screen prompt allows requestor to enter the information; name, phone number, location, specific room, and add a comment.
4. Click on "Submit Work Order Request."
5. A message is sent to the site administrator that a work order request has been entered.
6. The work order is assigned and the requestor will be notified that the work ordered has been issued.

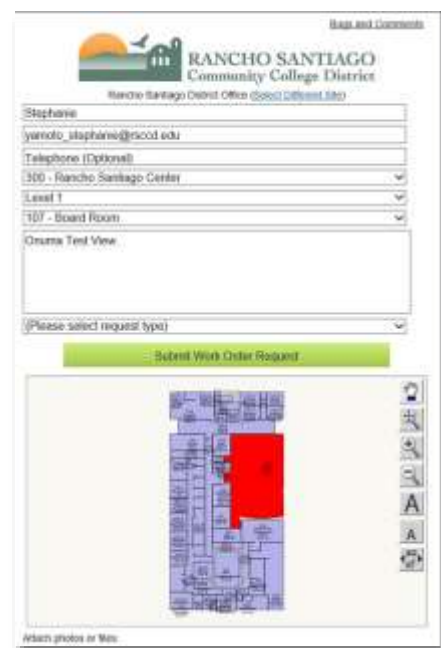


Figure 16. Onuma Work Order System

## GOAL 5: SOLID WASTE MANAGEMENT

### Goal Description

Continue to implement the landfill diversion program, expand it to include all sectors of recycling and waste reduction to landfills, and strive to meet the statewide landfill-recycling goal of 75% by 2020.

### ACHIEVEMENTS:

#### A. Improve Existing Recycling Programs

##### District:

- Procurement of a new waste hauler is in progress to continue efforts of imploring existing recycling programs.
- All the surplus material such as office furniture, equipment and electronic devices are sent to the District Warehouse. All departments are encouraged to attend the “Open House” for re-use/re-purpose opportunities.
- Districtwide, the paper forms reductions have been implemented.
- Applied and received a grant for Beverage Container Recycling Grant Programs (RBC 28 & RBC 29) to promote recycling and to reduce waste to the landfill by installing beverage containers at the District Office, Santa Ana College, Centennial Education Center, Digital Media Center, Santiago Canyon College, Orange Education Center and Orange County Sheriff’s Regional Training Academy.
- The District has ordered and received the first 141 recycling stations. Deployment, training, and placement are to be scheduled with supervisory staff and custodian at a later date.
- Cardboard and paper are sorted on-site and Paper Depot picks up the full bins as needed.
- Beginning May 2018, a report was provided from CR&R of the items that were sorted and recycled.
- These items are the following; beverage containers, glass, plastic (#3-7), cardboard, office paper (mixed), copier/toner cartridges, scrap metal, construction materials/debris.
- The District currently requires contractors to comply with recycling requirements during construction and demolition as the requirements are included within the District’s construction contract documents.



Figure 17. Modular workstation to be refurbished

Below are some samples of recycling containers to be deployed at a later date.



Figures 18. Samples of recycling containers

Two Burden carts with hoppers were purchased through the Cal Recycle Grant, one for each campus.



Figure 19. Burden cart with a hopper



Figure 20. Hydration Station



**Santa Ana College:**

Created a Hydration Station Map (See Exhibit B-Santa Ana College Bicycle Racks and Hydration Stations Location Map).



Figure 21. Hydration Station



**Santiago Canyon College:**

Three (3) water stations were installed in 2017 to encourage the use of fillable water bottles in order to reduce the consumption of disposable water bottles (See Exhibit C- Bicycle Racks and Hydration Stations Location Map).

## GOAL 6: SUSTAINABLE PROCUREMENT

### Goal Description

Implement efforts to source campus food, materials, supplies, information technology, equipment, and resources from organizations committed to social responsibility and environmental sustainability.

### A. Green Purchasing

#### Districtwide:

- Purchased less toxic cleaning solutions.
- LED lighting has reduced hazardous waste and the need to replace lamps.
- Ensure paper products specified contain more recycled product.
- Replace equipment with more energy efficient equipment such as copy machines, refrigerators, computers, etc.
- At this time, 29.4% of our Office Supply purchases, through Office Depot, are “green”.
- Paper used throughout the District, contains at least 30% recycled content.
- Paper towels are Green Seal GS-1 Certified, 100% recycled content, 65% post-consumer recycled content

Below are examples of some of the recycled products purchased Districtwide:



Figure 22. Samples of recycled products: copier paper, paper towels, highlighters, and pens

## GOAL 7: TRANSPORTATION

### Goal Description

Reduce the reliance of students, faculty, and staff on single occupancy vehicle commutes by 5 percent within the next five years, and encourage the use of low and zero emissions vehicles.

### ACHIEVEMENTS:

#### A. Understand Commute and Travel Patterns

##### Santa Ana College:

Parking study undertaken in Spring 2014, Fall 2014, Spring 2017 and Fall 2017, school semesters to evaluate a parking demand as well as traffic management plan to better understand use and need of parking during construction of both the Science Center and Johnson Center.

#### B. Encourage and Enhance Public Transportation and Ridesharing Options



Figure 23. Promotion Free Bus Ride Logo



Figure 24. OCTA bus promoting free bus rides (Santa Ana College)

##### Santa Ana College and Santiago Canyon College:

Partnered with Orange County Transportation Authority (OCTA) on a three-year pilot program that offers the students unlimited bus rides local fixed-routes in Fall of 2017. This program continues until the summer of 2020. Students are offered unlimited rides on all of Orange County bus local fixed routes.

On September 26, Santiago Canyon College and OCTA celebrated the Student Bus Pass Program with a kick-off ceremony. The program allows every full and part-time student from the college to take unlimited rides on OCTA's bus service utilizing the Orange County Bus mobile application on a smart device.



Figure 25. Promotion Free Bus Ride Logo



Figure 26. Special event celebrating OCTA Student Bus Pass Program at Santiago Canyon College



## C. Encourage and Enhance Bicycling Options

### Districtwide:

All new buildings shall comply with CalGreen’s bicycle parking requirement.



Figure 27. Bicycles using bike racks

### Santa Ana College:

New bicycle racks were provide and sufficient bicycle racks were added as part of the Central Plant Infrastructure project (See Exhibit B-Santa Ana College Bicycle Racks and Hydration Stations Map).



Figure 28. Bicycle using a bike rack

### Santiago Canyon College:

Each year, a bicycle has been an item that is offered through an opportunity drawing at the college’s annual Earth Day Event. Sometimes more than one bicycle has been offered since the first year of the Earth Day Event (See Exhibit C-Santiago Canyon College Bicycle Racks and Hydration Station Map).

## D. Improve Campus Fleet & Travel

### Santa Ana College:

- Two Toyota Prius (2016)



Figure 29. Toyota Prius for Campus Safety

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**Orange Education Center:**

- One Toyota Prius (2016)

**E. Encourage Electric Vehicles (EV) for Commuters**



Figure 30. Hybrid vehicle utilizing electric charging station

**Santa Ana College:**

- Ongoing assessment for future electric vehicle charging facilities.
- All new construction shall comply with California Green Building Code's Clean Air/Vanpool/EV requirements.
- Currently in Parking Lot 11 there is one electric charging station servicing two stalls.
- Designing for future in Parking lot 11, two electric charging stations servicing four stalls.
- Designing for future Health Sciences, two to three electric charging stations servicing three to six stalls, one of which is accessible (Parking Lot 6).

**Santiago Canyon College:**

- Designing for future Safety and Security Building, two electric charging stations servicing four stalls, one of which is accessible (Parking Lot 6).

## GOAL 8: WATER MANAGEMENT

### Goal Description

Perform water use benchmarking studies at both campuses and the District Office to better understand usage as compared to similar facilities and community college peers. Based on the results, establish annual water use reduction goals and plan appropriate measures to achieve goals.

### ACHIEVEMENTS:

#### A. Establish Water Conservation Goals

- California was in a served drought from 2012 to 2015 and a statewide mandate for water conservation was implemented in 2015. Governor Brown's 2015 Executive Order and subsequent State Water Resources Control Board (SWRCB) drought regulations require the District to conserve water.
- The District 2012-13 was used as a baseline year for comparison and established a 5% annual water reduction use.
- Districtwide has met the 5% reduction water use goal.
- Districtwide there has been a reduction by 17% over the last 5 years.
- In response to the drought period in 2014-15, Districtwide various water conservation measures were implemented such as: posted signs regarding awareness in water use reduction; some sites reduced irrigation to landscaping; and some sites installed low-flow water toilets and faucets.
- Districtwide there was a significant reduction in water usage since 2014.

#### B. Conduct a Comprehensive Facility Water Audits

- Completed benchmark studies for all District sites.
- Established the fiscal year 2012-13 as the baseline year for water use consumption analysis, consistent with the electricity and gas baseline year (See Exhibit E-Electricity, Gas and Water Consumption History FY2010-2018).
- The District conducts an annual review of water utility bills and reviews the trends with the campus to discuss use and changes.

#### C. Summary of Accounts

Table of Summary Accounts:

Site	Water Utility Agency	Number of Accounts, and number of meters	2 Month Service Period *exception; monthly
District Operations Center	City of Santa Ana	1 account; 1 meter	Mid-month
Santa Ana College	City of Santa Ana	10 accounts; 10 meters	Mid-month (5) End of Month (5)
Santiago Canyon College	City of Orange	3 accounts; 5 meters	End of Month
Orange County Education Center	City of Orange	2 accounts; 4 meters	End of Month
Orange County Sheriff's Regional Training Academy	Irvine Ranch Water District	5 accounts; 5 meters	Mid-month *
Digital Media Center	City of Santa Ana	2 accounts; 2 meters	End of Month
Centennial Education Center	City of Santa Ana	2 accounts; 2 meters	Beginning of the Month

- 
- The water consumption summary 2010 to 2018 (Exhibit E) includes 25 accounts, as well as 1 account that was in-activated for Santiago Canyon College in January 2011.
  - The District's sites are within three water utility agencies: City of Santa Ana, City of Orange and Irvine Water Ranch Water District.
  - The billing cycles are either at the beginning of the month, mid-month or at the end of the month, and services are being billed either monthly or bi-monthly.

#### **D. Water Summary Details**

##### 1. City of Santa Ana

- Services to District Operations Center, Santa Ana College, Centennial Education Center, and Digital Media Center
- Bills are available online up to 12 months.
- Billing statement is available to download.
- Bills from 2015 to current were downloaded.

##### 2. Irvine Ranch Water District

- Services to Orange County Regional Sheriff's Regional Training Academy
- Bills available online for 13 months.
- Billing statement is available to download.
- Bills from 2015 to current were downloaded.

##### 3. City of Orange

- Services to Santiago Canyon College and Orange Education Center
- Bills are available online for 8 months.
- Billing statement is available to download.
- Bills from 2015 to current were downloaded.

Note, all three water utility agencies do not offer the capability to export the water usage history in Microsoft Excel format, all collected data was entered manually into spreadsheets created by the District.

#### **E. Maintaining a Master File**

Water utility data is entered from the billing statements which includes the following:

- Date of Services; beginning date and end date
- Number of days of services
- Meter Read Date; beginning date and end date
- Total CCF (this is the difference between the two meter read dates)
- Total Gallons (the total CCF multiply by 748)
- Daily Average by Gallons
- Charges; various from water agencies, but all the rates and charges were entered.
- Billing Date (the date the billing statement was issued)

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## **F. Water Trends**

For each site it appears that spikes in water usage occur seasonally and when there are irrigation leaks and or other types of plumbing line breaks and repairs occur.

## **G. Recommendations to Improve Reporting of the Usage History**

Open communication with the campus and District is very important. In order to understand the usage and consumption patterns, all respective parties from the campuses to the District, must communicate with one another to proactively monitor utilities.

1. Campus or other building operators should notify the District when a leak occurs and note the duration.
2. The District office can inform the Colleges of spikes in the water billing statement, which may lead to investigation of unknown irrigation leaks.
3. District logs and tracks events for future reference and provides water use history data.

## **I. Implement Water Conservation Strategies**

Several water conservation measures have been implemented throughout the District and are included in the Facility Design Standard Guidelines.

### **District Office:**

Repaired irrigation system and removed the landscaping material to reduce water usage.

### **Santa Ana College:**

- Planning and scoping the installation of smart irrigation controls on campus are part of the District's Scheduled Maintenance projects.
- Completed the replacement of 6 irrigation controllers
- Phase 2 to replace an additional 14 controllers is in planning.
- Landscaping and Hardscape improvements as part of the Central Plant project.
- Additional Landscaping and Hardscape projects are in planning.

## Santiago Canyon College:

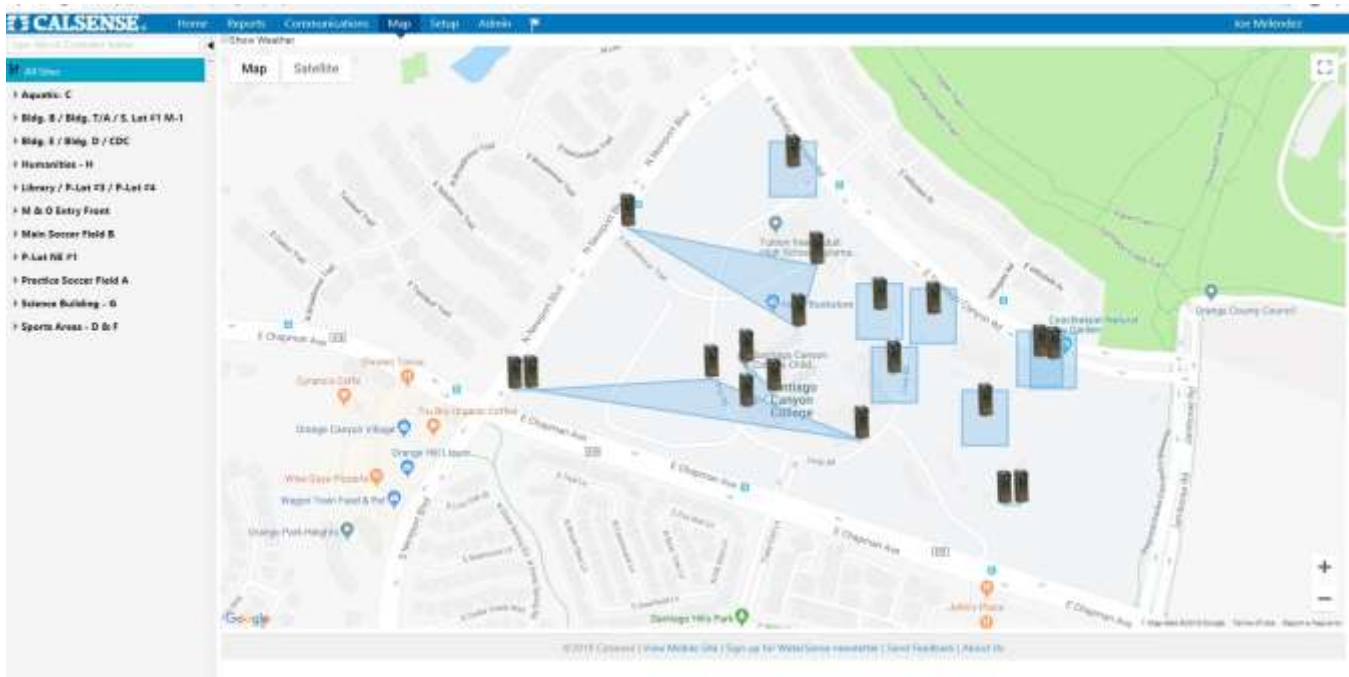


Figure 31. Santiago Canyon College Calsense

- In 2016-2017, a large water conservation project was implemented in the summer 2016-2017 (part of the District's Scheduled Maintenance projects 2015-2016) to upgrade all the irrigation controllers.
- New weather stations were installed and new controllers communicate via WIFI an online website for programming. Users will be able to program controls and measure/monitor water usage.
- Smart controllers will turn the main valves on and off based on ambient weather conditions, current forecasts, and precipitation conditions.
- The new irrigation system will alert users to faulty valves, leaks, and excessive water use.

## J. Reduce Storm Water, Sewer Discharges, and Water Pollution

### Santa Ana College/Orange County Sheriff's Regional Training Academy:

A storm water improvement project was completed in Summer 2016, for the undeveloped property at the Orange County Sheriff's Regional Training Academy to address the runoff drainage and erosion from property to implement best storm water management practices.

### Santa Ana College:

- New Science Center and Health Sciences buildings will utilize a shared retention basin to manage storm water runoff.
- New Johnson Center will be tied into the existing campus retention basin to manage storm water runoff.

### Santiago Canyon College:

- Completed a storm water improvement project in Fall 2016. The improvements diverted excess rainwater from the soccer fields and the undeveloped lot, adjacent to the Coastkeeper's Garden, to the

appropriate catch basins while filtering sediment and debris. This project implemented the storm water best management practices.

## K. Adopt Sustainable Landscaping Practices

### Districtwide:

- District will continue to review and include landscape materials with California native plants, drought resistant, and employ water-wise landscaping practices.
- All new buildings incorporate the Facility Designs Standards which require low water use plants and, irrigation systems with controllers to reduce and monitor water use.
- All new construction will comply with California Green Building Code.

### Santa Ana College:

- The new 6.2 acre Central Mall included 15 California, drought tolerant, native plants that are low maintenance and reduce water consumption.
- Utilized water wise irrigation systems which reduces watering plants to once a week.
- The mall included new benches, a focal point water feature with a trellis and installation of the Infinite Spirit Sculpture (See Exhibit D-Central Mall Landscape Walking Tour).

### Central Mall



Figure 15. New Central Mall Grand Opening Event



Figure 16. Central Mall Fountain



Figure 17. Infinite Spirit Sculpture



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## ***NONDISCRIMINATION POLICY***

The Rancho Santiago Community College District is committed to equal opportunity in educational programs, employment, and all access to institutional programs and activities.

The District, and each individual who represents the District, shall provide access to its services, classes, and programs without regard to national origin, religion, age, gender, gender identity, gender expression, race or ethnicity, color, medical condition, genetic information, ancestry, sexual orientation, marital status, physical or mental disability, pregnancy, or military and veteran status, or because he or she is perceived to have one or more of the foregoing characteristics, or based on association with a person or group with one or more of these actual or perceived characteristics.

The Chancellor shall establish administrative procedures that ensure all members of the college community can present complaints regarding alleged violations of this policy and have their complaints heard in accordance with the Title 5 regulations and those of other agencies that administer state and federal laws regarding nondiscrimination.

No District funds shall ever be used for membership, or for any participation involving financial payment or contribution on behalf of the District or any individual employed by or associated with it, to any private organization whose membership practices are discriminatory on the basis of national origin, religion, age, gender, gender identity, gender expression, race, color, medical condition, genetic information, ancestry, sexual orientation, marital status, physical or mental disability, pregnancy, or military and veteran status, or because he or she is perceived to have one or more of the foregoing characteristics, or because of his or her association with a person or group with one or more of these actual or perceived characteristics. Inquiries regarding compliance and/or grievance procedures may be directed to District's Title IX Officer and/or Section 504/ADA Coordinator. RSCCD Title IX Officer and Section 504/ADA Coordinator: Tracie Green, 2323 N. Broadway, Santa Ana, CA 92706, 714-480-7489.