



**Rancho Santiago Community College District  
Sustainable RSCCD Committee**

**September 17, 2014  
District Office  
Decision Room - #340  
3:00 – 4:00 p.m.**

**Agenda**

- |                            |               |
|----------------------------|---------------|
| 1. Sustainability Plan     | Matsumoto/NAM |
| 2. Prop 39 Projects Update | Matsumoto     |
| 3. Other                   |               |

**Next Meeting:**  
October 15, 2014  
3:00 p.m.  
District Office – Decision Room #340

**Mission Statement**

The mission of the Rancho Santiago Community College District is to provide quality educational programs and services that address the needs of our diverse students and communities.

The mission of Santa Ana College is to be a leader and partner in meeting the intellectual, cultural, technological, and workforce development needs of our diverse community. Santa Ana College provides access and equity in a dynamic learning environment that prepares students for transfer, careers and lifelong intellectual pursuit in a global community.

Santiago Canyon College is an innovative learning community dedicated to intellectual and personal growth. Our purpose is to foster student success and to help students achieve these core outcomes: to learn, to act, to communicate and to think critically. We are committed to maintaining standards of excellence and providing accessible, transferable, and engaging education to a diverse community.



# Rancho Santiago Community College District Sustainability Plan

**DRAFT**

Produced by  Sustainable rsccd

The logo consists of a stylized green tree icon next to the text "sustainable rsccd".

**July 2014**



# ACKNOWLEDGMENTS

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- Raúl Rodríguez, Ph.D., Chancellor
  
- Erlinda Martinez, Ed.D., President – Santa Ana College
- John Weispfenning, Ph.D., President – Santiago Canyon College

## Sustainable RSCCD Committee Members

- Delmis Alvarado, Classified Staff
- Kelsey Bain, Classified Staff
- Michael Collins, Ed.D., Vice President – Santa Ana College
- Douglas Deaver, Ph.D., Associate Professor Philosophy
- Leah Freidenrich, Professor Library & Information Science
- Peter Hardash, Vice Chancellor – Business Operations & Fiscal Services
- Steve Kawa, Vice President – Santiago Canyon College
- James Kennedy, Vice President – Centennial Education Center
- Laurene Lugo, Classified Staff
- Carri Matsumoto, Assistant Vice Chancellor - Facilities
- Lisa McKowan-Bourguignon, Asst. Professor Mathematics
- Kimo Morris, Ph.D., Asst. Professor Biology
- Elisabeth Pechs, Orange County SBDC
- Jose Vargas, Vice President – Orange Education Center

## Other Contributors

- Matt Sullivan, Consultant, Newcomb Anderson McCormick
- Danielle Moultsak, Project Manager – Newcomb Anderson McCormick



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## **SECTION 1.**

# **EXECUTIVE SUMMARY**

As with many public sector agencies, the Rancho Santiago Community College District (RSCCD) recognizes the environmental, economic, and social benefits of resource efficiency and sustainability. The passage of the California Global Warming Solutions Act (AB-32) and the establishment of a Sustainability Policy by the California Community Colleges (CCC) Board of Governors have made it imperative for Community Colleges to develop an organized, comprehensive approach that incorporates the elements of sustainability, satisfies state regulations, takes advantage of available resources and complimentary programs, and adopts the Best Practices of others who are further along this path.

Sustainability is defined as “meeting the needs of the present without compromising the ability of future generations to meet their own needs.” The purpose of this Sustainability Plan is to prepare the Rancho Santiago Community College District for the anticipated environmental and regulatory challenges of the 21<sup>st</sup> century, to guide the campus towards becoming a more sustainable institution, and to prepare students for the green economy.

RSCCD is a two-campus District, comprised of Santa Ana College and Santiago Canyon College, as well as two education centers, the Centennial Education Center and the Orange Education Center. The District has prepared this Plan to encompass the activities, goals, and priorities of each college and center. The following Sustainability Plan articulates the vision, goals, and objectives established by the District for sustainability, as well as the strategies to meet these goals. This Plan has been developed by the Sustainable RSCCD Committee (SRC). The SRC has developed this Sustainability Plan in coordination with the many different District stakeholders, including students, faculty, and staff, to ensure that the plan meets the different needs of the District.

### **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.*

## SECTION 2.

# BACKGROUND

### 2.1 HISTORY OF SUSTAINABILITY EFFORTS TO DATE

The Rancho Santiago Community College District has been proactive in the area of sustainability for the past several years. The Board of Trustees has established policies for District sustainability that have been incorporated in both the District Educational and Facilities Master Plans. The District has been active in recycling efforts, encouraging public transit use for students, faculty, and staff, and implementing energy and water saving projects and efficient new construction of campus facilities. Students have also been very active in this area through various clubs and sustainability events. While the District has made significant progress on the path to sustainability, it is poised to accomplish much more with the implementation of this Sustainability Plan. Section 4 of the Plan describes past activities and future plans in detail.

### 2.2 CREATION OF THE SUSTAINABILITY PLAN

To create this Sustainability Plan, RSCCD followed the process and utilized the tools provided in the California Community Colleges Sustainability Template. The process is illustrated in the flow chart at right. The implementation of the sustainability planning process and the resulting Sustainability Plan are described in the following chapters.

### 2.3 CAMPUS SUSTAINABILITY COMMITTEE

In order to manage the process and to develop this Sustainability Plan, the District established the SRC, consisting of faculty, staff, and students to provide representation from the different campus stakeholders. The Committee is responsible for developing and implementing the sustainability programs and projects described in this plan to achieve the sustainability goals.



### 2.4 THE POLICY CONTEXT OF SUSTAINABILITY PLANNING

Sustainability can provide environmental, economic, and social benefits to campuses. However, there are other motivations for the District to pursue these practices. The State of California has been on the forefront of efforts in establishing aggressive policies and standards for environmental protection and

reducing greenhouse gas (GHG) emissions that contribute to global warming. In 1970, the State adopted the California Environmental Quality Act (CEQA) with the goal to inform governments and the public about potential environmental impacts of projects. From 2005 onward, legislation has been passed to directly regulate GHG emissions by utilizing incentive mechanisms, cap-and-trade programs, and mandatory reporting while encouraging voluntary activities such as purchasing emissions offsets and offering renewable energy certificates (RECs). Compliance with state policies and regulations regarding these issues is an important factor for consideration by the Rancho Santiago Community College District.

The following outlines the numerous policy and regulatory drivers that contributed to the creation of this Plan.

#### **2.4.1 CCC BOARD OF GOVERNORS ENERGY AND SUSTAINABILITY POLICY**

To encourage the CCCs to a more sustainable future, the CCC Board of Governors approved the Energy and Sustainability Policy in January 2008, which puts forth goals for each campus to reduce their energy consumption from its 2001-02 baseline by 15 percent by 2011-12. It also sets goals for minimum efficiency standards of new construction and renovation projects and provides an incentive of 2 percent of construction cost for new construction projects and 3 percent of construction cost for modernization projects. The policy also sets goals for energy independence through the purchase and generation of renewable power and energy conservation through the pursuit of energy efficiency projects, sustainable building practices, and physical plant management.

The CCC Board of Governors Energy and Sustainability Policy can be found here:

[http://www.cccco.edu/Portals/4/Executive/Board/2008\\_agendas/january/3-1\\_Attachment\\_CCC%20Energy%20and%20Sustainability%20Policy%2011-9-07%20FINAL.pdf](http://www.cccco.edu/Portals/4/Executive/Board/2008_agendas/january/3-1_Attachment_CCC%20Energy%20and%20Sustainability%20Policy%2011-9-07%20FINAL.pdf)

#### **2.4.2 CALIFORNIA STATE CLIMATE REGULATIONS**

##### **2.4.2.1 *State of California Executive Order S-3-05***

Executive Order S-3-05 was signed by the Governor of California in 2005, thereby identifying the California Environmental Protection Agency (Cal/EPA) as the primary state agency responsible for establishing climate change emission reduction targets throughout the state. The Climate Action Team, a multi-agency group comprised of various state agencies, was formed to implement the Executive Order S-3-05. Shortly thereafter in 2006, the team introduced GHG emission reduction strategies and practices to reduce global warming. These measures are aimed at meeting the Executive Order's long term goal of reducing GHG emission to 80 percent below 1990 levels by 2050.

##### **2.4.2.2 *Global Warming Solutions Act of 2006 (AB-32)***

The Global Warming Solutions Act, or Assembly Bill 32 (AB-32), was adopted in 2006 by the California legislature, establishing two key requirements in regard to climate change reduction measures. The first requires that California GHG emissions be capped at 1990 levels by 2020, and the second establishes an enforcement mechanism for the GHG emissions reduction program with monitoring and reporting implemented by the California Air Resources Board (CARB).

In 2008, the Assembly Bill 32 Scoping Plan was released by CARB which describes measures to implement the requirements set by AB-32. In addition to partnering with local governments to encourage the establishment of regional emission reduction goals and community regulations, the Scoping Plan uses various mechanisms to reduce emissions state-wide, including incentives, direct regulation, and compliance mechanisms.

#### ***2.4.2.3 Assembly Bill 1493 (The Pavley Bill)***

Assembly Bill 1493, widely known as “The Pavley Bill”, was passed in 2002 and authorizes CARB to establish regulations to reduce the GHG emissions from passenger cars and light trucks by 18 percent by 2020 and 27 percent by 2030 from 2002 levels. This aggressive bill was temporarily blocked by the US EPA in March 2008 and later received a waiver of approval for implementation throughout California in June 2009.

#### ***2.4.2.4 Low Carbon Fuel Standard (LCFS)***

The Low Carbon Fuel Standard (LCFS) was established in January 2007 by Executive Order S-01-07 and requires California fuel providers to decrease lifecycle fuel carbon intensity of transportation fuels by 10 percent from 2007 levels by 2020.

#### ***2.4.2.5 California Renewables Portfolio Standard***

The California Renewables Portfolio Standard (RPS) was established in 2002 under Senate Bill 1078 and mandated that electrical corporations increase its total procurement of eligible renewable resources by at least 1 percent a year to reach a goal of 20 percent electricity generation from renewable resources. These goals were accelerated in 2006 under Senate Bill 107, which mandated that at least 20 percent of the total electricity sold be generated from renewable resources by the end of 2010. The RPS was further extended in 2008 by Executive Order S-14-08, which required that 33 percent of total electricity sales be generated from renewable resources by 2020. In April of 2011, this RPS standard of 33% renewable by 2020 was enacted into law through final passage of Senate Bill X 1-2 (Simitian) and extended to apply to both public and investor owned utilities.

#### ***2.4.2.6 Senate Bill 97***

Senate Bill 97, passed in 2007, required the Governor’s Office of Planning and Research (OPR) to develop and recommend amendments to CEQA Guidelines for addressing GHG emissions related to land use planning. The amendments to CEQA were approved and became effective in March 2010, thereafter requiring all CEQA documentation to include and comply with the new amendments established for addressing greenhouse gas emissions.

#### ***2.4.2.7 Senate Bill 375***

Senate Bill 375 was passed in 2008 to reduce GHG emissions caused indirectly by urban sprawl throughout California. The bill offers incentives for local governments to execute planned growth and

development patterns around public transportation in addition to revitalizing existing communities. Metropolitan Planning Organizations (MPOs) work with CARB to reduce vehicle miles traveled by creating sustainable urban plans with a comprehensive focus on housing, transportation, and land use. Urban projects consistent with the MPO's Sustainable Community Strategy (SCS) can bypass the CEQA's GHG emission environmental review. This provides developers with an incentive to comply with local planning strategies which support the State's greater effort for overall emission reduction in the land use and transportation sector.

#### ***2.4.2.8 Assembly Bill 341***

Starting July 1, 2012, businesses and public entities, including schools and school Districts that generate four cubic yards or more of waste per week and multifamily units of five or more will be required to recycle, if they are not already doing so. AB 341 also establishes a statewide goal of 75% diversion of solid waste to landfills. The purpose of this new law is to reduce greenhouse gas emissions by diverting commercial solid waste to recycling efforts and expand opportunities for additional recycling services and recycling manufacturing facilities in California.

#### ***2.4.2.9 Regional Air Pollution Control Districts (APCD) and Air Quality Management Districts (AQMD)***

In 1947, the California Air Pollution Control Act was passed and authorized the creation of Air Pollution Control Districts (APCDs) and Air Quality Management Districts (AQMDs) in every county. APCDs and AQMDs are tasked with meeting federal and state air pollution requirements set by the Clean Air Act and can develop regulations to achieve the necessary public health standards, though these regulations need approval from CARB and the US EPA. APCDs and AQMDs have jurisdiction over businesses and stationary sources of emissions and can offer varying levels of outreach, grants, and CEQA review and technical assistance to interested public and private parties. The APCDs and AQMDs do not have the authority to regulate mobile air pollution sources, which is the responsibility of CARB, and must defer to state or federal regulations provided by the California Air Resources Board and the U.S. Environmental Protection Agency.

**SECTION 3.****VISION STATEMENT, GOALS, AND PRIORITIES**

The Sustainable RSCCD Committee has developed the following Vision Statement to guide the District in its Sustainability Planning efforts.

*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.*

To realize this Vision Statement, the SRC has defined the following sustainability goals and priorities. The goals and priorities for the Sustainability Plan reflect campus needs, interests, and available resources.

Goal No.	Area of Sustainability	Established Goal
1	<b>Campus &amp; Community Engagement</b>	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.
2	<b>Curriculum Development</b>	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.
3	<b>Energy</b>	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 reduction goals and plan appropriate energy efficiency, demand reduction, or clean self-generation measures to achieve goals.
4	<b>Facilities Design &amp; Operation</b>	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 No.	Area of Sustainability	Established Goal
5	<b>Solid Waste Management</b>	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.
6	<b>Sustainable Procurement</b>	Implement efforts to source campus food, materials, supplies, information technology, equipment, and resources from organizations committed to social responsibility and environmental sustainability.
7	<b>Transportation</b>	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.
8	<b>Water Management</b>	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 alphabetical order, and are not necessarily listed by priority.

The goals and criteria established for the Sustainability Plan will be monitored during Plan implementation as described in Section 5, “Monitor and Report Performance”.

**SECTION 4.****PROGRAMS AND PROJECTS FOR IMPLEMENTATION**

Based on the goals and priorities described above, the SRC has selected the following programs and projects to actively improve campus sustainability. These programs and projects are also reflected in the Implementation Programs and Plans Checklist, located in Appendix 1, which outlines the details of each action item, its priorities, responsibility for implementation, schedules, and estimated cost of each program or project. Note that the paragraph numbering below corresponds to the Checklist items selected and are not necessarily in sequential order. The Checklist will be used by the SRC to manage the implementation process.

**4.1 MANAGEMENT AND ORGANIZATIONAL STRUCTURE**

In order to implement an effective Sustainability Plan, it will be important for RSCCCD to have a policy mandate for sustainability, the institutional structure required to manage the process, and the financial and programmatic expertise to accomplish Plan goals. The District will implement the following programs to meet this requirement.

**4.1.1 ADOPT A DISTRICT SUSTAINABILITY POLICY**

The District Board of Trustees has adopted a District Sustainability Policy by delegating authority to the Chancellor to establish administrative regulations for sustainable practices in the following areas: environmental education and training; energy, waste management and recycling, resource conservation, facilities, grounds and landscape management; hazardous materials, transportation and air quality; and purchasing practices.

In addition, the Board of Trustees endorsed the creation of a Sustainability Plan that addresses District-wide and site-specific needs for each college.

**4.1.3 APPOINT A CAMPUS SUSTAINABILITY COMMITTEE**

The SRC was established as a District-wide committee in 2011 under the leadership of Chancellor Raúl Rodriguez, PhD. The membership, which is open to all interested stakeholders of RSCCD, represents students, faculty, staff, and administration. The Committee is organized into subcommittees, each focusing on one of four areas of interest—transportation, facilities, recycling, and communications. The SRC has also created a logo to represent their sustainable efforts on campus.

The SRC led the development of this Sustainability Plan, and will manage its implementation and monitor progress after adoption by the Board of Trustees.

In addition, Santa Ana College (SAC) has established a Green Task Force, which consists of both faculty and students, and works to provide a greener SAC campus. SAC has also created an Environmental Task Force which serves as a sub-committee to the SAC Facilities Committee.

**4.1.4 FUNDING AND RESOURCES TO SUPPORT SUSTAINABILITY ACTIVITIES**

Rancho Santiago Community College District has worked hard to obtain funding for sustainable development, and to spend these funds responsibly. In 2002, voters approved Measure E, a \$337 million general obligation bond to renovate existing campus buildings and construct new classrooms. These funds were used to implement a wide variety of sustainability projects on campus.

With the passage of California Proposition 39 in November 2012, RSCCD and the community college system will receive roughly \$30 million annually for five years to fund energy efficiency and clean energy generation projects. In Fiscal Year 2013-2014 RSCCD's share of this funding was \$1.02 million, which was utilized to install advanced LED lighting systems throughout the District, saving energy and money. At the time of this publication, the District was moving forward with the planning of its FY 14-15 projects. The District will continue to invest its Proposition 39 allocation in clean energy projects throughout the life of the program.

**4.1.5 EMPLOY SUSTAINABILITY PROFESSIONALS, AS REQUIRED**

The District contracts with energy and sustainability consultants as necessary to ensure that expert knowledge and advice is considered when evaluating and implementing sustainability initiatives. The District has valued and successful relationships with several professional firms and relies on their expertise to ensure program and project success.

**4.1.7 INTEGRATE SUSTAINABILITY PLANNING INTO CAMPUS MASTER PLAN**

The District has integrated principles of sustainability into the RSCCD Facilities Master Plan, with guidance from the architects and consultants from HMC Architects. The Master Plan committee considered current offerings, potential future programs, current facility challenges, future instructional needs, and the state of infrastructure systems, while striving to incorporate sustainability into all aspects of campus life. The current Master Plan states that the District should update and implement facilities master plans, maximize college and community use of facilities, and incorporate green efforts into facilities development and other efforts when cost-effective.

## **4.2 ENERGY EFFICIENCY**

Energy efficiency is one of the most cost effective ways to reduce campus energy use and its carbon footprint. When implemented properly, efficiency measures can decrease energy use without compromising comfort and can improve indoor air quality and enhance student, faculty, and staff performance. Energy efficiency will be a higher priority than renewable or other on-site energy generation due to more favorable economics and to avoid over-sizing renewable energy systems.

The following energy efficiency programs and projects will be implemented at the District.

**4.2.1 SET ENERGY EFFICIENCY GOALS**

It is important to set goals for the reduction of any resource in order to define success. Planning for energy conservation is important to the District. As described in Section 3, the District will 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, RSCCD will establish annual energy use reduction goals (minimum 5% below average for similar facilities) and plan appropriate energy efficiency, demand reduction, or clean self-generation measures to achieve goals.

The District has stated that it will continue to participate in the California Community Colleges/Investor Owned Utility (CCC/IOU) Energy Efficiency Partnership, and will continue to leverage Proposition 39 funding, in order to help further this goal and reduce energy usage and operating costs.

**4.2.4 CONDUCT COMPREHENSIVE FACILITY ENERGY AUDITS**

The District recognizes the need for energy audits to gain information about the current state of energy use at its facilities and is currently in the process of compiling baseline documentation to complete a comprehensive audit. The audit results will identify energy efficiency projects and measures that when implemented will help to achieve the District's energy usage reduction goals as described above.

**4.2.5 IMPLEMENT NEW AND EXISTING AUDIT RECOMMENDATIONS**

An energy study was performed at the District Office in May 2013 by a consultant contracted by RSCCD. The study contained recommendations to improve the overall energy efficiency of the facility and to reduce energy costs and the associated carbon footprint of the building. The results of the study were reviewed by Southern California Edison (SCE) and Southern California Gas (SCG) Company and they determined that the projects will qualify for roughly \$108,000 in utility rebates if implemented. Southland Industries is currently conducting a detailed site study to implement the projects.

**4.2.8 IDENTIFY AND TAKE ADVANTAGE OF GRANT AND INCENTIVE PROGRAMS**

The District has demonstrated an effective use of funding programs to finance many sustainability projects on campus. Funds from Measure Q will be used for the construction of new utility infrastructure and to complete a Central Plant project at Santa Ana College, which is projected to significantly increase campus energy efficiency. In addition, funds from Measure E were used to update and renovate campus buildings.

As described above, the District participates in the CCC/IOU Energy Efficiency Partnership and maximizes the energy efficiency incentive provided by SCE and SCG to help fund energy projects at the District. These incentives are leveraged to allow the District's Proposition 39 funds to go further and result in deeper energy savings and more comprehensive projects than would otherwise be feasible.

**4.2.9 ENERGY EFFICIENT EQUIPMENT**

A wide variety of energy efficient equipment has been installed on both campuses and in the District Office in recent years. The following paragraphs describe both completed projects and projects currently in progress, as well as new, planned projects to install more energy efficient equipment and systems.

***4.2.9.2 Efficient Lighting and Lighting Controls***

Santa Ana College and Santiago Canyon College have installed advanced LED lighting as part of the Building and Site Lighting Replacement projects. LED lighting retrofits have also been a part of the Proposition 39 funding program administered by the Chancellors Office. The District has also participated in LED Lighting Demonstration Project to educate the public about efficient lighting.

***4.2.9.3 Install Energy Efficient HVAC Systems***

A new Chilled Water Central Plant is planned for Santa Ana College. The new Central Plant will provide chilled water to cool most of the conditioned spaces on campus, and save money and energy by taking advantage of cooling load diversity and off-peak production. The Central Plant will include a small building to house chillers, pumps, controls, and other equipment, a Thermal Energy Storage (TES) tank for “off peak” chilled water production and storage, a chilled water distribution piping loop, and the integration of the system into the existing campus buildings HVAC systems. The location of the building and TES tank will be determined during design. The District estimates that the Central Plant will reduce the campus electrical costs by approximately 50% for the portion of the bill that pertains to cooling only. The electrical consumption of the campus will be reduced by approximately 40% and demand will be reduced by 50%. As a result, the greenhouse gas emissions will be reduced by approximately 40%.

The implementation of the new Central Plant at Santa Ana College will include the retrofit of air handling units on campus buildings connected to the plant. Currently the existing buildings, with the exception of building D, all have self-contained Direct-Expansion (DX) air conditioning units. The new Central Plant will distribute chilled water to the campus buildings and new air handlers will be installed in place of the DX units, improving efficiency, comfort, and reducing energy costs.

Santiago Canyon College has plans to update the HVAC control system in their Science Building and to re-commission the building for more energy-efficient operation. In addition, occupancy sensors will be installed to control the speed of exhaust fans based on building usage, and to modify sequence of operations for various mechanical equipment, including air handlers, boilers, and fume hood equipment.

In Buildings D and C of Santiago Canyon College, the District plans to replace an inefficient chiller with a new energy-efficient unit and install new pumps equipped with Variable Frequency Drives (VFD's) which will improve efficiency and comfort. In addition, the existing split-system units and single-packaged systems will be replaced with more efficient units. The District also plans to install new variable hot water supply and return valve actuators to distribute reheat water more efficiently.

At the District office, existing chillers, the cooling tower, and pumps will be replaced with more efficient equipment. The equipment will be installed with VFDs to adjust the speed of fans and motors. The

existing energy management system (EMS) will be replaced to provide greater ability to monitor and control equipment and reduce energy usage. In addition, the air distribution ducting will be modified to more efficiently ventilate the building.

In addition to the Santa Ana College Central Plant, various other energy-reducing projects have been implemented utilizing the Investor Owned Utilities (IOUs) incentive programs. These projects include:

**Santa Ana College:**

- Buildings A, F, and R Boiler Replacements
- Central Plant and New Infrastructure
- Health Sciences Building upgrades
- Science Technology Engineering Math Building (STEM) upgrades
- Committed scheduled maintenance funds to upgrade inefficient boilers
- Campus-wide LED exterior and interior lighting upgrades funded by the Districts Proposition 39 allocation

**Santiago Canyon College:**

- Building D Chiller and Boiler Upgrades
- Building D & C HVAC Renovations
- Pool Pump VFDs
- Boiler replacement to meet new SCAQMD emissions standards

## 4.3 FACILITIES OPERATION

In addition to installing energy efficient equipment, RSCCD strives to operate high-performing facilities, buildings, and energy infrastructure systems that are optimized for inhabitant comfort, productivity, and energy and resource efficiency. Current and planned activities in this area are described below.

### 4.3.1 ENCOURAGE AND SUPPORT ENERGY EFFICIENCY TRAINING OF STAFF

The Maintenance and Operations staff at both Santa Ana and Santiago Canyon Colleges have been trained to operate new EMS systems installed at their campuses. Further ongoing training programs will be developed and implemented to ensure that the staff is up to date on equipment, system, and operational changes in the facilities.

### 4.3.2 INSTALL ENERGY MANAGEMENT SYSTEMS

The District will maximize use of computerized EMS systems to provide centralized reporting and control of campus energy related activities. The campus will strive to achieve optimum efficiency in the use of natural gas, electricity, or other energy resources to meet the heating, cooling, and lighting needs of the buildings and/or facilities. Except for areas requiring special operating conditions, such as electronic data processing facilities, or other scientifically critical areas, where rigid temperature controls are required, building and/or facility temperatures will be controlled between the limits stated below. For both

campuses, the District will install new, more robust Energy Management Systems (EMS) with an expanded range of controls for the mechanical equipment and lighting systems to improve operational energy efficiency. There are also plans to retrofit air handlers and install new high efficiency motors and fans at various buildings.

#### **4.3.3 ADJUST TEMPERATURE SET POINTS AND SCHEDULE OPERATING TIMES**

As part of the new construction program, the District will develop and implement a District-wide Owner Operating Requirement specification that will be used by the commissioning agents and EMS installer to ensure the EMS systems are customized to the campus needs and the HVAC equipment scheduling and maintenance is optimized. This system is currently being implemented on the Science Center Retro-Commissioning project and the District Operation Center HVAC renovations project. The Owner Operating Requirements will include specifications for temperature set points and operating schedules.

#### **4.3.4 OPTIMIZE BUILDING OCCUPANCY SCHEDULING**

The Owner Operating Requirement will also provide specifications and requirements to optimize the building occupancy scheduling, including:

- Normal Occupancy Schedule
- Pre-occupancy Operating Period
- Non-occupancy Schedule
- Holiday Schedule
- Cleaning Schedule

#### **4.3.5 OPTIMIZE HVAC EQUIPMENT SCHEDULING**

To best optimize the equipment scheduling of the HVAC systems, the District will evaluate needs related to instruction so as to utilize entire buildings and shut off HVAC and lighting in buildings that are not being utilized.

In addition, the Owner Operating Requirement specification will include the following items to optimize HVAC equipment scheduling:

- Air Temperature Range
- Humidity Range
- Relative Building Pressure
- Air Filtration
- Ventilation
- Noise Criteria
- Supply Air Temperature Reset Range
- Preferred CO<sub>2</sub> Range
- CO Alarm

**4.3.6 ACTIVATE ENERGY-SAVING FEATURES FOR APPLIANCES AND COMPUTERS**

Santiago Canyon College has made a commitment to utilize energy-saving features by installing motion sensors on its personal computers (PC's) which shut down the PC and ancillary equipment when not needed. The District has plans to evaluate other IT related energy savings technologies, including PC Power Management and Server Virtualization.

**4.3.7 PURSUE MONITORING-BASED COMMISSIONING (MBCX)/RETRO-COMMISSIONING (RCX)**

Working with the CCC/IOU Partnership, the District plans to develop a Retro-commissioning (RCx) and Monitoring Based Commissioning (MBCx) implementation program to improve energy efficiency of major facilities operations. The program will involve installation of whole-building energy meters to determine trends in energy use. The process will identify baseline usage data, identify changes in building and systems operations that will reduce usage, and monitor the actual results of projects implemented to demonstrate increased efficiency. The RCx/MBCx program plan will be completed and adopted by end of 2015 and updated every two years.

In addition, Santiago Canyon College has developed a Measurement and Verification (M&V) Plan to evaluate energy system performance at the Science Building following the planned retro-commissioning of the building. The M&V process will evaluate the building and energy systems performance through energy simulation and engineering analysis. The retro-commissioning contractor will install the necessary metering equipment to measure energy use and will track performance by comparing predicted performance to actual performance.

**4.4 SUSTAINABLE BUILDING PRACTICES**

Construction and renovation of new and existing facilities provides a significant opportunity to reduce the environmental impacts of the built environment through sustainable building practices. The District will incorporate energy and resource efficient “Green Building” practices in the design and construction of all new and renovated facilities. The following implementation programs have been implemented or are planned by the District to meet this goal.

**4.4.1 ESTABLISH A GREEN BUILDING STANDARD**

In the Facilities Master Plan, the District has stated that it will work to develop green building design standards. Currently, the District is establishing the requirement that all major capital projects and renovations meet LEED Silver “equivalent” standard and utilize utility “Savings by Design” programs. In addition, the District is developing standards for efficient landscaping and plant materials, irrigation equipment, low flow plumbing fixtures, low wattage LED lighting , efficient HVAC equipment, glazing and fenestration, insulation, roofing, low VOC painting and coating, Energy Management Systems, lighting controls, and daylight harvesting strategies. The District has already implemented a policy to minimize exposure of buildings occupants, indoor surfaces, and ventilation air distribution systems to environmental tobacco smoke. The District prohibits smoking in the buildings except in designated

exterior parking lots. The exterior parking areas are at least 25 feet away from entries, outdoor air intakes, and operable windows.

The Sustainable RSCCD Committee has recommended the development of sustainable design standards for the renovation of existing buildings to make such buildings more efficient, cost effective, and comfortable for their occupants. Many buildings on campus have been constructed using sustainable design criteria.

The newest building at Santiago Canyon College is the 90,000 sq. ft. Humanities Building, which is a US Green Building Council LEED Gold Building. Sustainable features of this building include a photovoltaic system, a block exterior which requires little maintenance, lighting features that coordinate day-lighting with interior lighting, and drought tolerant landscaping. It was also designed with low VOC emitting products to reduce the quantity of indoor air contaminates that are odorous, irritating, and/or harmful to the comfort and well-being of occupants. To attain an Indoor Environmental Quality LEED credit, the building was designed with the following adhesives and sealants in accordance with South Coast Air Quality Management District (SCAQMD) requirements to limit VOCs: carpet, rubber flooring, drywall, cover base, structural glazing, PVC welding, ABS welding, and top and trim adhesive. The following materials do not exceed Green Seal GS-11 (VOC content limit) and Green Seal Plus requirements; painting and coatings, carpet systems, and composite woods. Both the Humanities Building and the Gymnasium were designed and installed with a fluid-applied roof coating that contain low Solar Reflective Index (SRI) values promoting cooler roofs to avoid heat islands effects, also in pursuit of LEED credits. The cooler roofs reduce building cooling loads. Staff have been trained in efficient operations of all campus facilities.

#### **4.4.2      IMPLEMENT SUSTAINABLE DESIGN PRACTICES**

All District new construction, renovation, maintenance, and repair projects are planned with consideration of optimum energy efficiency, low life cycle operating costs, and compliance with the District's goals and all applicable energy codes and regulations. Energy efficient and sustainable design strategies are addressed early in the project planning and design phases to maximize cost effectiveness and are balanced with the academic program needs of the project.

Both campuses have made efforts to implement sustainable design practices and to research the best methods for implementation. At Santa Ana College, the Facilities Committee prepares a regular report which describes the sustainable building practices for buildings on campus. The recent renovation of the Johnson Center at SAC resulted in modern and efficient infrastructure and technology to support the building use and fulfill the College's objective for sustainable and environmentally responsible operations. Service and receiving facilities at the building accommodate recycling, and separate delivery vehicles from pedestrian circulation.

Santiago Canyon's Humanities building embodies sustainable design with its outdoor teaching spaces, which were implemented in pursuit of LEED credits. The outdoor teaching environments are designed such that the exterior concrete benches are equipped with data connections and power to allow the use of electronic devices to facilitate teaching.

#### **4.4.3 USE AN INTEGRATED SYSTEMS APPROACH IN BUILDING DESIGN**

Sustainable building goals will be evaluated in a cost effective manner by identifying economic and environmental performance criteria, evaluating life cycle savings, and adopting an integrated systems approach to design. Such an approach treats the entire building as one system and recognizes that individual building features, such as lighting, windows, heating and cooling systems, will be evaluated and designed as interactive systems.

As an example, the new parking structure planned at Santa Ana College is a potential location for a central cooling plant, which could be integrated into the design. The parking structure also provides an opportunity for integrating a large scale solar photovoltaic facility into the campus. In addition, the College is considering the feasibility of a rainwater harvesting system, which would use the upper deck as a collection area.

#### **4.4.5 COMMISSION NEW BUILDINGS**

The District performs new building commissioning after construction to ensure that systems were installed and operating as designed. Individual systems are also commissioned to ensure that they run as efficiently as possible. As part of the Measure 'Q' construction program, Proposition 39 projects, and scheduled maintenance projects, the Facilities Department will require new and renovation projects to contain a comprehensive commissioning plan as part of the project specifications. At Santiago Canyon the Athletics and Aquatics Center completed in 2012 and Humanities Building completed in 2014 have both been through the commissioning process.

### **4.5 ON-SITE GENERATION AND RENEWABLE ENERGY**

As described below, the District has evaluated the potential for renewable energy and clean on-site generation. These goals are balanced by the philosophy that renewable generation implementation should occur only after significant efficiency and conservation plans have been implemented to ensure that any self-generation or demand response programs or projects are sized appropriately.

#### **4.5.1 EVALUATE CLEAN COGENERATION AND RENEWABLE ENERGY GENERATION**

The Facilities Master Plan contains goals to explore renewable energy opportunities. This has manifested as a comprehensive Photovoltaic System Feasibility Study at both Santa Ana and Santiago Canyon. The results of this study are currently under review by Distinct Facilities staff. In addition, a photovoltaic system has been recently installed on the 90,000 square foot Humanities Building at Santa Ana College, which provides approximately 19% of the building's electrical needs.

The Santiago Canyon College Facilities Master Plan includes a new energy efficient cogeneration central plant to provide air conditioning for the entire campus. This proposal is currently under evaluation.

**4.5.2 EVALUATE LOAD SHIFTING TECHNOLOGIES**

Load shifting technologies, such as Thermal Energy Storage (TES), reduce HVAC energy and power consumption during peak hours. As part of the Central Plant project at Santa Ana, the campus is implementing an ice based TES system that will make use of load shifting technologies. The chiller will use off-peak energy for production of ice. This technology will reduce the energy costs required to produce the ice. The District will also implement load shifting technologies as part of the future central plant at the Santiago Canyon campus.

**4.6 TRANSPORTATION, COMMUTING, AND CAMPUS FLEET & TRAVEL**

Transportation at a typical community college accounts for over half of a GHG emissions from the campus. For this reason, Ranch Santiago CCD will strive to reduce Vehicle Miles Traveled (VMT) for students, faculty, and staff commuting to the campuses and encourage the use of low and zero emissions vehicles, public transportation, carpooling, and cycling in an effort to reduce greenhouse gas emissions and minimize the infrastructure costs related to parking. The District has set a goal to reduce the reliance of students, faculty, and staff on single occupancy vehicle commutes by 5 percent within the next five years. The following programs will be implemented to achieve this goal.

**4.6.1 UNDERSTAND COMMUTE AND TRAVEL PATTERNS**

In order to better understand commute and travel patterns, the District will conduct annual traffic counts and surveys to determine baselines for commuting trips and total Vehicle Miles Traveled to both colleges. The traffic counts and surveys will be updated annually to monitor progress toward the reduction goals.

In addition, the employee and student Sustainability Survey conducted in 2014 included questions specific to transportation habits and requested suggestions on ways in which the District can facilitate increased use of alternative modes of transportation. Given these data and suggestions, the District is better prepared to implement and facilitate initiatives that will reduce the reliance on single-occupancy vehicle use. The survey results and individual responses were heavily considered within this Sustainability Plan section.

**4.6.2 ENCOURAGE AND ENHANCE PUBLIC TRANSPORTATION AND RIDESHARING OPTIONS**

The District will or will continue to employ the following strategies to encourage and enhance public transportation and ride sharing options.

***4.6.2.2 Increase Awareness***

The District will be partnering with the South Coast Air Quality Management District (SCAQMD) to develop a program to raise awareness at both colleges about sustainable transportation options. This program will be targeted to students, faculty, and staff to encourage public transportation use by providing information and communicating the benefits to the environment and traffic congestion alleviation.

#### *4.6.2.3 Facilitate Public Transit Use*

In spring of 2014 in conjunction with the preparation of this Sustainability Plan, the SRC conducted an online survey to students and staff campus to gain input on campus and District sustainability efforts. As identified in the Student Sustainability Survey, students and employees alike identified the facilitation of public transit use as the most effective means to reducing their dependency on single-occupancy vehicles. Given these responses, the RSCCD Sustainability Committee will continue to work with the Orange County Transportation Authority (OCTA) to improve bus service to both District campuses and will explore options for discounted transit passes for RSCCD students and employees. Since this is a large concern of the District community, the SRC would like to create a District-Level committee inclusive of students, faculty, staff and possibly community members to spearhead all District transportation efforts.

Currently, Santa Ana College is served by two major bus routes that arrive every 10 minutes at peak times (Route 60 on 17th St and Route 57 on Bristol St). A third route arrives every 30 minutes (Route 51 on Flower). Santiago Canyon College, located in the City of Orange, is at the end of the only bus line that serves the campus. According to the Sustainability Survey, OCTA service is convenient for approximately 15% of students surveyed and only a handful of staff. Increasing and improving the OCTA service to the colleges is a high priority of the District.

#### *4.6.2.4 Incentivize Public Transportation and Carpooling*

The District currently operates a discounted student public bus pass program to encourage public transit use. The District is also exploring enhanced incentives to promote public transit and carpooling including:

- Promote current student transit passes through communication and/or promotional pricing (focusing on students whose home address is within a quarter of a mile of one of the bus routes serving the colleges)
- Explore a partnership with OCTA to offer student monthly passes (currently only 75 day and 120 day passes are available with a student discount; costing \$115 and \$185 respectively)
- Continue to explore partnering with Student Government to offer an on-going subsidized student transit pass program to facilitate students taking the bus to campus and reduce demand for parking
- Provide parking spaces in preferably located areas for carpools and electric/ hybrid vehicles

#### *4.6.2.7 Encourage Fuel Efficient Vehicles for Commuters*

The District has established a goal to encourage the use of low and zero emissions vehicles for commutes to campus. The surveys described above will assist the District in quantifying how many of these vehicles are already in use. Actions to encourage low and zero emissions vehicles include the following:

- Plans are underway for the installation of electric car charging stations at both Santa Ana College and Santiago Canyon College.

- The RSC will also explore a preferential parking program consisting of “close-in” parking and reduced parking fees to encourage these vehicles for college commutes

#### **4.6.3 ENCOURAGE AND ENHANCE BICYCLING OPTIONS**

Santa Ana College plans to partner with the City of Santa Ana on a bike-friendly city initiative to increase the use of bicycling as a means of transportation for staff and students. In 2013-2014, Santa Ana purchased additional bike racks to encourage alternative transportation options. The college hopes to continue encouraging bicycle use through the following measures:

- Add bike racks using the inverted-U style in locations recommended by transportation planning professionals
- Plan for and communicate the availability of showers on campus and the district office
- Add bike lockers or other secure storage (possibly with an associated usage fee)

Approximately two years ago, Santiago Canyon added three bicycle racks on campus to the three existing ones. Since then, usage of the bike racks has been noted to have increased.

In 2013, the District held a Ride to Work Day contest, to promote biking throughout both campuses and the District office. The District will continue promoting bicycle use by sponsoring annual Bike to Work Day events.

#### **4.6.4 IMPROVE CAMPUS FLEET & TRAVEL**

Santa Ana College has worked to improve the campus fleet by the replacement of gas powered maintenance carts with new electric powered carts. SAC also upgraded one of its security vehicles to a Prius hybrid vehicle. The District will continue to upgrade its campus fleet with more fuel efficient vehicles as they are replaced.

#### **4.6.5 ENHANCE STUDENT DISTANCE LEARNING**

The District Educational Master Plan includes a priority for the expansion and enhancement of distance-learning education course offerings. A full-time faculty coordinator will be hired to manage the program, training on effective online course design will be implemented, and an outreach and marketing plan will be developed to encourage student participation. To support distance education and other technology advancements, funding will be needed for faculty and staff to attend conferences and training workshops.

### **4.7 WATER, WASTEWATER, AND SUSTAINABLE LANDSCAPING**

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.

The following implementation programs have been completed or are planned for the District.

#### **4.7.1 ESTABLISH WATER CONSERVATION GOALS**

The District will 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, the District will establish annual water use reduction goals and plan new appropriate measures to achieve goals.

#### **4.7.2 IMPLEMENT WATER CONSERVATION STRATEGIES**

Both Santa Ana and Santiago Canyon have implemented water conservation strategies through various projects on their respective campuses. For example, Santiago Canyon College is currently working with the Irvine Ranch Water District (IRWD) to utilize reclaimed water to irrigate the athletic fields. Although the area is served by the IRWD, the recycled water is provided through a partnership from the City of Orange Water Department.

In addition, the new Humanities and Gymnasium buildings at SCC were designed with low-flush volume toilets with automatic operation providing reduced water usage. Waterless and low-flush urinals were also installed and plans have been made to install more when funding is available. Synthetic turf has also been installed on the softball field to reduce the need for water, fertilizer, and pesticides.

Santa Ana College has 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 recently installed to reduce the use of water, fertilizer, and pesticides, as well as GHG emissions related to lawn mowers.

#### **4.7.3 REDUCE STORM WATER, SEWER DISCHARGES, AND WATER POLLUTION**

Efforts to promote sustainable storm water management is a key component of the District's planning for environmental stewardship. Storm water management has been a concern to the District and an environmental issue in Southern California for many years. Drought and long dry seasons followed by frequent, sometimes heavy rains contribute to the flushing of pollutants into the Santa Ana River and the Pacific Ocean. For example, the Santa Ana College Facilities Master Plan provides policies for the incorporation of best management practices and employs natural processes to filter and retain the flow of storm water. Opportunities for bio swales and rain gardens have also been investigated. Rain gardens will be used to retain and percolate water for building roof drains. Bio swales will be incorporated in large areas of impervious paving, including roads and parking lots. The City of Santa Ana storm water drainage system has a finite capacity, and efforts to retain or detain storm water on the campus significantly reduce the College's environmental impact. As future campus development occurs, the College will explore the feasibility of harvesting storm water to replace potable water used for irrigation and other uses.

At the District level, erosion control systems and best management practices on the construction program have been implemented. The District has employed a Storm Water Pollution Prevention Program consultant to inspect, monitor, and advise construction personnel and the District on best practices.

#### **4.7.4 ADOPT SUSTAINABLE LANDSCAPING PRACTICES**

Various sustainable landscaping projects have been implemented on both campuses, such as the Campus Landscape Improvement Program at Santa Ana College and the Coastkeeper Garden at Santiago Canyon College. The Coastkeeper Garden is a project where SCC leases some of its property to the non-profit Orange County Coastkeepers, who have built a demonstration garden open to the public featuring sustainable landscape techniques. SCC has also undergone campus landscaping projects using native or adaptive plant materials to reduce or eliminate irrigation requirements. Highly water efficient irrigation equipment is employed where irrigation is required. Moving forward, the District will continue to landscape with native plants and employ water-wise landscaping practices.

### **4.8 SOLID WASTE REDUCTION AND MANAGEMENT**

The District strives to minimize solid waste to reduce greenhouse gas emissions and landfill deposits. If designed and implemented effectively, minimizing solid waste can save the District money and create revenue streams that can be reinvested in the campus. The District will employ the principles of Reduce, Reuse, and Recycle in its solid waste reduction program.

The following programs will be implemented at the District to manage solid waste and reduce landfill deposits.

#### **4.8.1 CREATE WASTE REDUCTION GOALS**

The District has established goals to improve existing landfill diversion programs, 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. The District will monitor progress toward these goals by utilizing the diversion reports provided by its contracted waste haulers.

#### **4.8.2 MAXIMIZE PROGRAMS OFFERED BY CONTRACTED WASTE HAULER**

The District is severely limited on service offerings for recycling and green waste and food waste composting based on options from its contracted waste hauler. Currently, all waste is picked up in a single stream from the campuses and recycling is performed at the local Materials Recovery Facility (MRF), where recyclable material is separated from landfill waste. The SRC waste management subcommittee is working to establish a scope of services for expanded recycling required by both colleges and the District Office will rebid the contract to include these additional services.

#### 4.8.3 REDUCE THE WASTE STREAM TO THE LANDFILL

The District and colleges will act to reduce the waste stream to the landfill by making resource conservation an integral part of its waste reduction and recycling programs. They will integrate the concept of resource conservation by employing the strategies of reduce, reuse, and recycle into its environmental programs. Santiago Canyon College has made efforts to avoid an increase in what goes to landfills despite the increase in student population and in facilities over the past few years. SCC believes it can do even better with recycling campaigns.

##### *4.8.3.1 Raise Awareness of Waste Reduction*

The District and colleges will actively advocate, where appropriate, for resource conservation practices to be adopted at the local, state, and national levels. Both colleges have conducted awareness efforts to improve recycling, and the Santiago Canyon College Facilities Committee is planning to advertise recycling with promotional activities that explain its benefits.

##### *4.8.3.2 Minimize Unnecessary Waste*

The District will explore the installation of water bottle refilling stations or enhance current water fountains to better accommodate bottle refills. This will encourage the use of reusable bottles, thereby reducing the amount of plastic water bottles purchased and thrown in the waste stream.

The Santa Ana “Don” Bookstore and the Santiago Canyon “Hawk” Bookstore encourages the reuse of student textbooks through their textbook “buy-back” and “swap” programs where students are able to sell or exchange their books with the store or other students.

##### *4.8.3.3 Reduce Paper Use*

Santiago Canyon’s Facilities Committee hopes to promote the use of electronic media in place of the enormous amount of paper used for syllabi and class handouts. SCC further reduces paper use by employing a standard of double-sided copies at the college printing center. In addition, any white paper discarded at the copy center, which is unused on one-side, is collected and used in the math tutoring center as scratch paper. As captured in the Sustainability Survey results, many faculty throughout the district request electronically submitted student assignments and incorporate other paper waste reduction measures, such as providing course materials online.

##### *4.8.3.7 Support Producer Responsibility Programs*

The District will consider purchasing from responsible providers by buying products from providers who are environmentally and socially responsible. The District will purchase, where financially viable, recycled products. The District will also encourage suppliers, both private and public, to make recyclable products and unbleached paper products available for purchase.

**4.8.4 IMPROVE EXISTING RECYCLING PROGRAMS**

As described above, the District is working with its contracted waste hauler to implement a source-separated recycling program. This may require that the District work with the municipalities where each campus is located to negotiate enhanced services at each campus.

In addition to administrators, students are also concerned about recycling efforts on campus. Currently community members come on campus and recycle bottles and cans from the trash receptacles for their own needs. Efforts are being made to build a more robust recycling program that would include construction debris, cardboard, mulching and green waste.

At Santiago Canyon, the Humanities building was designed such that free-standing recyclable and trash receptacles are strategically placed in certain key locations of the building to promote recycling, in pursuit of a Storage and Collection of Recyclables LEED credit. Throughout campus a Paper Collection and Recycling Program has also been implemented, and there are plans to place more recycling bins around campus.

**4.8.6 GREEN WASTE AND FOOD WASTE COMPOSING**

Santiago Canyon's current contract agreement with its landscape contractor requires that none of the green waste goes to landfill but goes toward composting, thus reducing the waste stream to the landfill and GHG emissions.

Moving forward, the District would like to explore the possibility of a district-wide food-waste composting program.

**4.8.7 ADOPT CONSTRUCTION AND DEMOLITION (C&D) RECYCLING**

As part of the Measure 'E' and Measure 'Q' building program, all new construction projects contain construction waste management specifications requiring that contractors separate Construction and Demolition (C&D) recyclable material from the construction waste. The contractors separate C&D waste on-site in three categories: re-use or recycle on-site, transport to approved recyclers, and transport to legally designated landfills. The C&D recycling goal is 50% of material diverted from the landfill. The contractor is required to provide a monthly report to verify the target amounts.

## **4.9 GREEN PURCHASING**

Rancho Santiago CCD will establish districtwide purchasing policies to meet the goals of environmental, economic, and social sustainability and to use its market power to influence suppliers to be more sustainable.

**4.9.1 SUSTAINABLE FOOD PURCHASING**

The impacts of food sustainability are far reaching and complex. The District will take into account the sustainability of food served on campuses when making decisions regarding food purchasing. Food

sustainability and quality was a concern highlighted by students and faculty in the spring 2014 Student Sustainability Survey. In response to these suggestions, Santa Ana and Santiago Canyon College will explore healthier cafeteria food options, including vegan, vegetarian, organic, and locally produced items.

#### **4.9.2 GREEN PURCHASING PRACTICES**

With assistance from the US Environmental Protection Agency's (EPA) Comprehensive Procurement Guidelines, RSCCD will create a Green Purchasing Policy in 2015 aimed at campus-wide, sustainable procurement.

##### ***4.9.2.1 Establish Requirements for Minimum Recycled Content***

The Director of Purchasing for the District will work with departments to establish minimum recycled content standards for designated recycled products to maximize recycled product availability, recycled content, and competition.

##### ***4.9.2.2 Establish Standards for Green Purchasing***

The District and colleges will use recycled products and recycled materials to meet their needs when possible. The District will require its contractors and consultants to use and specify recycled products in fulfilling contractual obligations whenever practical. A list of recycled products will be maintained and will be made available to all departments as a purchasing resource. Updates to the list will be made as new products become available. The District currently purchases Green Seal janitorial products and "green" custodial paper products and will continue to do so in the future.

### **4.10 STUDENT AND CURRICULUM DEVELOPMENT**

The primary purpose of the California Community College system is to educate students and foster their success by preparing them for the careers of tomorrow. The mission of Rancho Santiago CCD is to deliver high quality instruction to students both within and beyond traditional geographical boundaries and to provide an open and welcoming culture that supports student completion and success. With the economics of environmental sustainability becoming increasingly important in all facets of society, the District has a responsibility to play a role in moving current and future generations toward a sustainable future.

To better prepare its students to pursue a career path within the "green" economy and become responsible stewards of the environment, RSCCD will strive to creatively integrate sustainability into existing course curricula within and beyond the STEM field, promote student enrollment in new and existing courses with emphasis on sustainability, and develop new curricula and career-oriented certificate and training programs with a focus on these topics. Through the Sustainability Plan initiatives, faculty, staff, administrators, and students will have opportunities to collaborate, participate, and serve as effective agents for positive change.

**4.10.1 CREATE A SUB-COMMITTEE IN THE ACADEMIC SENATE DEVOTED TO SUSTAINABILITY**

Santiago Canyon College Associated Student Government (ASG) has recently established a student leadership position to promote and gain involvement of campus students in environmental issues and sustainability initiatives on campus.

**4.10.2 PROVIDE PROFESSIONAL DEVELOPMENT AND CREATE A FACULTY FORUM**

Since faculty drives change in curriculum, professional development and recognition are key drivers of sustainability curriculum development. Santa Ana and Santiago Canyon College will incorporate sustainability topics within professional forums and Flex Day workshops for faculty to share ideas around curriculum enhancements and revisions. From these events, the colleges will create a working committee of faculty tasked with the implementation and advancement of the RSCCD “Curriculum Development” goal outlined in Section 3 of the Plan.

**4.10.3 UTILIZE DIFFERENT PATHWAYS TO INTEGRATE SUSTAINABILITY IN THE CURRICULUM**

The Community College Academic Senate Curriculum Committee indicates that faculty members at CCCs are currently integrating sustainability in the curriculum in three main ways: by adding a component to an existing course outline of record, creating a new course, or creating a new certificate or degree program. The District employs these strategies as described more fully below, and all strategies will require leadership from faculty for adoption.

***4.10.3.1 Adding a Component to an Existing Course Outline of Record***

Both Santa Ana and Santiago Canyon Colleges have several courses that incorporate principles of sustainability through the course curriculum, projects, and assignments:

**Centennial Education Center**

**English as a Second Language (ESL)** – ESL curriculum develops the ability of non-English speaking students in basic literacy skills, including letter and number recognition/production, simple personal information, and basic oral communication in preparation for enhanced job opportunities. Sustainability topics, vocabulary, and lessons are incorporated throughout the curriculum.

**Santa Ana College**

**Environmental Studies 140 – Environmental Geology** - This course focuses on the study of urban geologic hazards: earthquakes, groundwater pollution, flood potential, landslides and creep, soil expansion, coastal erosion, and volcanic hazards.

**Biology 109 – Fundamentals of Biology** – Biology 109 focuses on the principles of biology and stresses the relationship of all organisms from anatomical, physiological and ecological points of view. Includes cell machinery, genetics, reproduction, embryology, animal behavior, botany, ecology, evolution and human physiology. The course dedicates lab exercise to environmental issues, which includes an in-depth

discussion of the human ecological “footprint,” global warming, and the effects of the human population on the environment.

**Biology 200 - The Environment of Man** - Sustainability is fundamental to the class, as it touches on environmental problems such as energy, resources, pollution, land use, population and food, including economic and political factors.

**Business 150 – Introduction to Information Systems and Applications** – This course is an introduction to computer concepts and management information systems. Students learn to use application to solve business problems. Included in the course is a discussion on computer and technology recycling programs.

**Engineering 165 – Introduction to Energy** – Students will gain a broad understanding of energy concepts, efficiencies, conservation, distribution, careers and cost-benefit analysis of energy resource use. The study of both renewable and non-renewable energy will be included.

**Engineering 175 – Introduction to Energy Analysis** – This course is focused on energy analysis with respect to energy conservation, energy auditing, and CA Title 24 requirements. Calculations will be performed manually and with the assistance of software applications. Career tracks in energy analysis will be explored. Energy concepts, heat loss calculations, basic solar concepts, site selection, design improvements, appliances, and utility systems will be covered within this course.

**Engineering 201 – Architectural Practice** – This course focuses on energy efficiency and building design, including thermal massing and natural ventilation as cooling methods. Students inquire and work with the SAC Facilities team on identifying potential renovation projects on campus.

**Sociology 100 – Introduction to Sociology** – Sociology 100 focuses on the scientific study of human societies and behavior focusing on the process of social interaction, patterns of social inequality, and the influence of social institutions on individuals as members of social groups. Environmental sustainable practices are both formally and informally integrated in the classroom and coursework through education about the environment, social change, and volunteerism.

#### Santiago Canyon College

**Automotive Technology 085 – Basic Clean Air Car Course** – A Bureau of Automotive Repair recognized Basic Clean Air Car Course, which prepares students for the State Smog Technician Exam.

**Biology 109 – Fundamentals of Biology** – See above under Santa Ana College courses.

**Biology 111- Marine Biology** – This course covers basic concepts of marine ecosystems including oceanographic principles, ecology and a survey of marine habits and diversity of marine organisms.

**Biology 127 – Ecology** – Introduction to the basic principles of ecology. Study of ecosystems, biomes, and the relationships of plants and animals in the natural world.

**Biology 128 Natural History of the California Coast** – A field study course focused on the ecological study of plant and animal life of the southern and central California coast.

**Biology 128 – Ecology of Southern California** – Identification and study of the plants and animals of the ocean, mountain and desert regions of Southern California with emphasis on the organisms relationship to their environment. This is a field study course and includes overnight camping.

**Biology 170 – Environmental Challenge of the 21<sup>st</sup> Century** – Examines the environmental impacts of increased human population on food, water and energy resources. Land use policies and environmental effects of pollution will also be analyzed.

**Biology 200 - The Environment of Man** - See above under Santa Ana College courses.

**Biology 212 – Animal Diversity and Ecology** - A study of ecological principles, and relationships between animal diversity and ecosystems. Habitat, populations, ecological interactions, and environmental influences are stressed while surveying animal diversity and addressing structure, function, behavior, and adaptation of major taxonomic groups.

**Biology 214 – Evolution and Plant Diversity** – Principles and processes of evolution leading to biodiversity. Survey of the organisms, viruses, prokaryotes, fungi, algae, and plants with emphasis on evolutionary adaptations of the anatomy, physiology, and life cycles of these organisms.

**Biology 259 - Introduction to Environmental Biology** - This course includes the study of ecosystems, population dynamics, and classification, diversity of plant and animal species, effects of pollutants at both the cellular and organismal levels and principles of ecology.

**English 101 – Freshman Composition** - This course emphasizes expository and argumentative essays and the completion of a research paper. In certain course sections, environmental topics are emphasized in course material, essays and presentations.

**Geology 140 – Environmental Geology** - See above under Santa Ana College courses.

**Geology 150 – Introduction to Oceanography** – Introductory study of the ocean and its topography, sediments, circulation, shoreline processes, biological productivity and mineral resources.

#### *4.10.3.3 Create a New Certificate or Degree Program*

The following sustainability-related degree and certificate programs are currently offered by RSCCD:

**Earth Science Degree** - The associate degree curriculum in earth Science prepares students for transfer to a four-year institution leading to a baccalaureate degree in Earth Science or Geology. A baccalaureate degree in Earth Sciences may provide the recommended content preparation for students interested in teaching science at the middle school level or are planning to go to law school in the area of Environmental Law or Public Policy. Students may also gain skills necessary for opportunities with

Geotechnical or Environmental consulting firms or with government agencies such as the National Park Service.

**Energy Analysis Degree & Certificate** – This degree program trains students for work in energy analysis and auditing. Students completing training will be prepared for work performing Title 24 energy calculations or for work in utility companies, or private companies that do energy analysis and auditing. Course work includes: Engineering 165, Engineering 175 (described above).

**Water Utility Science Degree & Certificate** - The Water Utility Science program and certificate at Santiago Canyon offers a wide range of courses that directly apply to water distribution, treatment, and wastewater management. The program provides a great opportunity for students to be trained in a growing and important field centered on environmental sustainability. With completion of the program, students are prepared for entry-level jobs in the water distribution, treatment and water reclamation industries. The associate of science degree provides coursework and internship experience designed to provide an overview of a wide range of environmental career opportunities.

Moving forward, the faculty at Santa Ana and Santiago Canyon would like to explore the creation of additional certificate and degree programs inclusive of environmental sustainability. Students have also expressed their desire for development of more environmental programs. When asked what kinds of programs and services Santiago Canyon College should offer in the spring 2014 survey, most participants touched on developing programs in the areas of High Technology and Green Technology. For example, participants suggested that the college should not only expand upon its signature programs in Water and Surveying, but also develop green technology programs and create environmental studies and sustainable studies programs.

#### **4.10.4 ADVOCATE FOR CHANGE AT THE STATEWIDE LEVEL**

The Sustainable RSCCD Committee hopes to advocate for sustainability on a larger scale by sending representatives from both the SRC and the Campus Facilities Committees to the annual Higher Ed Sustainability Conference. This will provide a venue for learning, sharing experiences with other higher education institutions, and collaborating statewide on various sustainability initiatives and programs.

#### **4.10.5 TRAINING OPPORTUNITIES FOR STUDENTS**

Students can enhance the learning done in the classroom environment with hands on experience by applying what they have learned to the real world. The District will employ the following strategies to enhance student learning outside of the classroom.

##### ***4.10.5.2 Facilitate Hands-On Campus Projects***

Biology faculty at Santa Ana oversee a group called the Green Task Force, which works to identify recycling projects and organizes Earth Day events. Recently, the Associated Student Government (ASG) committed to improving District recycling efforts and generating greater student interest. The Administrative Services Department agreed to provide recycling bins for cans and bottles to assist in this

effort. Students will regularly empty them along with the current containers used for paper recycling. The students will then deliver the collections to recycling centers.

Students have expressed interest in hands-on projects, such as replacing old restroom faucets with more water efficient fixtures, working on drought-tolerant landscape and efficient-irrigation renovations, and the installation of water bottle filling stations to reduce the use of disposable water bottles.

#### **4.10.5.4 *Invite Notable Speakers***

Santiago Canyon College 2014 Earth Day event featured several guest speakers who presented on a variety of sustainability topics.

#### **4.10.5.5 *Support Student Committees & Clubs***

The District Master Plan states that the District will engage student organizations and clubs and support student activities designed to improve sustainability.

Student Clubs at Santa Ana College include the Collegiate Alliance for Positive Environmental Stewardship Engineering Club (CAPES). Students involved in CAPES participate in activities that focus on sustainable topics such as sustainable design and building with solar.

### **4.11 CAMPUS AND COMMUNITY OUTREACH & AWARENESS**

The sustainability of a college is highly dependent on the actions of individual students, faculty, administration, and staff. While the installation of energy efficient equipment or provision of recycling receptacles can make a District more sustainable, fostering a campus culture centered on environmental sustainability and positively influencing behavior are crucial to the overall effectiveness of these programs. Additionally, it is important to maintain transparency and inform the campus and local community of the District's progress with sustainability plan implementation. This is hard work and contributions to the sustainability of the District should be recognized. The District will implement the following programs related to campus and community outreach and awareness.

#### **4.11.1 *CREATE A WEBSITE DEDICATED TO CAMPUS SUSTAINABILITY***

The District has established a website to publicize the activities of the Sustainable RSCCD Committee. The website identifies committee members, contains meeting agendas and minutes, as well as describing other sustainability activities going at campuses and the District level. The Sustainable RSCCD Committee's web page can be found here:

<http://rsccd.edu/Discover-RSCCD/Pages/Sustainable%20RSCCD%20Committee.aspx>

#### **4.11.3 *SUSTAINABILITY EVENTS***

Since 2013, the District has worked with student clubs to plan, organize, and hold Earth Day events at each campus. Santa Ana College's annual sustainability event, "Sustain-a-Palooza," which started in

2013, has been a success, with overflowing crowds, informational presentations, speakers and involvement by a number of campus clubs. At the 2014 event, a presentation to students was given to inform students of the RSCCD Sustainability Plan creation and vision. Students were given the opportunity to provide input to the plan and suggestions for improved sustainability on campus. All of these suggestions have been reviewed by the Sustainable RSCCD Committee and considered for implementation – several of which have been incorporated within the Sustainability Plan.

At Santiago Canyon College, students have organized an on-going, periodic campus clean-up day. Moving forward, both colleges hope to plan reoccurring volunteer days focused on the environment through student-run sustainability clubs.

The Transportation Subcommittee of the Sustainable RSCCD Committee proposes to designate a day in May of each year as “Ride Your Bike to Work Day”. The District will publicize the event and provide prizes for participants to encourage bicycling to campus and reducing vehicle commutes.

#### **4.11.4 CAMPUS SPECIFIC OUTREACH & AWARENESS**

The SRC publishes a Sustainable RSCCD e-newsletter to inform the campus community about sustainability news and events.

In spring of 2014 in conjunction with the preparation of this Sustainability Plan, the SRC conducted an online survey to students and staff campus to gain input on campus and District sustainability efforts. Over 730 students and 200 faculty, staff and administrators completed the survey and provided valuable insight and recommendations for improved sustainability on campus. The SRC will use the survey responses to help the District achieve its sustainability goals. In addition, specific recommendations provided by students, faculty, and staff have been included in the Sustainability Plan for future implementation. The SRC will conduct similar surveys on an annual basis to measure the District's progress in the field of sustainability (using the 2014 survey as a baseline), provide a means for student and employee involvement, and to act as a tool informing students, faculty, and staff of the District's ongoing commitment. The Survey Results are attached in Exhibit 2 of the Plan.

#### **4.11.5 COMMUNITY SPECIFIC OUTREACH & AWARENESS**

The RSCCD Master Plan states that the District will work to foster community partnerships related to sustainability. Specific to this effort are the public transportation needs of the campus community and discussions held between the District and local transportation officials. Please see section 4.6 for the ways in which RSCCD plans to partner with community members and organizations to reach their transportation goals.

### **4.12 CREATE A CLIMATE ACTION PLAN**

#### **4.12.5 MAKE A COMMITMENT TO REDUCE GREENHOUSE GAS EMISSIONS**

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The Sustainable RSCCD Committee has discussed the possibility of becoming a signatory to the American College and University Presidents' Climate Commitment (ACUPCC). Signatories of the ACUPCC agree to complete a greenhouse gas (GHG) inventory; create an action plan with targets and milestones for reducing emissions; integrate sustainability into curriculum; and make their plans, inventory, and progress reports publicly available. The SRC will continue to evaluate its participation in this program over the near term.

## SECTION 5.

# MEASURE AND REPORT PERFORMANCE

As with any successful program, the ongoing progress and performance of sustainability plan activities should be *monitored and compared to goals and criteria*. This will require continuous participation of the Sustainable RSCCD Committee, students, faculty, and staff, and other participants in the process. To communicate results and ensure transparency and accountability, the *results of the Sustainability Plan activities should be communicated to the larger campus community on a regular basis*.

The following section describes the planned process for measuring and reporting sustainability activities and achievements.

## 5.1 MEASURING PERFORMANCE

In order to monitor the Districts progress towards its sustainability goals, the SRC plans to collect information on the following key metrics at the regular intervals described below. In addition, the table below indicates responsibility for the accomplishment of each goal to meet the timelines established.

Goal No.	Goal	Goal Description	Performance Metric and Frequency of Measurement	Responsibility
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.	Develop and implement a program to raise awareness in the campus community to inspire behavioral changes to enhance sustainability. Increase community awareness and support of the college sustainability efforts through the use of targeted media.  Develop a Campus & Community Engagement Plan by the Spring Semester of 2015 with implementation by the Fall Semester of 2015.	RSCCD Chancellor's Office  President's Cabinet, each College  Director of Public Affairs and Communications  Associated Student Government

<b>Goal No.</b>	<b>Goal</b>	<b>Goal Description</b>	<b>Performance Metric and Frequency of Measurement</b>	<b>Responsibility</b>
<b>2</b>	<b>Curriculum Development</b>	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.	Develop an Implementation Plan to achieve Curriculum Goals by the Spring Semester of 2015.	Academic Senate College Curriculum Committee  VP of Academic Affairs, each college
<b>3</b>	<b>Energy</b>	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.	Perform benchmarking studies by the end of 2014. Establish annual energy use and demand reduction goals (minimum 5% below average for similar facilities) and plan appropriate energy efficiency, demand reduction, or clean self-generation measures by mid-2015 to meet reduction goals.	VP of Administrative Services, each college  Facilities Committee  Assistant Vice Chancellor Facility Planning, District Construction & Support Services  Facilities Manager, each college
<b>4</b>	<b>Facilities Design &amp; Operation</b>	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.	All major capital projects and renovations shall meet LEED Silver “equivalent” standard. Require this standard with all design and construction contracts starting immediately.  Working with the CCC/IOU Partnership, develop a Retro-commissioning (RCx) and Monitoring Based Commissioning (MBCx) implementation program to improve energy efficiency of major facilities operations. RCx/MBCx program to completed and adopted by end of 2015 and updated every two years.	VP of Administrative Services, each college  Facilities Committee  Assistant Vice Chancellor Facility Planning, District Construction & Support Services  Facilities Manager, each college

Goal No.	Goal	Goal Description	Performance Metric and Frequency of Measurement	Responsibility
5	<b>Solid Waste Management</b>	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.	Strive to meet the statewide landfill diversion goal of 75 percent by 2020. Establish 2014 as a baseline year for diversion measurement and develop a plan with appropriate measures by mid-2015 to meet goals. Evaluate diversion results annually and update program as needed to meet goals.	Vice Chancellor for Business Operations and Fiscal Services  VP of Administrative Services, each college  Facilities Committee  Assistant Vice Chancellor Facility Planning, District Construction & Support Services
6	<b>Sustainable Procurement</b>	Implement efforts to source campus food, materials, supplies, information technology, equipment, and resources from organizations committed to social responsibility and environmental sustainability.	Develop procurement standards to achieve sustainable procurement goals by the Spring Semester 2015. Implement standards in all areas of procurement concurrent with adoption of standards.	VP of Administrative Services, each college  Vice Chancellor for Business Operations/Fiscal Services  Director of Purchasing, each College  Director of Public Affairs and Communications

<b>Goal No.</b>	<b>Goal</b>	<b>Goal Description</b>	<b>Performance Metric and Frequency of Measurement</b>	<b>Responsibility</b>
<b>7</b>	<b>Transportation</b>	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.	Conduct annual traffic counts and surveys to determine baselines for commuting trips and total Vehicle Miles Traveled to both colleges. Update traffic counts and surveys annually to monitor progress toward 5% reduction goals. Develop programs and projects by the end of 2014 to meet goals.	RSCCD Chancellor's Office  VP of Administrative Services, each college  Assistant Vice Chancellor Facility Planning, District Construction & Support Services  Director of Public Affairs and Communications  Associated Student Government
<b>8</b>	<b>Water Management</b>	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.	Perform benchmarking studies by the end of 2014. Establish annual water use reduction goals (minimum 5% below average for similar facilities) and plan appropriate measures to meet reduction goals by mid-2015 for implementation.	VP of Administrative Services, each college  Assistant Vice Chancellor Facility Planning, District Construction & Support Services  Facilities Manager, each college

## 5.2 REPORTING PERFORMANCE

In order to keep the campus community informed of the progress of the Sustainability Plan activities, the SRC will publicize sustainability activities on the Sustainable RSCCD Committee web site. Additionally, the Committee will summarize activities, metrics, and progress towards goals in an annual report to the District Board of Trustees, which will be available publicly on the sustainability website.

### 5.2.1 CAMPUS WORKSHOPS

The Sustainable RSCCD Committee will hold periodic workshops open to all campus members throughout the planning and implementation phases of the project. This will be designed to encourage a two-way dialogue where information is provided to the campus community and feedback is solicited and incorporated into the plan.

## APPENDICES

**Appendix 1 – Programs and Plans Checklist**

**Appendix 2 – 2014 Sustainability Survey Results**

**Appendix 3 – 2014 Santa Ana College Sustainapalooza Student Input**



**Appendix 1**  
**Programs and Plans Checklist**



**Sustainability Template Plan Summary**  
**Implementation Programs and Checklist**

**District:** Rancho Santiago Community College District  
 Santiago Canyon College, Santa Ana College, District Office, Centennial Education Center, Orange  
**Campus:** Education Center  
**Project:** Sustainability Plan  
**Date:** 7/15/2014

Click Here to go to **Output Tab**

Plan Section	Template Plan Section Description	# of Programs Available	# of Programs Selected	# of Selected Programs Completed
<a href="#"><u>4.1</u></a>	Management and Organizational Structure	7	5	3
<a href="#"><u>4.2</u></a>	Energy Efficiency	11	6	1
<a href="#"><u>4.3</u></a>	Facilities Operation	7	7	0
<a href="#"><u>4.4</u></a>	Sustainable Building Practices	5	4	0
<a href="#"><u>4.5</u></a>	On-Site Generation and Renewable Energy	5	2	0
<a href="#"><u>4.6</u></a>	Transportation, Commuting, and Campus Fleet & Travel	5	5	0
<a href="#"><u>4.7</u></a>	Water, Wastewater, and Sustainable Landscaping	4	4	0
<a href="#"><u>4.8</u></a>	Solid Waste Reduction and Management	7	6	1
<a href="#"><u>4.9</u></a>	Green Purchasing	3	2	0
<a href="#"><u>4.10</u></a>	Student and Curriculum Development	5	5	1
<a href="#"><u>4.11</u></a>	Campus and Community Outreach & Awareness	5	4	1
<a href="#"><u>4.12</u></a>	Create a Climate Action Plan	4	1	0
<a href="#"><u>4.13</u></a>	Other Programs and Projects for Implementation	0	0	0
<b>Totals</b>		<b>68</b>	<b>51</b>	<b>7</b>

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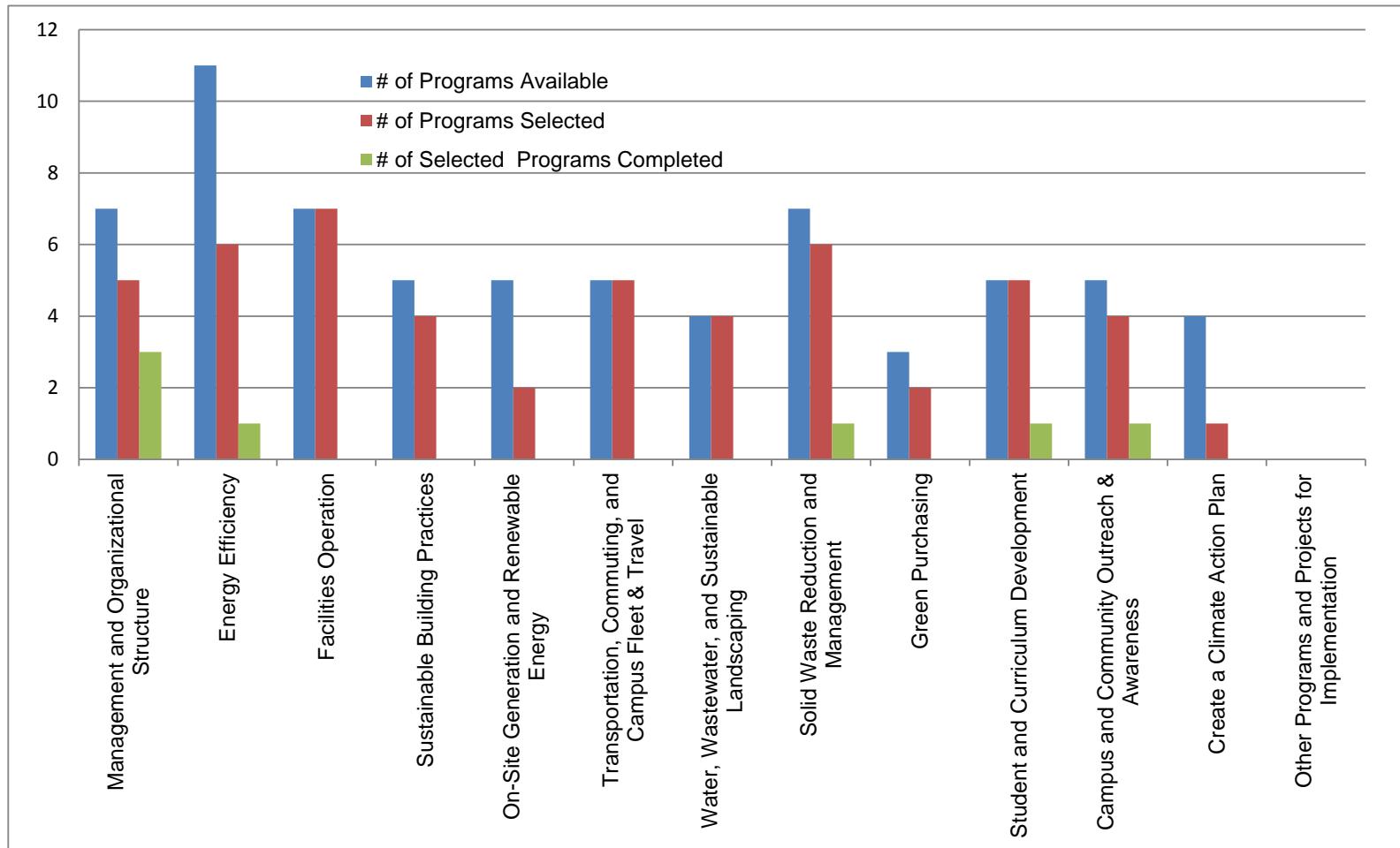
## Sustainability Template Programs Chart

**District:** Rancho Santiago Community College District

**Campus:** Santiago Canyon College, Santa Ana College, District Office, Centennial Education Center, Orange Education Center

**Project:** Sustainability Plan

**Date:** 7/15/2014



**Sustainability Template Plan  
Implementation Programs and Plans Checklist**

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**Campus:** Santiago Canyon College, Santa Ana College, District Office, Centennial Education Center, Orange Education Center  
**Project:** Sustainability Plan  
**Date:** 7/15/2014

**Priority Implementation Plans Indicated Below**

Selected Programs and Plans for Implementation are Summarized Below		
Section 4.1 MANAGEMENT AND ORGANIZATIONAL STRUCTURE		Comments
<input checked="" type="checkbox"/>	4.1.1	Adopt a District Sustainability Policy
<input type="checkbox"/>	4.1.2	Appoint a Sustainability Coordinator, Establish an Office of Sustainability
<input checked="" type="checkbox"/>	4.1.3	Appoint a Campus Sustainability Committee
<input checked="" type="checkbox"/>	4.1.4	Funding and Resources to Support Sustainability Activities
<input checked="" type="checkbox"/>	4.1.5	Employ Sustainability Professionals, as required
<input type="checkbox"/>	4.1.6	Consider Sustainability in Endowment Investments
<input checked="" type="checkbox"/>	4.1.7	Integrate Sustainability Planning into Campus Master Plan
<input type="checkbox"/>	4.1.8	<i>Enter Other Program and Project 1, text will change color</i>
<input type="checkbox"/>	4.1.9	<i>Enter Other Program and Project 2, text will change color</i>

See Sustainability Template Plan Section 7.1 for Details of Implementation Plans.

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**Date:** 7/15/2014

**Priority Implementation Plans Indicated Below**

Selected Programs and Plans for Implementation are Summarized Below		
Section 4.2 ENERGY EFFICIENCY		Comments
<input checked="" type="checkbox"/>	4.2.1	Set Energy Efficiency Goals
<input type="checkbox"/>	4.2.2	Evaluate Mechanisms for the Implementation of Energy Efficiency Projects
<input type="checkbox"/>	4.2.3	Conduct Facility Prioritization Survey
<input checked="" type="checkbox"/>	4.2.4	Conduct Comprehensive Facility Energy Audits
<input checked="" type="checkbox"/>	4.2.5	Implement New and Existing Audit Recommendations
<input type="checkbox"/>	4.2.6	Implement Ongoing Energy Monitoring
<input type="checkbox"/>	4.2.7	Participate in Demand Response Programs
<input checked="" type="checkbox"/>	4.2.8	Identify and Take Advantage of Grant and Incentive Programs
<input type="checkbox"/>	4.2.9.1	Establish an Energy Efficiency Purchasing Policy
<input checked="" type="checkbox"/>	4.2.9.2	Efficient Lighting and Lighting Controls
<input checked="" type="checkbox"/>	4.2.9.3	Install Energy Efficient HVAC Systems
<input type="checkbox"/>	4.2.9	<i>Enter Other Program and Project 1, text will change color</i>
<input type="checkbox"/>	4.2.9	<i>Enter Other Program and Project 2, text will change color</i>

See Sustainability Template Plan Section 7.2 for Details of Implementation Plans.

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**Priority Implementation Plans Indicated Below**

Selected Programs and Plans for Implementation are Summarized Below		
Section 4.3 FACILITIES OPERATION		Comments
<input checked="" type="checkbox"/>	4.3.1	Encourage and Support Energy Efficiency Training of Staff
<input checked="" type="checkbox"/>	4.3.2	Install Energy Management Systems
<input checked="" type="checkbox"/>	4.3.3	Adjust Temperature Set Points and Schedule Operating Times
<input checked="" type="checkbox"/>	4.3.4	Optimize Building Occupancy Scheduling
<input checked="" type="checkbox"/>	4.3.5	Optimize HVAC Equipment Scheduling
<input checked="" type="checkbox"/>	4.3.6	Activate Energy-Saving Features for Appliances and Computers
<input checked="" type="checkbox"/>	4.3.7	Pursue Monitoring-Based(MBCx)/Retro-Commissioning (RCx)
<input type="checkbox"/>	4.3.8	<i>Enter Other Program and Project 1, text will change color</i>
<input type="checkbox"/>	4.3.9	<i>Enter Other Program and Project 2, text will change color</i>

See Sustainability Template Plan Section 7.3 for Details of Implementation Plans.

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**Date:** 7/15/2014

**Priority Implementation Plans Indicated Below**

Selected Programs and Plans for Implementation are Summarized Below		
Section 4.4 SUSTAINABLE BUILDING PRACTICES		Comments
<input checked="" type="checkbox"/>	4.4.1	Establish a Green Building Standard
<input checked="" type="checkbox"/>	4.4.2	Implement Sustainable Design Practices
<input checked="" type="checkbox"/>	4.4.3	Use an Integrated Systems Approach in Building Design
<input type="checkbox"/>	4.4.4	Hire Sustainable Building Design Professionals
<input checked="" type="checkbox"/>	4.4.5	Commission New Buildings
<input type="checkbox"/>	4.4.6	<i>Enter Other Program and Project 1, text will change color</i>
<input type="checkbox"/>	4.4.7	<i>Enter Other Program and Project 2, text will change color</i>

See Sustainability Template Plan Section 7.4 for Details of Implementation Plans.

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**Date:** 7/15/2014

**Priority Implementation Plans Indicated Below**

Selected Programs and Plans for Implementation are Summarized Below		
Section 4.5 ON-SITE GENERATION AND RENEWABLE ENERGY		Comments
<input checked="" type="checkbox"/>	4.5.1	Evaluate Clean Cogeneration and Renewable Energy Generation
<input checked="" type="checkbox"/>	4.5.2	Evaluate Load Shifting Technologies
<input type="checkbox"/>	4.5.3	Minimize Greenhouse Gas Intensity of Purchased Electricity
<input type="checkbox"/>	4.5.4	Evaluate Participation in Community Choice Aggregation
<input type="checkbox"/>	4.5.5	Identify and Take Advantage of Grant and Incentive Programs
<input type="checkbox"/>	4.5.6	<i>Enter Other Program and Project 1, text will change color</i>
<input type="checkbox"/>	4.5.7	<i>Enter Other Program and Project 2, text will change color</i>

See Sustainability Template Plan Section 7.5 for Details of Implementation Plans.

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**Date:** 7/15/2014

**Priority Implementation Plans Indicated Below**

Selected Programs and Plans for Implementation are Summarized Below		
Section 4.6 TRANSPORTATION, COMMUTING, AND CAMPUS FLEET & TRAVEL		Comments
<input checked="" type="checkbox"/>	4.6.1	Understand Commute and Travel Patterns
<input checked="" type="checkbox"/>	4.6.2	Encourage and Enhance Public Transportation and Ridesharing Options
<input checked="" type="checkbox"/>	4.6.3	Encourage and Enhance Bicycling Options
<input checked="" type="checkbox"/>	4.6.4	Improve Campus Fleet & Travel
<input checked="" type="checkbox"/>	4.6.5	Enhance Student Distance Learning
<input type="checkbox"/>	4.6.6	<i>Enter Other Program and Project 1, text will change color</i>
<input type="checkbox"/>	4.6.7	<i>Enter Other Program and Project 2, text will change color</i>

See Sustainability Template Plan Section 7.6 for Details of Implementation Plans.

For questions, comments, or feedback, please contact Matt Sullivan, Newcomb | Anderson | McCormick, 415-896-0300, matt\_sullivan@newcomb.cc



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**Priority Implementation Plans Indicated Below**

Selected Programs and Plans for Implementation are Summarized Below		
Section 4.7 WATER, WASTEWATER, AND SUSTAINABLE LANDSCAPING		Comments
<input checked="" type="checkbox"/>	4.7.1	Establish Water Conservation Goals
<input checked="" type="checkbox"/>	4.7.2	Implement Water Conservation Strategies
<input checked="" type="checkbox"/>	4.7.3	Reduce Storm Water, Sewer Discharges, and Water Pollution
<input checked="" type="checkbox"/>	4.7.4	Adopt Sustainable Landscaping Practices
<input type="checkbox"/>	4.7.1	<i>Enter Other Program and Project 1, text will change color</i>
<input type="checkbox"/>	4.7.2	<i>Enter Other Program and Project 2, text will change color</i>

See Sustainability Template Plan Section 7.7 for Details of Implementation Plans.

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**Priority Implementation Plans Indicated Below**

Selected Programs and Plans for Implementation are Summarized Below		
Section 4.8 SOLID WASTE REDUCTION AND MANAGEMENT		Comments
<input checked="" type="checkbox"/>	4.8.1	Create Waste Reduction Goals
<input checked="" type="checkbox"/>	4.8.2	Maximize Programs Offered by Contracted Waste Hauler
<input checked="" type="checkbox"/>	4.8.3	Reduce Waste Stream to the Landfill
<input checked="" type="checkbox"/>	4.8.4	Improve Existing Recycling Programs
<input type="checkbox"/>	4.8.5	Collect and Sell All Recyclable Material
<input checked="" type="checkbox"/>	4.8.6	Green Waste and Food Waste Composting
<input checked="" type="checkbox"/>	4.8.7	Adopt Construction and Demolition (C&D) Recycling
<input type="checkbox"/>	4.8.8	<i>Enter Other Program and Project 1, text will change color</i>
<input type="checkbox"/>	4.8.9	<i>Enter Other Program and Project 2, text will change color</i>

See Sustainability Template Plan Section 7.8 for Details of Implementation Plans.

For questions, comments, or feedback, please contact Matt Sullivan, Newcomb | Anderson | McCormick, 415-896-0300, matt\_sullivan@newcomb.cc



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**Date:** 7/15/2014

**Priority Implementation Plans Indicated Below**

Selected Programs and Plans for Implementation are Summarized Below		
Section 4.9 GREEN PURCHASING		Comments
<input checked="" type="checkbox"/>	4.9.1	Sustainable Food Purchasing
<input checked="" type="checkbox"/>	4.9.2	Green Purchasing Practices
<input type="checkbox"/>	4.9.3	Socially Responsible Purchasing
<input type="checkbox"/>	4.9.4	<i>Enter Other Program and Project 1, text will change color</i>
<input type="checkbox"/>	4.9.5	<i>Enter Other Program and Project 2, text will change color</i>

See Sustainability Template Plan Section 7.9 for Details of Implementation Plans.

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**Date:** 7/15/2014

**Priority Implementation Plans Indicated Below**

Selected Programs and Plans for Implementation are Summarized Below		
Section 4.10 STUDENT AND CURRICULUM DEVELOPMENT		Comments
<input checked="" type="checkbox"/> 4.10.1	Create a Sub-Committee in the Academic Senate Devoted to Sustainability	
<input checked="" type="checkbox"/> 4.10.2	Provide Professional Development and Create a Faculty Forum	
<input checked="" type="checkbox"/> 4.10.3	Utilize Different Pathways to Integrate Sustainability in the Curriculum	
<input checked="" type="checkbox"/> 4.10.4	Advocate for Change at the Statewide Level	
<input checked="" type="checkbox"/> 4.10.5	Training Opportunities for Students	
<input type="checkbox"/> 4.10.6	<i>Enter Other Program and Project 1, text will change color</i>	
<input type="checkbox"/> 4.10.7	<i>Enter Other Program and Project 2, text will change color</i>	

See Sustainability Template Plan Section 7.10 for Details of Implementation Plans.

For questions, comments, or feedback, please contact Matt Sullivan, Newcomb | Anderson | McCormick, 415-896-0300, matt\_sullivan@newcomb.cc



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**Sustainability Template Plan  
Implementation Programs and Plans Checklist**

**District:** Rancho Santiago Community College District  
**Campus:** Santiago Canyon College, Santa Ana College, District Office, Centennial Education Center, Orange Education Center  
**Project:** Sustainability Plan  
**Date:** 7/15/2014

**Priority Implementation Plans Indicated Below**

Selected Programs and Plans for Implementation are Summarized Below		
Section 4.11 CAMPUS AND COMMUNITY OUTREACH & AWARENESS		Comments
<input checked="" type="checkbox"/>	4.11.1	Create a Website Dedicated to Campus Sustainability
<input type="checkbox"/>	4.11.2	Hold Workshops and Presentations
<input checked="" type="checkbox"/>	4.11.3	Sustainability Events
<input checked="" type="checkbox"/>	4.11.4	Campus Specific Outreach & Awareness
<input checked="" type="checkbox"/>	4.11.5	Community Specific Outreach & Awareness
<input type="checkbox"/>	4.11.6	<i>Enter Other Program and Project 1, text will change color</i>
<input type="checkbox"/>	4.11.7	<i>Enter Other Program and Project 2, text will change color</i>

See Sustainability Template Plan Section 7.11 for Details of Implementation Plans.

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**Sustainability Template Plan**  
**Implementation Programs and Plans Checklist**

**District:** Rancho Santiago Community College District  
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**Project:** Sustainability Plan  
**Date:** 7/15/2014

**Priority Implementation Plans Indicated Below**

Selected Programs and Plans for Implementation are Summarized Below		
Section 4.12 CREATE A CLIMATE ACTION PLAN		Comments
<input checked="" type="checkbox"/>	4.12.5	Make a Commitment to Reduce Greenhouse Gas Emissions
<input type="checkbox"/>	4.12.6	Perform a Campus Greenhouse Gas Inventory
<input type="checkbox"/>	4.12.7	Create and Execute a Climate Action Plan with Prioritized Greenhouse Gas Reduction Measures
<input type="checkbox"/>	4.12.8	Regularly Monitor and Report Progress to Campus
<input type="checkbox"/>	4.12.9	<i>Enter Other Program and Project 1, text will change color</i>
<input type="checkbox"/>	4.12.10	<i>Enter Other Program and Project 2, text will change color</i>

See Sustainability Template Plan Section 7.12 for Details of Implementation Plans.

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**District:** Rancho Santiago Community College District  
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**Date:** 7/15/2014

**Priority Implementation Plans Indicated Below**

<b>Selected Programs and Plans for Implementation are Summarized Below</b>	
<b>Section 7.13 OTHER PROGRAMS AND PROJECTS FOR IMPLEMENTATION</b>	<b>Comments</b>
<input type="checkbox"/> 4.13.1	<i>Enter Other Program and Project 1, text will change color</i>
<input type="checkbox"/> 4.13.2	<i>Enter Other Program and Project 2, text will change color</i>
<input type="checkbox"/> 4.13.3	<i>Enter Other Program and Project 3, text will change color</i>
<input type="checkbox"/> 4.13.4	<i>Enter Other Program and Project 4, text will change color</i>

See Sustainability Template Plan Section 7.13 for Details of Implementation Plans.

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**Sustainability Template Plan**  
**Implementation Programs and Plans Checklist**

**District:** Rancho Santiago Community College District  
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**Priority Implementation Plans Indicated Below**

<b>Section 4.1 MANAGEMENT AND ORGANIZATIONAL STRUCTURE</b>										
<b>Section</b>	<b>Selected Program or Project</b>	<b>Action Items/Notes</b>	<b>Priority (select)</b>	<b>Status (select)</b>	<b>Linked to</b>	<b>Cost (\$)</b>	<b>Associated GOAL(s)</b>	<b>Target Completion Date</b>	<b>Assigned To</b>	<b>Email address</b>
4.1.1	Adopt a District Sustainability Policy		High	Complete			1			
4.1.3	Appoint a Campus Sustainability Committee		High	Complete			1			
4.1.4	Funding and Resources to Support Sustainability Activities	Measure E and Prop 39 Funds	High	In-Process			3,4	On-going		
4.1.5	Employ Sustainability Professionals, as required		Med	In-Process			3,4	On-going		
4.1.7	Integrate Sustainability Planning into Campus Master Plan		High	Complete			3,4			

<b>Section 4.2 ENERGY EFFICIENCY</b>										
<b>Section</b>	<b>Selected Program or Project</b>	<b>Action Items/Notes</b>	<b>Priority (select)</b>	<b>Status (select)</b>	<b>Linked to</b>	<b>Cost (\$)</b>	<b>Associated GOAL(s)</b>	<b>Target Completion Date</b>	<b>Assigned To</b>	<b>Email address</b>
4.2.1	Set Energy Efficiency Goals	District to perform energy use benchmarking studies at SCC, SAC and the DO; Annual energy use reduction goals to be established based on results	High	Planned			3	Mid-2015		
4.2.4	Conduct Comprehensive Facility Energy Audits	DO currently in process of compiling baseline data for audit	High	Planned			3	2014		
4.2.5	Implement New and Existing Audit Recommendations	Energy study performed in 2012; Southland Industries currently conducting site study to implemented energy projects recommended by the study	High	In-Process			3	On-going		
4.2.8	Identify and Take Advantage of Grant and Incentive Programs	Measure E and Prop 39 Funds	High	In-Process			3	On-going		
4.2.9.2	Efficient Lighting and Lighting Controls		High	Complete			3			
4.2.9.3	Install Energy Efficient HVAC Systems	Chilled Water Central Plant planned at SAC; Upgraded HVAC control system planned at SCC; DO plans to replace chillers, cooling tower, and pumps	High	Planned			3			

**Sustainability Template Plan**  
**Implementation Programs and Plans Checklist**

**District:** Rancho Santiago Community College District  
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**Priority Implementation Plans Indicated Below**

<b>Section 4.3 FACILITIES OPERATION</b>										
Section	Selected Program or Project	Action Items/Notes	Priority (select)	Status (select)	Linked to	Cost (\$)	Associated GOAL(s)	Target Completion Date	Assigned To	Email address
4.3.1	Encourage and Support Energy Efficiency Training of Staff	M&O staff trained to operate EMS; ongoing training programs to be developed	Med	In-Process			3,4			
4.3.2	Install Energy Management Systems	EMS currently installed; Plans to install a new, more robust EMS at both campuses	Med	In-Process			3,4			
4.3.3	Adjust Temperature Set Points and Schedule Operating Times		High	Planned			3,4			
4.3.4	Optimize Building Occupancy Scheduling		High	Planned			3,4			
4.3.5	Optimize HVAC Equipment Scheduling		High	Planned			3,4			
4.3.6	Activate Energy-Saving Features for Appliances and Computers	Measures currently in place at SCC; District plans to evaluate and implement other IT-related energy savings technologies, including PC Power Mgmt and Server Virtualization	Med	In-Process			3,4			
4.3.7	Pursue Monitoring-Based(MBCx)/Retro-Commissioning (RCx)	Working with the CCC/IOU Partnership, develop a Retro-commissioning (RCx) and Monitoring Based Commissioning (MBCx) implementation program to improve energy efficiency of major facilities operations. RCx/MBCx program to completed and adopted by end of 2015 and updated every two years.	Med	In-Process			3,4	2015		

<b>Section 4.4 SUSTAINABLE BUILDING PRACTICES</b>										
Section	Selected Program or Project	Action Items/Notes	Priority (select)	Status (select)	Linked to	Cost (\$)	Associated GOAL(s)	Target Completion Date	Assigned To	Email address
4.4.1	Establish a Green Building Standard	District is currently developing standards and implementing those that are already in place	High	In-Process			3,4,8			
4.4.2	Implement Sustainable Design Practices		High	In-Process			1,3,4,6,8	On-going		
4.4.3	Use an Integrated Systems Approach in Building Design		Med	Planned			1,3,4,6,8	On-going		
4.4.5	Commission New Buildings	Two buildings completed in 2012 and 2014 have been commissioned; District is committed to commissioning all new buildings in the future as well	High	In-Process			3,4	On-going		

<b>Section 4.5 ON-SITE GENERATION AND RENEWABLE ENERGY</b>										
Section	Selected Program or Project	Action Items/Notes	Priority (select)	Status (select)	Linked to	Cost (\$)	Associated GOAL(s)	Target Completion Date	Assigned To	Email address
4.5.1	Evaluate Clean Cogeneration and Renewable Energy Generation	Comprehensive photovoltaic system feasibility study at SCC and SAC currently under review	Med	In-Process			3			
4.5.2	Evaluate Load Shifting Technologies	In-process at SAC; planned at SCC as part of future central plant	Med	In-Process			3			

**Sustainability Template Plan**  
**Implementation Programs and Plans Checklist**

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Priority Implementation Plans Indicated Below

<b>Section 4.6 TRANSPORTATION, COMMUTING, AND CAMPUS FLEET &amp; TRAVEL</b>										
<b>Section</b>	<b>Selected Program or Project</b>	<b>Action Items/Notes</b>	<b>Priority (select)</b>	<b>Status (select)</b>	<b>Linked to</b>	<b>Cost (\$)</b>	<b>Associated GOAL(s)</b>	<b>Target Completion Date</b>	<b>Assigned To</b>	<b>Email address</b>
4.6.1	Understand Commute and Travel Patterns	Conduct annual traffic counts and surveys to determine baseline for commuting trips and total Vehicle Miles Traveled to both campuses	Med	Planned			1,7	2014		
4.6.2	Encourage and Enhance Public Transportation and Ridesharing Options	Several initiatives currently planned or in place including: Increase Awareness, Facilitate Public Transit Use, Incentivize Public Transportation and Carpooling, Encourage Fuel Efficient Vehicles for Commuters	High	In-Process			1,7	2014/On-going		
4.6.3	Encourage and Enhance Bicycling Options	Add bike racks; plan for and communicate the availability of showers for commuters; add bike lockers or other secured storage	High	Planned			1,7	2015		
4.6.4	Improve Campus Fleet & Travel	District will continue to upgrade campus fleets with more fuel efficient vehicles	Med	In-Process			7	On-going		
4.6.5	Enhance Student Distance Learning	Expand and enhance distance-learning education course offerings; Hire full-time faculty coordinator to manage distance-learning program	High	Planned			1,7	2015		

<b>Section 4.7 WATER, WASTEWATER, AND SUSTAINABLE LANDSCAPING</b>										
<b>Section</b>	<b>Selected Program or Project</b>	<b>Action Items/Notes</b>	<b>Priority (select)</b>	<b>Status (select)</b>	<b>Linked to</b>	<b>Cost (\$)</b>	<b>Associated GOAL(s)</b>	<b>Target Completion Date</b>	<b>Assigned To</b>	<b>Email address</b>
4.7.1	Establish Water Conservation Goals	Perform benchmarking studies by the end of 2014. Establish annual water use reduction goals (minimum 5% below average for similar facilities) and plan appropriate measures to meet reduction goals by mid-2015 for implementation.	High	Planned			8	2014/Mid-2015		
4.7.2	Implement Water Conservation Strategies	Several water conservation measures have been implemented throughout the District	High	In-Process			8	On-going		
4.7.3	Reduce Storm Water, Sewer Discharges, and Water Pollution	Plans to implement rain gardens and bio swales in place; Erosion control systems have been implemented as well as a Storm Water Pollution Prevention Program	High	In-Process			8			
4.7.4	Adopt Sustainable Landscaping Practices	Campus Landscape Improvement Program at SAC and the Coastkeeper Garden at SCC (implemented/on-going); District will continue to landscape with native plants and employ water-wise landscaping practices	High	In-Process			8	On-going		

**Sustainability Template Plan**  
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<b>Section 4.8 SOLID WASTE REDUCTION AND MANAGEMENT</b>										
Section	Selected Program or Project	Action Items/Notes	Priority (select)	Status (select)	Linked to	Cost (\$)	Associated GOAL(s)	Target Completion Date	Assigned To	Email address
4.8.1	Create Waste Reduction Goals	Establish 2014 as a baseline year for diversion measurement and develop a plan with appropriate measures by mid-2015 to meet goals. Evaluate diversion results annually and update program as needed to meet goals	High	Planned			5	Mid-2015		
4.8.2	Maximize Programs Offered by Contracted Waste Hauler	SRC waste management subcommittee working to establish scope of services for expanded recycling throughout the District	High	In-Process			5	Mid-2015		
4.8.3	Reduce Waste Stream to the Landfill	District plans to reduce waste stream to the landfill through the following: Raise Awareness of Waste Reduction; Minimize Unnecessary Waste; Reduce Paper Use; Support Producer Responsibility Programs	High	In-Process			1,5,6	Mid-2015		
4.8.4	Improve Existing Recycling Programs		High	In-Process			1,5	Mid-2015		
4.8.6	Green Waste and Food Waste Composting	Current contract agreement with landscape contractor requires that all waste is composted; District plans to explore possibility of food-waste composting program district-wide	Med	In-Process			5	Mid-2015		
4.8.7	Adopt Construction and Demolition (C&D) Recycling	C&D recycling requirements currently in place	High	Complete			5	On-going		

<b>Section 4.9 GREEN PURCHASING</b>										
Section	Selected Program or Project	Action Items/Notes	Priority (select)	Status (select)	Linked to	Cost (\$)	Associated GOAL(s)	Target Completion Date	Assigned To	Email address
4.9.1	Sustainable Food Purchasing	Both colleges to explore healthier cafeteria food options, including vegan, vegetarian, organic, and locally produced items	Med	Planned			1,6	Spring 2015		
4.9.2	Green Purchasing Practices	RSCCD will create a Green Purchasing Policy in 2015 aimed at campus-wide, sustainable procurement	High	Planned			6	Spring 2015		

**Sustainability Template Plan**  
**Implementation Programs and Plans Checklist**

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**Priority Implementation Plans Indicated Below**

<b>Section 4.10 STUDENT AND CURRICULUM DEVELOPMENT</b>										
Section	Selected Program or Project	Action Items/Notes	Priority (select)	Status (select)	Linked to	Cost (\$)	Associated GOAL(s)	Target Completion Date	Assigned To	Email address
4.10.1	Create a Sub-Committee in the Academic Senate Devoted to Sustainability	SCC Associated Student Government has recently established a student leadership position	High	Complete			1			
4.10.2	Provide Professional Development and Create a Faculty Forum	Flex Day workshops at SCC and SAC to incorporate sustainability topics; Working committee of faculty to be created tasked with the implementation and advancement of the RSCCD "Curriculum Development" goal	High	Planned			1,2	Spring 2015		
4.10.3	Utilize Different Pathways to Integrate Sustainability in the Curriculum	Sustainability has been integrated extensively within curriculum at both colleges; Plans in place to increase availability of these courses and to create new sustainability - oriented/ focused courses and programs	High	In-Process			1,2	On-going		
4.10.4	Advocate for Change at the Statewide Level	District hopes to send representatives to the Higher Ed Sustainability Conference	Med	Planned			1	2015		
4.10.5	Training Opportunities for Students	Facilitate Hands-ON Campus Projects; Invite Notable Speakers; Support Student Committees and Clubs	High	In-Process			1,2	On-going		

<b>Section 4.11 CAMPUS AND COMMUNITY OUTREACH &amp; AWARENESS</b>										
Section	Selected Program or Project	Action Items/Notes	Priority (select)	Status (select)	Linked to	Cost (\$)	Associated GOAL(s)	Target Completion Date	Assigned To	Email address
4.11.1	Create a Website Dedicated to Campus Sustainability		High	Complete			1			
4.11.3	Sustainability Events	Several sustainability events at SCC and SAC have occurred/ are on-going; Transportation subcommittee to plan "Bike to Work" day	High	In-Process			1,7	On-going		
4.11.4	Campus Specific Outreach & Awareness	Sustainability Student, Faculty & Staff survey completed Spring 2014; To be repeated annually; Develop Campus & Community Engagement Plan by the Spring Semester of 2015 with implementation by the Fall Semester of 2015	High	In-Process			1	Sping 2015/ Fall 2015 (see notes)		
4.11.5	Community Specific Outreach & Awareness	Public transportation partnerships with the District (see 4.6); Campus & Community Engagement Plan by the Spring Semester of 2015 with implementation by the Fall Semester of 2015	High	In-Process			1,7	Sping 2015/ Fall 2015 (see notes)		

<b>Section 4.12 CREATE A CLIMATE ACTION PLAN</b>										
Section	Selected Program or Project	Action Items/Notes	Priority (select)	Status (select)	Linked to	Cost (\$)	Associated GOAL(s)	Target Completion Date	Assigned To	Email address
4.12.5	Make a Commitment to Reduce Greenhouse Gas Emissions		Med	Planned			2,3,4,5,6,7			

<b>Section 7.13 OTHER PROGRAMS AND PROJECTS FOR IMPLEMENTATION</b>										
Section	Selected Program or Project	Action Items/Notes	Priority (select)	Status (select)	Linked to	Cost (\$)	Associated GOAL(s)	Target Completion Date	Assigned To	Email address

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**Appendix 2  
2014 Sustainability Survey Results**

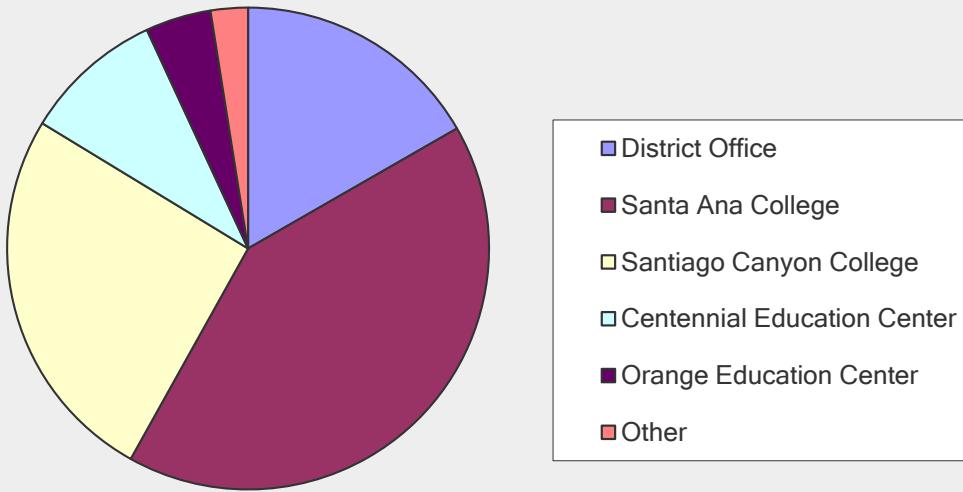


## Faculty, Administration & Staff Sustainability Survey

### Where do you work?

Answer Options	Response Percent	Response Count
District Office	16.7%	34
Santa Ana College	41.4%	84
Santiago Canyon College	25.6%	52
Centennial Education Center	9.4%	19
Orange Education Center	4.4%	9
Other	2.5%	5
<i>answered question</i>		203
<i>skipped question</i>		0

Where do you work?

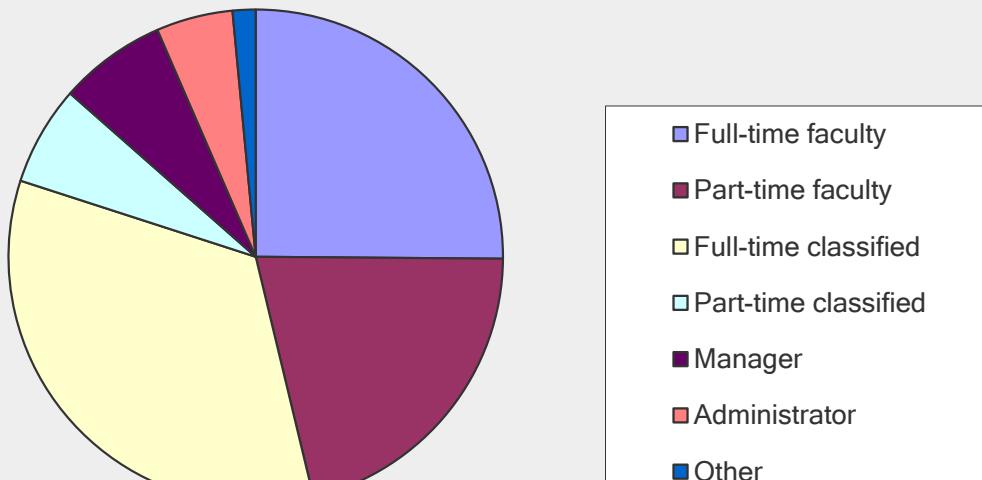


## Faculty, Administration & Staff Sustainability Survey

What best describes you?

Answer Options	Response Percent	Response Count
Full-time faculty	25.1%	50
Part-time faculty	21.1%	42
Full-time classified	33.7%	67
Part-time classified	6.5%	13
Manager	7.0%	14
Administrator	5.0%	10
Other	1.5%	3
<i>answered question</i>		199
<i>skipped question</i>		4

What best describes you?

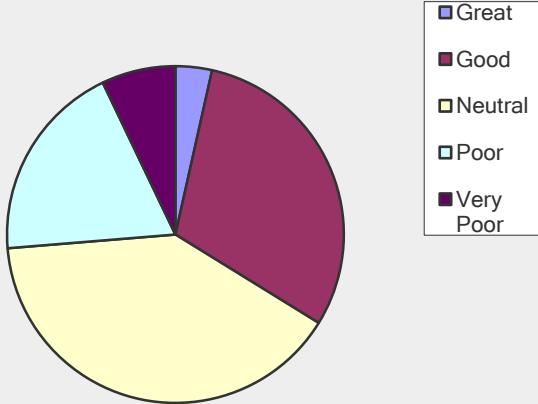


## Faculty, Administration & Staff Sustainability Survey

Overall, how would you rate the level of sustainability at the campus or location you work?

Answer Options	Response Percent	Response Count
Great	3.5%	7
Good	30.3%	60
Neutral	39.9%	79
Poor	19.2%	38
Very Poor	7.1%	14
<i>answered question</i>		198
<i>skipped question</i>		5

Overall, how would you rate the level of sustainability at the campus or location you work?



## Faculty, Administration & Staff Sustainability Survey

Which of the following areas would you most like to see become more sustainable on campus? (Select the three most important to you.)

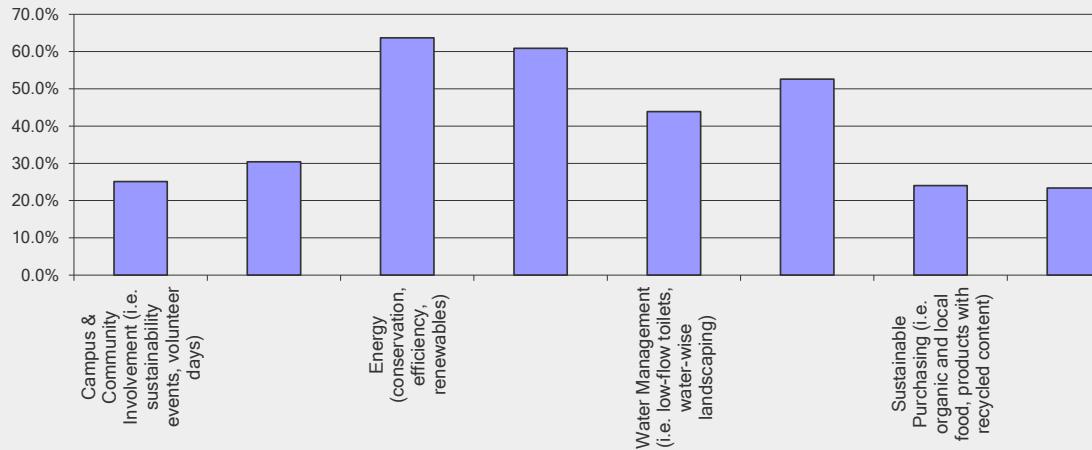
### Answer Options

Campus & Community Involvement (i.e. sustainability events, volunteer days)	25.1%	43
Sustainability within curriculum (i.e. more sustainability course options and career-oriented Energy (conservation, efficiency, renewables)	30.4%	52
Solid Waste Management (recycling, composting, reduction, reuse)	63.7%	109
Water Management (i.e. low-flow toilets, water-wise landscaping)	60.9%	105
Facilities Design & Operation (i.e. "green" buildings, sustainable landscaping)	43.9%	75
Sustainable Purchasing (i.e. organic and local food, products with recycled content)	52.6%	90
Transportation (i.e. public transit, bike options)	24.0%	41
Other (please specify)	23.4%	41
		15

Response  
Percent  
Response  
Count

*answered question* 173  
*skipped question* 32

Which of the following areas would you most like to see become more sustainable on campus? (Select the three most important to you.)

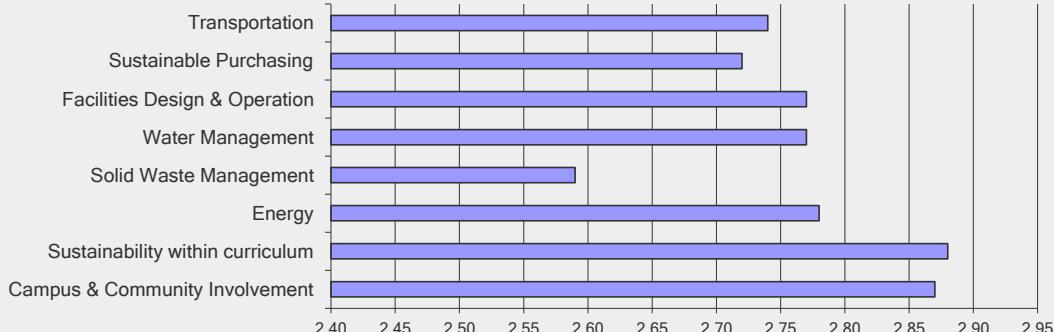


**Faculty, Administration & Staff Sustainability Survey**

How sustainable do you think your campus or facility is in each of the following areas? If you are unsure of what a category entails please see the question above, which provides examples.

Answer Options	Very poor	Poor	Neutral	Good	Great	Rating Average	Response Count
Campus & Community Involvement	11	44	76	38	3	2.87	172
Sustainability within curriculum	12	30	98	31	1	2.88	172
Energy	13	45	78	34	0	2.78	170
Solid Waste Management	26	44	73	26	0	2.59	169
Water Management	14	43	82	30	1	2.77	170
Facilities Design & Operation	21	38	72	35	3	2.77	169
Sustainable Purchasing	13	41	97	18	1	2.72	170
Transportation	20	36	82	30	1	2.74	169
					<i>answered question</i>		176
					<i>skipped question</i>		27

How sustainable do you think your campus or facility is in each of the following areas? If you are unsure of what a category entails please see the question above, which provides examples.

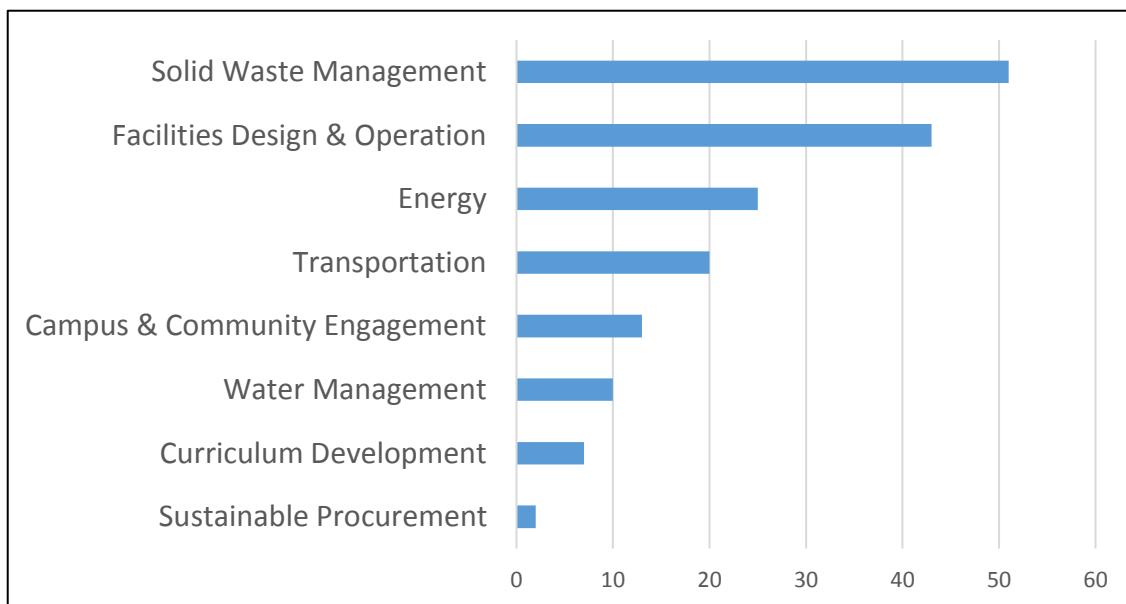


## Faculty, Administration & Staff Sustainability Survey

What specific sustainability measures or programs would you like to see at your campus, facility, or district-wide? Please list all ideas that come to mind.

Answer Options	Response Count
	100
<i>answered question</i>	100
<i>skipped question</i>	103

Areas of Sustainability Mentioned	Response Count
Sustainable Procurement	2
Curriculum Development	7
Water Management	10
Campus & Community Engagement	13
Transportation	20
Energy	25
Facilities Design & Operation	43
Solid Waste Management	51



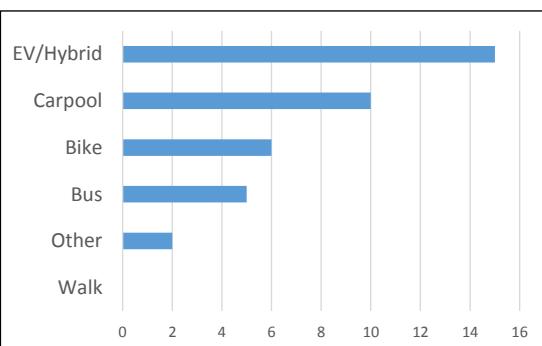
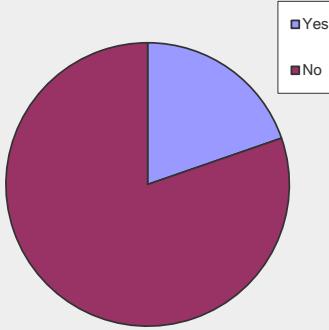
## Faculty, Administration & Staff Sustainability Survey

Do you ever use alternate modes of transportation to travel to or from your campus or facility? (i.e. bus, bike, electric/ hybrid vehicle)

Answer Options	Response Percent	Response Count
Yes	19.7%	34
No	80.3%	139
If yes, please elaborate in the space below.		37
<i>answered question</i>		173
<i>skipped question</i>		30

Alternative Modes of Transportation Mentioned	Count
Walk	0
Other	2
Bus	5
Bike	6
Carpool	10
EV/Hybrid	15

Do you ever use alternate modes of transportation to travel to or from your campus or facility? (i.e. bus, bike, electric/ hybrid vehicle)

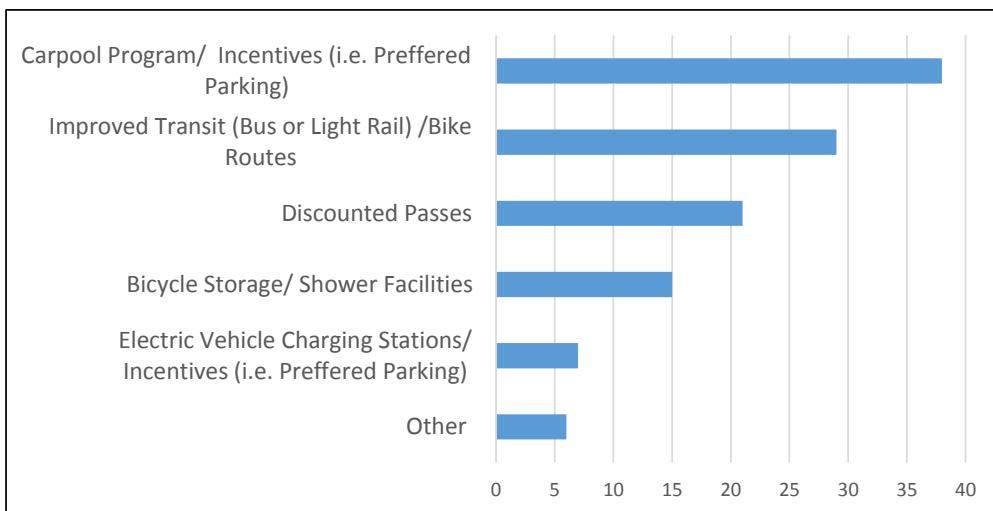


## Faculty, Administration & Staff Sustainability Survey

What programs or changes would encourage you to use or increase your use of alternative transportation to and from your campus or facility? (i.e. discounted bus pass, improved bus routes and frequency, better bike storage, carpool program)

Answer Options	Response Count
	117
<i>answered question</i>	117
<i>skipped question</i>	86

Category	Count
Other	6
Electric Vehicle Charging Stations/ Incentives (i.e. Preferred Parking)	7
Bicycle Storage/ Shower Facilities	15
Discounted Passes	21
Improved Transit (Bus or Light Rail) /Bike Routes	29
Carpool Program/ Incentives (i.e. Preferred Parking)	38

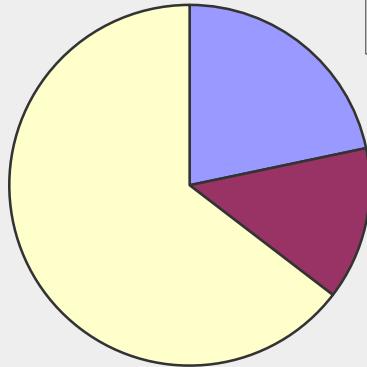


## Faculty, Administration & Staff Sustainability Survey

If you are a faculty member, do you integrate sustainability into your curriculum or promote sustainability within the classroom?

Answer Options	Response Percent	Response Count
Yes	21.7%	35
No	13.7%	22
N/A	64.6%	104
If yes, what is the course name?		29
	<i>answered question</i>	161
	<i>skipped question</i>	42

If you are a faculty member, do you integrate sustainability into your curriculum or promote sustainability within the classroom?

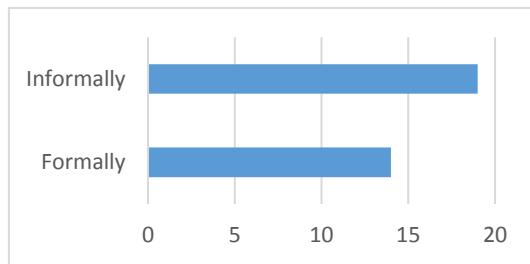


## Faculty, Administration & Staff Sustainability Survey

Please explain the sustainability practice(s) and/or coursework you mentioned in Q7. Are they formally (included in syllabus) or informally integrated within the classroom?

Answer Options	Response Count
	32
<i>answered question</i>	32
<i>skipped question</i>	171

Category	Count
Formally	14
Informally	19

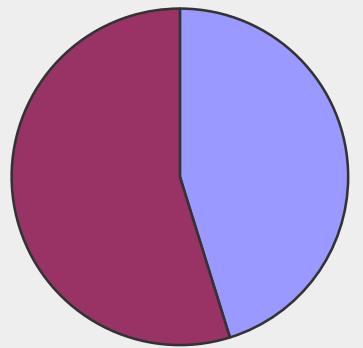


## Faculty, Administration & Staff Sustainability Survey

Would you be willing to share the ways in which you have integrated sustainability in the classroom with other faculty in an effort to promote sustainability throughout the district

Answer Options	Response Percent	Response Count
Yes	45.2%	14
No	54.8%	17
If yes, please provide your name and email address below.		9
<i>answered question</i>		31
<i>skipped question</i>		172

Would you be willing to share the ways in which you have integrated sustainability in the classroom with other faculty in an effort to promote sustainability throughout the district and across disciplines?



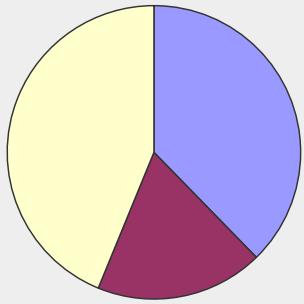
Yes  
 No

## Faculty, Administration & Staff Sustainability Survey

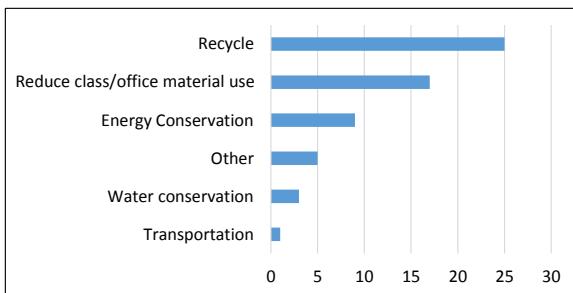
**Do you integrate sustainability into your management/ administrative position and/or responsibilities?**

Answer Options	Response Percent	Respon se
Yes	37.7%	61
No	18.5%	30
N/A	43.8%	71
If yes, please elaborate in the space below.		44
	<i>answered question</i>	<b>162</b>
	<i>skipped question</i>	<b>41</b>

**Do you integrate sustainability into your management/ administrative position and/or responsibilities?**



Category	Count
Transportation	1
Water conservation	3
Other	5
Energy Conservation	9
Reduce class/office material use	17
Recycle	25

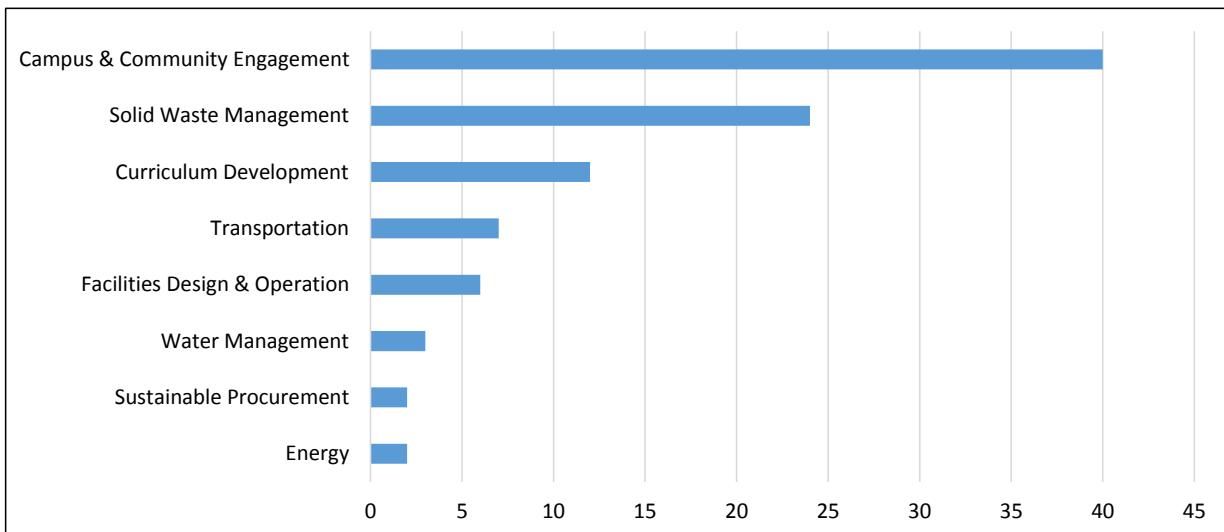


## Faculty, Administration & Staff Sustainability Survey

What could the administration, faculty, or staff do to help promote sustainability among students, on campus, and as a district?

Answer Options	Response Count
	102
<i>answered question</i>	102
<i>skipped question</i>	101

Areas of Sustainability Mentioned	Count
Energy	2
Sustainable Procurement	2
Water Management	3
Facilities Design & Operation	6
Transportation	7
Curriculum Development	12
Solid Waste Management	24
Campus & Community Engagement	40

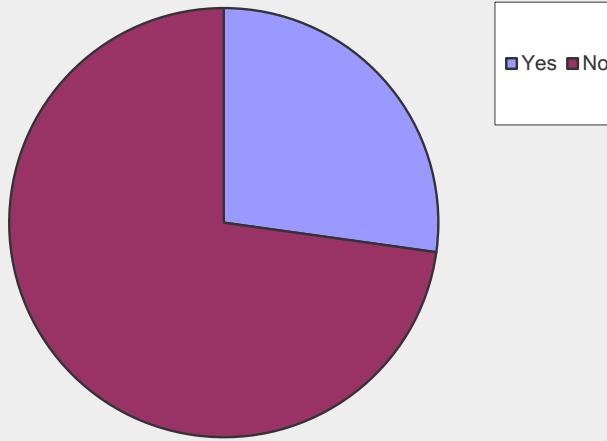


## Faculty, Administration & Staff Sustainability Survey

Would you like to be involved in a committee of students, faculty, classified staff, and administrators to help make the district more sustainable?

Answer Options	Response Percent	Response Count
Yes	27.2%	40
No	72.8%	107
If yes, please provide your name and email address below.		34
	<i>answered question</i>	147
	<i>skipped question</i>	56

Would you like to be involved in a committee of students, faculty, classified staff, and administrators to help make the district more sustainable?

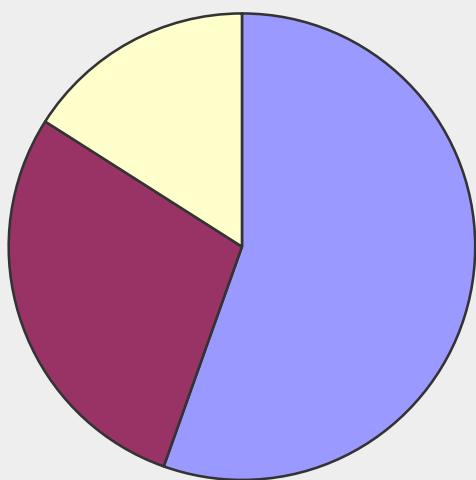


## Student Sustainability Survey

### Which college do you attend?

Answer Options	Response Percent	Response Count
Santa Ana College	55.5%	406
Santiago Canyon College	28.6%	209
Both	16.0%	117
	<i>answered question</i>	732
	<i>skipped question</i>	0

### Which college do you attend?



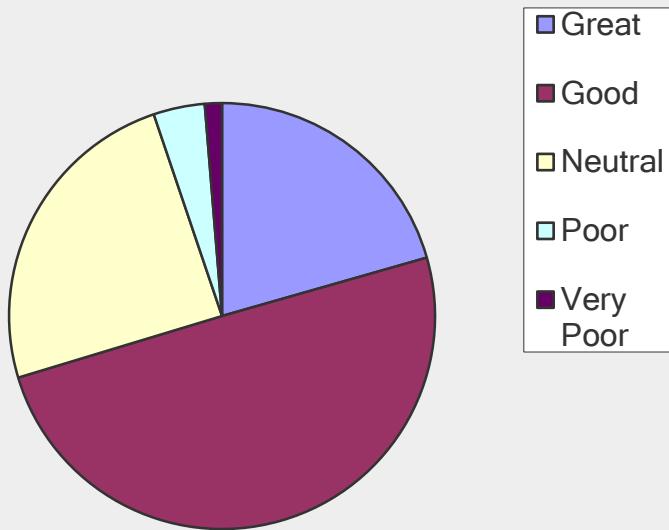
■ Santa Ana College  
■ Santiago Canyon College  
□ Both

## Student Sustainability Survey

Overall, how would you rate the level of sustainability on campus?

Answer Options	Response Percent	Response Count
Great	20.6%	148
Good	49.8%	358
Neutral	24.5%	176
Poor	3.9%	28
Very Poor	1.3%	9
<i>answered question</i>		719
<i>skipped question</i>		13

Overall, how would you rate the level of sustainability on campus?

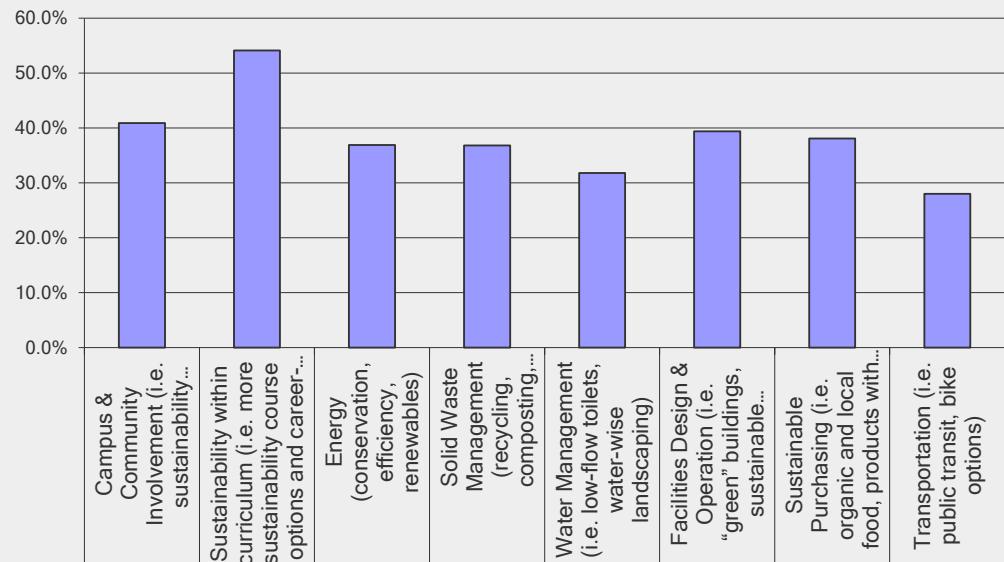


## Student Sustainability Survey

Which of the following areas would you most like to see become more sustainable on campus? (Select the three most important to you.)

Answer Options	Response Percent	Response Count
& Campus & Community Involvement (i.e. sustainability events, volunteer days)	40.9%	246
Sustainability within curriculum (i.e. more sustainability course options and career-oriented programs)	54.1%	325
Energy (conservation, efficiency, renewables)	36.9%	222
Solid Waste Management (recycling, composting, reduction, reuse)	36.8%	221
Water Management (i.e. low-flow toilets, water-wise landscaping)	31.8%	191
Facilities Design & Operation (i.e. “green” buildings, sustainable landscaping)	39.4%	237
Sustainable Purchasing (i.e. organic and local food, products with recycled content)	38.1%	229
Transportation (i.e. public transit, bike options)	28.0%	168
Other (please specify)		30
<i>answered question</i>		601
<i>skipped question</i>		131

Which of the following areas would you most like to see become more sustainable on campus? (Select the three most important to you.)

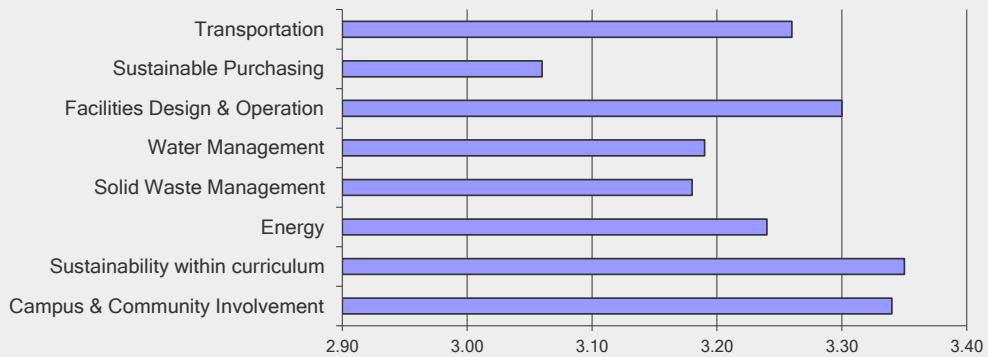


**Student Sustainability Survey**

How sustainable do you think campus is in each of the following areas? If you are unsure of what a category entails please see the question above, which provides examples.

Answer Options	Very poor	Poor	Neutral	Good	Great	Rating Average	Response Count
Campus & Community Involvement	17	67	269	203	53	3.34	609
Sustainability within curriculum	17	86	229	212	61	3.35	605
Energy	13	99	267	181	44	3.24	604
Solid Waste Management	26	93	269	176	39	3.18	603
Water Management	25	91	274	175	41	3.19	606
Facilities Design & Operation	19	94	239	192	60	3.30	604
Sustainable Purchasing	37	108	276	144	36	3.06	601
Transportation	18	79	284	171	51	3.26	603
						<i>answered question</i>	<b>616</b>
						<i>skipped question</i>	<b>116</b>

How sustainable do you think campus is in each of the following areas? If you are unsure of what a category entails please see the question above, which provides examples.



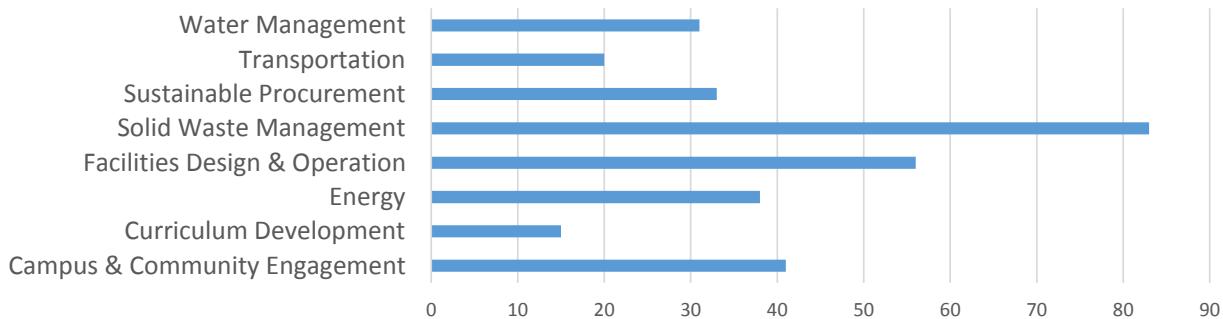
## Student Sustainability Survey

What specific sustainability measures or programs would you like to see on campus? Please list all ideas that come to mind.

Answer Options	Response Count
<i>answered question</i>	296
<i>skipped question</i>	436

Areas of Sustainability	Response Count
Campus & Community Engagement	41
Curriculum Development	15
Energy	38
Facilities Design & Operation	56
Solid Waste Management	83
Sustainable Procurement	33
Transportation	20
Water Management	31

Student Comments Per Category

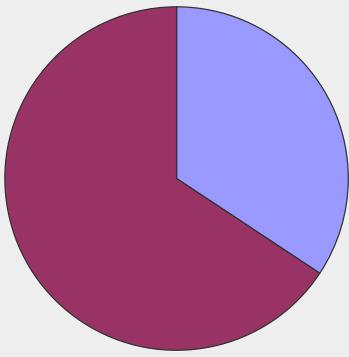
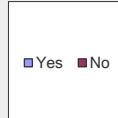


### Student Sustainability Survey

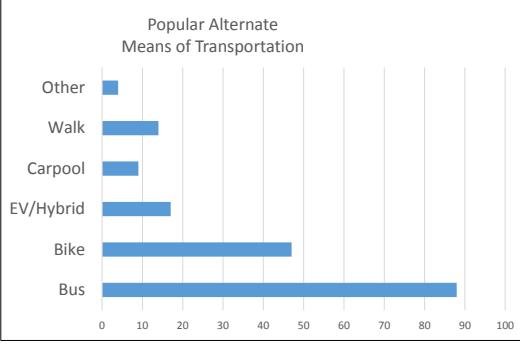
**Do you ever use alternate modes of transportation to travel to or from campus? (i.e. bus, bike, electric/ hybrid vehicle)**

Answer Options	Response Percent	Response Count
Yes	34.3%	199
No	65.7%	381
If yes, please elaborate in the space below.		160
<i>answered question</i>	<b>580</b>	
<i>skipped question</i>		<b>152</b>

**Do you ever use alternate modes of transportation to travel to or from campus?  
(i.e. bus, bike, electric/ hybrid vehicle)**



Category	Count
Bus	88
Bike	47
EV/Hybrid	17
Carpool	9
Walk	14
Other	4

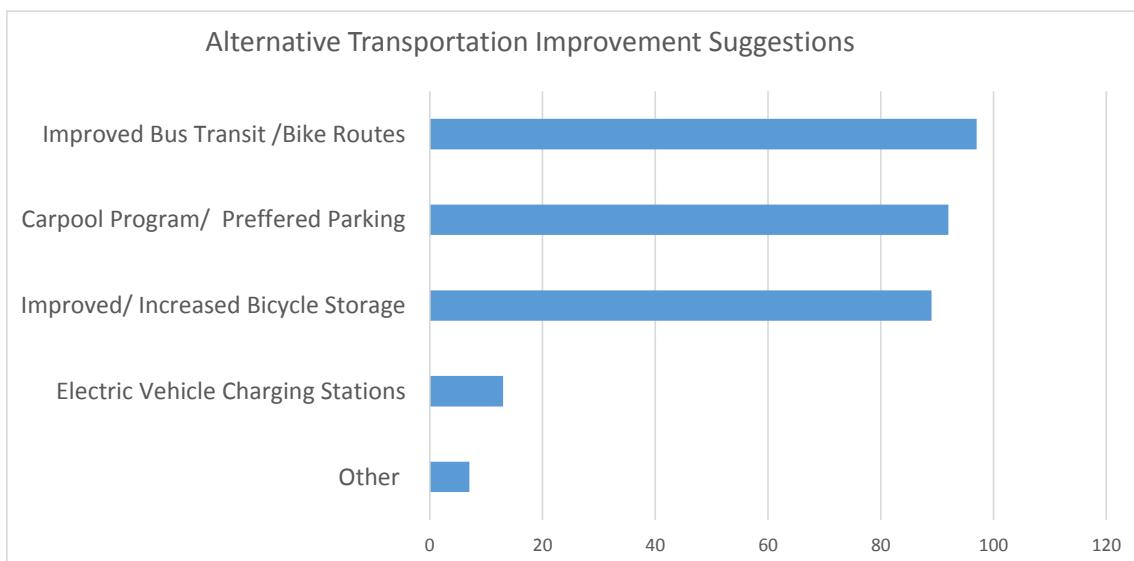


## Student Sustainability Survey

What programs or changes would encourage you to use or increase your use of alternative transportation to and from your campus or facility? (i.e. discounted bus pass, improved bus routes and frequency, better bike storage, carpool program)

Answer Options	Response Count
	375
<i>answered question</i>	<b>375</b>
<i>skipped question</i>	357

Category	Count
Other	7
Electric Vehicle Charging Stations	13
Improved/ Increased Bicycle Storage	89
Carpool Program/ Preferred Parking	92
Improved Bus Transit /Bike Routes	97
Discounted Transit Pass/ Incentives	152

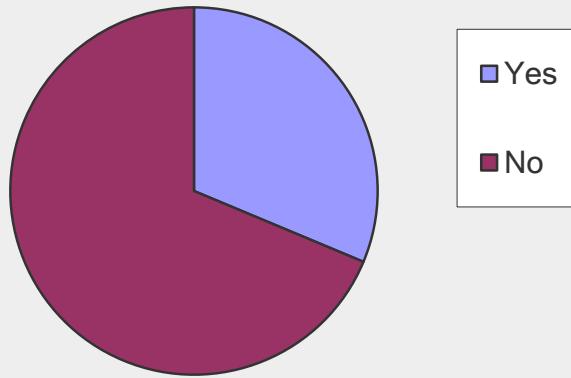


## Student Sustainability Survey

Are interested in finding out more about sustainability on campus and how to get involved?

Answer Options	Response Percent	Response Count
Yes	31.3%	177
No	68.7%	388
If yes, please provide your name and email address below.		121
<i>answered question</i>		565
<i>skipped question</i>		167

Are interested in finding out more about sustainability on campus and how to get involved?



**Appendix 3**  
**2014 Santa Ana College Sustainapalooza Student Input**



**Student Sustainability Suggestions**  
**Santa Ana College - Sustain-a-Palooza Event**  
**4/23/2014**

Topic	Suggestion	Count	Total
Waste	School-wide recycling program, recycling cans next to all trash cans and in every classroom, on campus recycling center	15	26
	Trash cans by parking lots	1	
	Eliminate usage of plastic bags on campus (ie college stores)	1	
	Compost program	5	
	Hold reoccurring volunteer days focused on restoring/ cleaning up local environment/ trash pick-up on campus	2	
	More cigarette trash disposal	1	
	Solar powered trash compactors	1	
Water	Conserve water in school experiments, like chemistry labs (dry labs instead)	2	25
	Provide filtered water (hot and cold) for drinking and instant food; more water fountains	12	
	Waterless urinals	1	
	Reclaimed water for irrigation and toilets	2	
	Hand sensed faucets; Eliminate water flowing unnecessarily	2	
	More efficient restrooms	3	
	Establish culture of water conservation by educating campus community	1	
Energy	Water wise landscaping	2	21
	Renewable energy generation on campus	7	
	Solar powered outlets	1	
	Energy efficient lighting, more natural light	5	
	Raise AC set points (often too cold in buildings), thermally efficient buildings, solar powered AC, turn off AC during winter	6	
	Turn off computers at night	1	
	Outfit gym with equipment to harness Kinetic Energy	1	
Transportation	Carpool program- created/ facilitated within the classroom; reward those who carpool	4	15
	Fuel-efficient maintenance/ campus vehicles	1	
	Better public transit to and from campus / Student pass program / College Shuttle Bus	5	
	More parking so you don't waste gas going around the lot several times	3	
	Better bike racks, conducive to safer bike locking	1	
Landscaping	Outfit parking with equipment to harness kinetic energy	1	14
	Plant more trees and flowers; campus tree-planting project	7	
	More gardens like Coastkeepers, student gardens, organic gardens	3	
	Shaded outdoor study area	1	
	More native California plants on campus/ desert landscaping	2	
Curriculum/ Student Involvement	Campus/ community garden; harvest fruit and vegetables	1	10
	More sustainability lectures and classes/ regular documentary screenings - knowledge and awareness are going to be the largest contributing factors to the sustainability of our planet	2	
	Hold student events such as green day, hiking trips, ocean clean ups	3	
	Sustainability reward program - honor/celebrate those who are making a difference!	1	
	Paperless classes : Do not require students to print notes/capacity to submit more homework online	3	
Procurement (Food and Products)	Contribute to the local community through course projects or field trips/ volunteer days	1	16
	Organic/ healthier food options on campus	6	
	Re-evaluate/ eliminate contracts with Pepsi/Sysco	1	
	Host farmer's market on campus	1	
	Recycled/ hemp product options	1	
	Community engagement through purchasing / Sustainable purchasing	2	
	Recycled toilet paper and paper towels (from recycled materials)	2	
	Used materials repurposing	1	
Reduce use of plastic containers		1	
No flyers! Use a screen or teleprompter attached to smart code reader for flyer download		1	
		Total	127



# PROP 39

## PROJECT UPDATES



Sustainable RSCCD  
Committee Meeting  
September 17, 2014



Santiago  
Canyon  
College



## BACKGROUND

- ❖ Proposition 39: CA Clean Energy Jobs Act passed November 2012
- ❖ In 2013-2014 Budget proposed \$51 million to community colleges to support energy efficiency projects and workforce development training.
- ❖ Potentially 3 years of additional funding may be available
- ❖ RSCCD offers educational programs in approximately 1,251,353 sq. ft. of facilities.
- ❖ District-wide usage is approximately 15 million kWh/yr
- ❖ Approx. \$2,000,000/annually at a blended rate of about \$.14/kWh
- ❖ Prop 39 Implementation Guidelines October 2013
- ❖ Partnerships with CCC/IOU-District-Utilities



## PROP 39 PROJECTS

### Year I

- ❖ SAC: LED Lighting Upgrade (interior and exterior)
- ❖ SCC: Science Building Retro-Commissioning
- ❖ Total Allocation to District: \$1,017,539 (Year 2013-2014)



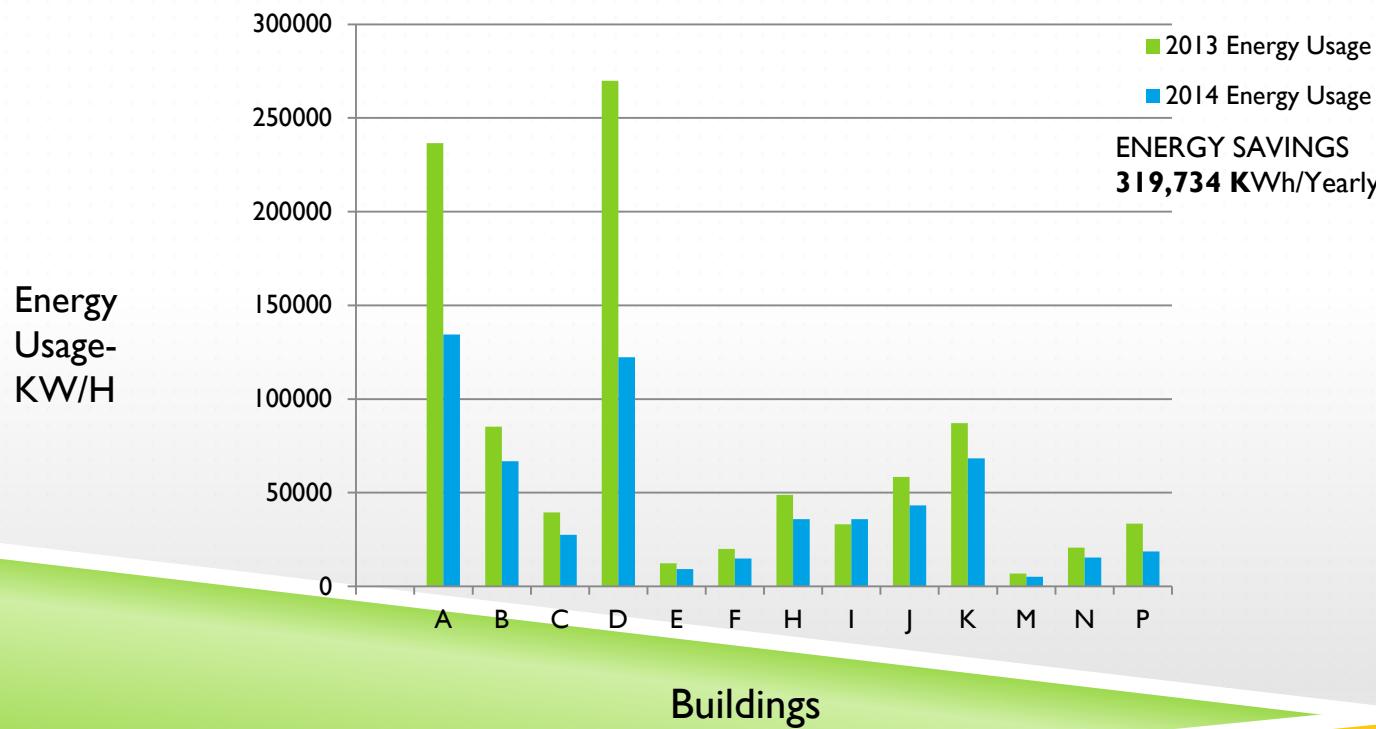
## SAC LED LIGHTING UPGRADE

### Project Summary:

- ❖ Replace fluorescent and incandescent lights with LED retrofit kits for all applicable interior lights and replace exterior parking lights with new LED fixtures.
- ❖ Over 30,000 light bulbs replaced throughout approximately 14 buildings.
- ❖ 50 exterior parking lot lights replaced.
- ❖ Exterior replacement of high pressure sodium and metal halide fixtures in 4 parking lots.
- ❖ 50 exterior parking lot lights replaced.
- ❖ Retrofit all 2x2 and 2x4 troffer style light fixtures with retrofit kits.
- ❖ Only ballast and bulb removed replaced with LED strips and LED driver (power).
- ❖ Project completed August 2014.
- ❖ Project currently in measurement and verification phase.



# SAC LED INTERIOR/EXTERIOR LIGHTING UPGRADE PROJECT ENERGY SAVINGS





# SAC LED INTERIOR/EXTERIOR LIGHTING UPGRADE

## DUNLAP HALL





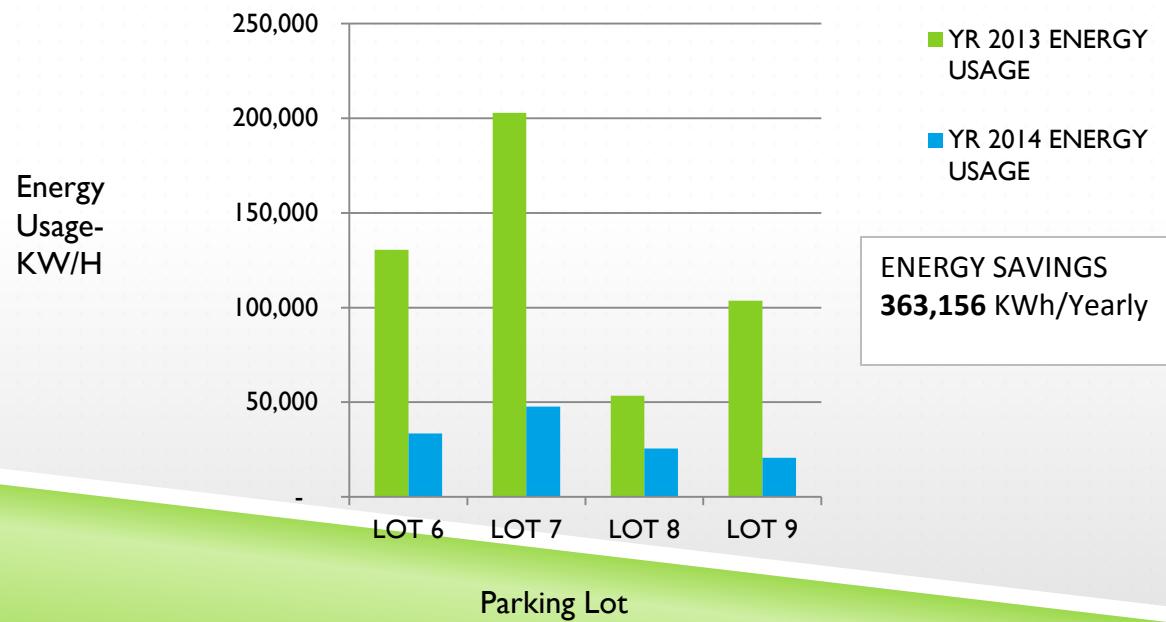
# SAC LED INTERIOR/EXTERIOR LIGHTING UPGRADE

## NEALLY LIBRARY





# SAC LED PARKING LOTS LIGHTING UPGRADE ENERGY SAVINGS





# SAC LED PARKING LOTS LIGHTING UPGRADE

## PARKING LOT





## SCC SCIENCE & MATH BUILDING RCx

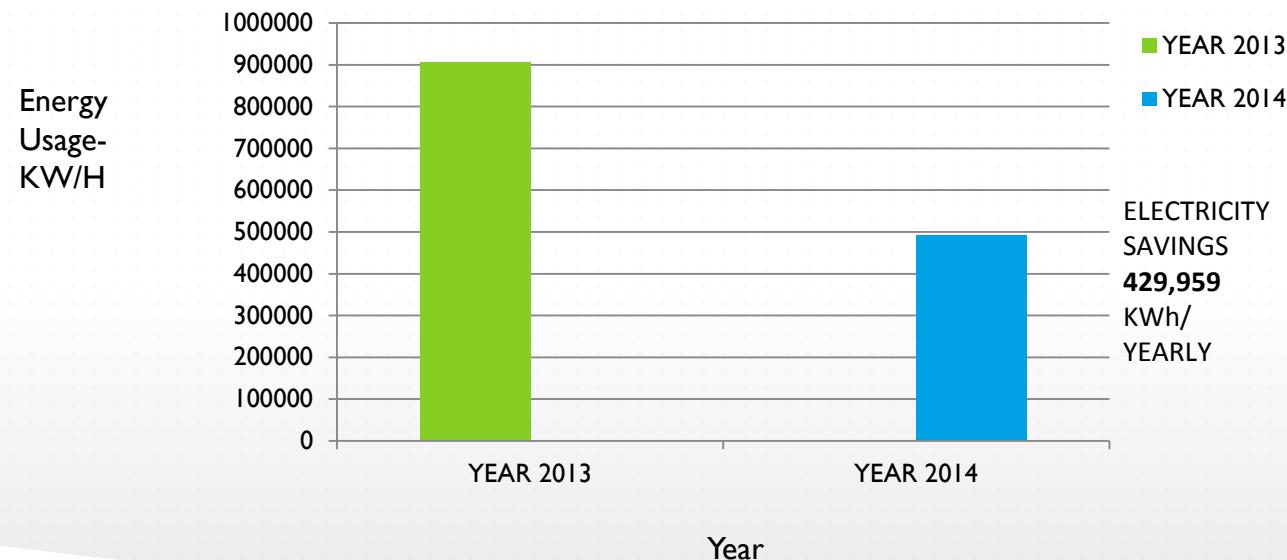
### 8 Energy Efficiency Measure Categories of Work

- ❖ Occupancy Sensor Based Demand Control Ventilation
- ❖ Lab Exhaust Fan Controls
- ❖ Variable Speed Exhaust Fan Operation
- ❖ Demand Control Ventilation
- ❖ Fan Static Pressure Reset
- ❖ Equipment Scheduling
- ❖ Hot Water Boilers Staging and Shutdown
- ❖ EMS System Replacement
- ❖ Project completed in August 2014
- ❖ Project currently in measurement and verification phase



# SCC SCIENCE CENTER RCx

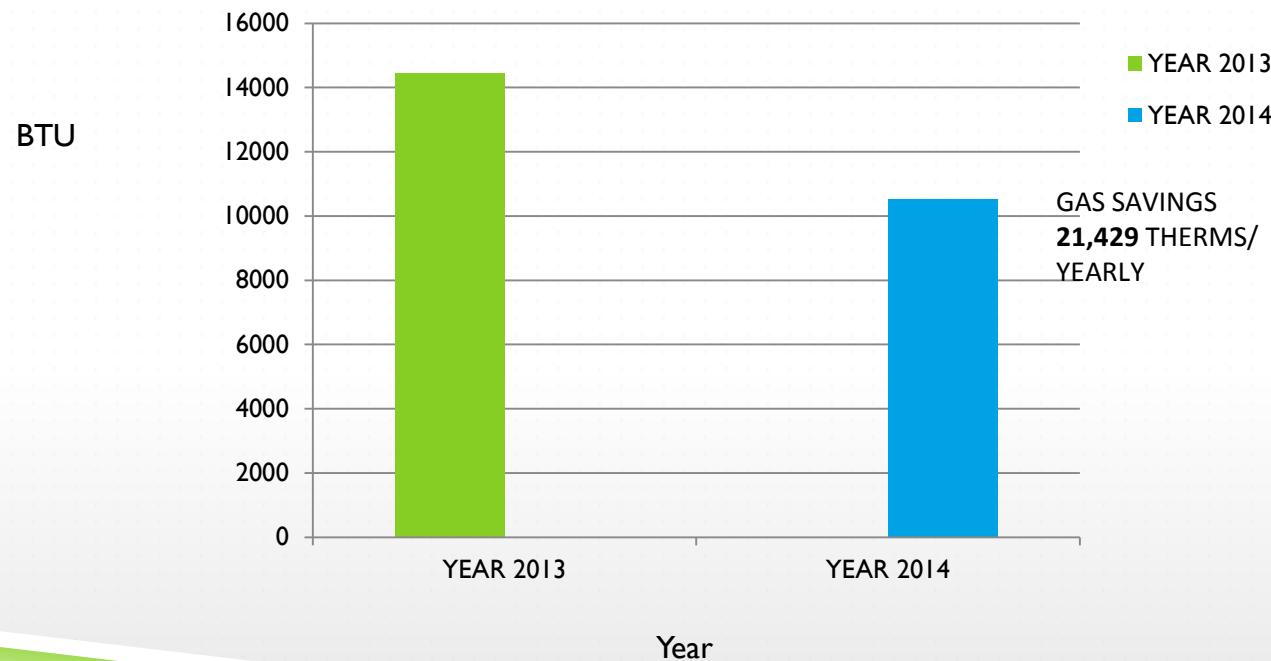
## ELECTRICITY SAVINGS





# SCC SCIENCE CENTER RCx

## GAS SAVINGS





## SCC SCIENCE CENTER RCx



Controller, VFD Panel and Boiler Piping



## Year 2 Prop 39 Projects

### Santiago Canyon College

- ❖ Replace interior lights with LED lights
- ❖ Replace exterior lights with LED lights

### District Office

- ❖ Replace interior lights with LED lights
- ❖ Currently pending bid award in upcoming Board meeting



## Other Future Energy Saving Projects

### Santa Ana College

- ❖ Central Plant
- ❖ Campus wide Monitoring Base Commissioning
- ❖ Campus wide Replacement of Premium Efficiency Motors & Fan Wheels
- ❖ Campus wide Energy Management System
- ❖ LED projects at Digital Media Center
- ❖ LED projects at Orange County Regional Sheriff Training Center

### Santiago Canyon College

- ❖ Campus wide Monitoring Base Commissioning
- ❖ Central Plant
- ❖ Building D Chiller and Energy Management System upgrades



## LED Interesting Facts

- ❖ LED bulbs have a useful life of 100,000 hours – that is a life span of more than 12 years if run 24 hours a day, seven days a week
- ❖ LEDs use 75% less energy to produce light
- ❖ LEDs generate less heat when producing light, therefore HVAC systems run more efficiently (no need to cool down heat generated from incandescent lighting)
- ❖ LEDs contain no mercury, therefore have a smaller environmental impact
- ❖ Disposal of fluorescent tubes costs about \$3.50 each - removal of 30,000 bulbs would be \$105,000. Removal of 30,000 LED would cost \$0.80
- ❖ LEDs are “instant-on”, they achieve optimal brightness immediately