SAN JOSÉ STATE UNIVERSITY

SUSTAINABILITY

2016 REPORT

www.sjsu.edu/sustainability

dwight•bentel•hall
communications

President's message

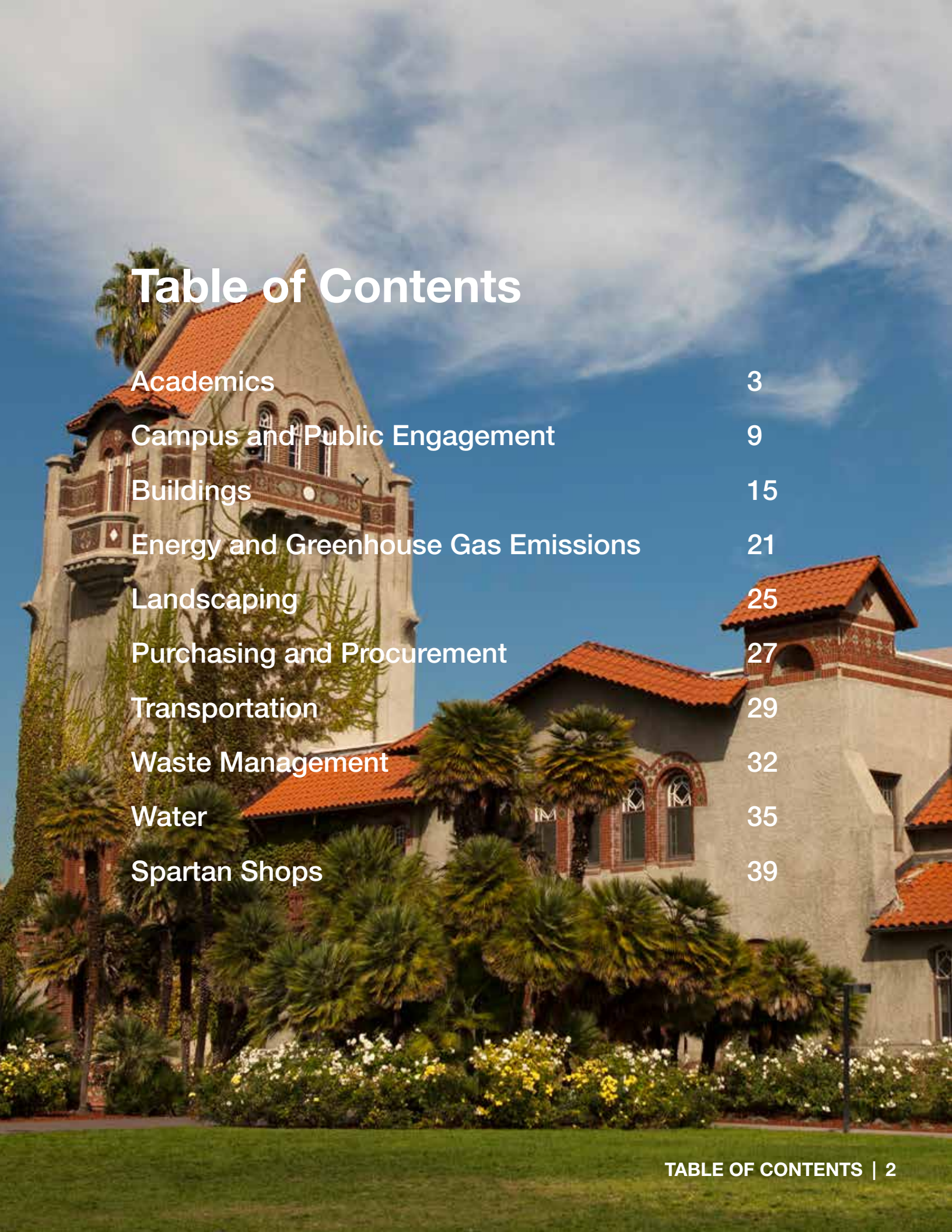
We have shown a commitment to sustainability on our campus that continues to grow each year. By pioneering innovations, we are at the forefront of energy efficiency and water conservation. We are setting an example for our students, faculty, staff, administrators, local community members and our industry partners.

One of our most important efforts is educating our students and providing resources that support research around these issues. We are striving to incorporate these topics into the curriculum so that students from all majors begin to think about how their actions affect the world around them, and this understanding will ultimately influence the decisions they make as leaders in our community upon their graduation. I am pleased to share that 78 percent of our academic departments offered courses that embed these topics into the curriculum in 2015-16 and at least half of our departments have faculty or students engaged in research that will enhance best practices regionally and globally.

The Sustainability Report 2016 highlights the strides SJSU has taken in the areas of academics, campus and public engagement, facilities, transportation, waste management, and energy and greenhouse gas emissions. Through the collaborative efforts of students, faculty, staff and administrators from multiple departments across campus, our campus is becoming a leader in sustainability and I look forward to watching our efforts expand in the future.

Sincerely,

Mary A. Papazian
President



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Academics

MAIN STRATEGIES

As part of the May 2016 "4 Pillars" student success plan, the Provost and Vice President of Student affairs are supporting the creation of three General Education Pathways for undergraduate students. These pathways focus on three areas: Sustainability, Creativity, and Global Citizenship.

The pathway structure and course options have been developed by a cross-university team that includes faculty and administrators. Planned implementation is within the next two academic years.

Additionally, the CSU's ‘Campus as a Living Lab’ Grant Program is a unique opportunity to partner faculty and facilities management staff in using the campus as a forum for the exploration of sustainability concepts and theories. The program aligns the California State University’s long-standing commitment to sustainability with the fundamental goal of preparing students for the workforce through integration of sustainability concepts into the curriculum. Participating campuses can receive funding for course redesign to support these efforts.

OBJECTIVES FOR 2020

- Ensure 10% or more of all courses offered by SJSU are sustainability courses and/ or courses that include sustainability
- Formalize the creation of one new sustainability-related and focused minors by AY ‘18-’19
- Increase faculty conducting research on sustainability to 18%
- Reinstate SJSU Academic Office of Sustainability and associated resources

ACCOMPLISHMENTS

Between the 2015-16 academic year, SJSU offered 341 sustainability-related or -focused courses in 50 out of 64 total academic departments (78%). The amount of offered courses has increased since the previous 2011 STARS Report. In addition, all academic colleges at the University offered at least one sustainability course.

Of the 9,047 SJSU students that graduated in AY 2015-16 with a bachelor or master's degree, 4,887 graduates were in a program with an identified sustainability learning outcome. In particular, the University offered three undergraduate degrees in Environmental Studies: Bachelor of Science, Bachelor of Arts, and Bachelor of Arts in preparation for teaching. Other sustainability-focused undergraduate degrees offered by the University include BS Meteorology with Concentration in Climate Change, BS Civil Engineering, BS Industrial Technology, BS Biological Sciences, BA Life Science, BA Earth Science, and BS Geology. Offered sustainability minors include Sustainable Water Resources, and Energy Policy and Green Building.

Graduate degrees, with sustainability focuses, offered by the University include: MS Environmental Studies, MA Biological Science, MS in Engineering with Emphasis in Green Technology, MS Engineering, MS Civil Engineering, MS Marine Science, MS Geology, and MS Urban Planning. Graduate minors include MS Biological Sciences with Concentration in Ecology and Evolution, MS in Urban Planning, and Specialization in Environmental Planning. SJSU promotes broadening student knowledge in sustainability by providing immersive opportunities in sustainability-focused educational study programs. The University offers a variety of Faculty-Led Programs (FLP); these student study abroad opportunities are designed and taught by SJSU professors and lasts between two to four weeks.

Of the 64 academic departments at SJSU, 34 departments (50%) included at least one faculty/staff that is actively pursuing and conducting research, have submitted research proposals, or have been awarded grants relating to sustainability. And of the 576 SJSU faculty/staff engaged in research, 89 are engaged in sustainability research (15%). Several SJSU faculty have received notable achievements in their sustainability research in recent years.

CAMPUS AS A LIVING LAB

The SJSU Campus as a Living Lab (CLL) Project developed nine total campus sustainability modules across three campuses; of which, three modules were developed and modeled after SJSU's campus features: (1) Central Energy Plant: Cogeneration & Cooling Towers (Energy Sustainability), (2) Dr. Martin Luther King, Jr. Library (Green Building), and (3) Sustainable Agriculture Garden (Organic Food). SJSU utilizes the campus infrastructures and operations to demonstrate advancement in campus sustainability, in areas such as air & climate, buildings, dining services/food, energy, grounds, transportation, waste, water, coordination, planning & governance, public engagement, and others to encourage multidisciplinary student learning, applied research, and/or practical work.

Central Energy Plant: Cogeneration & Cooling Towers

`Dr. Martin Luther King, Jr. Library

Sustainable Agriculture Garden

SJSU'S ORGANIZED RESEARCH UNIT (ORU)

SJSU's Organized Research Unit (ORU) supports sustainability research for both students and faculty. There are over 30 research units and facilities that partner industry with academic research to enhance technology, encourage development of new products, and improve education through dissemination of research, perform public services, and provide special training. A few highlighted ORUs are listed below:

- Center for the Development of Recycling (CDR): database for recycling information and applied waste management; research to increase the scope and availability of recycling and increase effectiveness of recycling as a solid waste management strategy; projects: (1) Recycling & Reuse Study of the 300 Largest Business in San Jose; (2) San Jose Hotel Waste Reduction & Recycling Study.

- GreenHouse facilities: support plant biology instruction and research; three climate-controlled greenhouses and open-air facility house with living plant collections; used by students and faculty for conducting experiments/research.

- Environmental Resource Center (ERC): serves as an environmental library; organizes SJSU's annual Earth Day celebration; conducts other campus projects and events that promote sustainability.

- Institute for Metropolitan Studies (IMS): Facilitates the exchange of knowledge and expertise on urban problems and critical matters related to metropolitan development; prepared a manual with guidelines for incorporating watershed protection measures in trail development in Santa Clara County.

- Mineta Transportation Institute (MTI): focuses on international surface transportation policy issues; projects: (1) Emergency Preparation in Transportation research project includes disaster preparation studies as related to natural catastrophes (such as flooding, mud slides and chemical spills); (2) Spartan Superhighway project headed up by students who are currently prototyping solar-powered Alternative Transit Network (ATN).

- Moss Landing Marine Laboratories (MLML): administers the Master of Science in marine science program for California State Universities; is an outfitted marine operations; known for hands-on, field-oriented approach which places students, faculty, researchers, and staff at the frontiers of marine science worldwide where discoveries are being made.

SPARTAN SUPERWAY PROJECT

The Spartan Superway Project is an innovation unique to SJSU; the project addresses not only curriculum, research, and campus engagement in sustainability but also energy, transportation, and climate change. The project focuses on two efforts: (1) develop a new curriculum stem in sustainable mobility within departments, and (2) drum up industry projects for a newly conceived interdisciplinary senior project program in the College of Engineering. Students play a vital role in the creative development of the automated transit network (ATN); the project exposes students to problems and helps them gain industry experiences through hands-on training and education. The program also involved the participation of students across the globe. In summer 2015, students from Brazil, Sweden, South Korea, and France were part of the International Summer Program.

Students Danny Ornellas, Carl Tubis, and Jack Irwin working on the track.

Congressman Mike Honda visits the team at Maker Faire.

Students Jared Besson and Cheng-Hisen Liu setting up the scale model track.

Team mounting the bogie on the track.

Team mounting the cabin on the bogie.

THE GREEN NINJA PROJECT

The National Science Foundation (NSF) awarded an interdisciplinary research team from SJSU with $1.1 million to design and implement the "Green Ninja Film Academy (GENIE)," an intervention that leverages well-established research on motivation to encourage student interest and engagement in the STEM-related field of climate change. The project is aimed at scientifically-underserved middle school students who will be guided through a structured storytelling and filmmaking experience that builds competencies in science, engineering design, media technology, and communications.

During the three-year project, 60 teachers and at least 2,000 students will directly participate in the GENIE project, with additional participation from parents, friends, and teachers who attend the Green Ninja Film Festival. GENIE is also designed around helping teachers prepare to implement the Common Core and Next Generation Science standards using climate change as a context.

This program builds on the established Green Ninja Project, an SJSU initiative that develops media to inspire student interest in science and the environment. The principal investigators of the NSF grant are SJSU professors Eugene Cordero (Meteorology and Climate Science), David Chai (Animation/Illustration), Ellen Metzger (Geology and Science Ed), Grinell Smith (Elementary Education), and Elizabeth Walsh (Meteorology and Climate Science and Science Education).

PRIORITIES FOR 2017/2018

- Two SJSU faculty members are a part of a CSU task force aimed at creating a system-wide sustainability minor
- Provost's 2016 "4 Pillars" Student Success Plan includes creating an integrated-knowledge minor with a focus on sustainability
- Increase faculty participation in Campus as a Living Lab grant funding opportunities

Campus and Public Engagements

MAIN STRATEGIES

SJSU encourages the campus community to engage in sustainability and supports the students who serve as educators in peer-to-peer sustainability outreach ("Eco-Reps"). Of the 30,000 enrolled, degree-seeking students, a number of students choose to participate as Eco-Reps on campus.

The mission of the Environmental Resource Center (ERC) is to provide services in environmental awareness and education. It is also a pass/no pass credit class (ENVS 181). Although the ERC is an extension of the Environmental Studies Department, students from all majors are welcomed to enroll.

Students in the ERC receive semester-long training in environmental education and public outreach; students also gain skills in leadership and project management. Students learn to effectively manage projects by networking with contacts, planning event needs, and delegating responsibilities with other students in the organization. ERC students are important Eco-Reps that support the campus community in sustainability outreach and education.

Several SJSU networks promote students and employees to engage in community services:

- Community Engagement Collaborative (CEC): comprised of campus entities that promote, support, and oversee community engagement and service learning as their primary mission.
- Center for Community Learning and Leadership (CCLL): promotes service-learning, community engagement, internships civic learning; collaborating with faculty and students, and community organizations for academic advancement, professional enhancement, and serving the common good; all essential to the college experience.
- Cesar Chavez Community Action Center (CCCAC): established by Associated Students in July 2005, connects SJSU students with community service opportunities that deepen the educational experience while promoting the lifelong commitment to civic activism at the heart of the Cesar Chavez legacy.

- CommUniverCity (CUC): Established in 2005, CommUniverCity-San Jose is a partnership between the Five Wounds/Brookwood Terrace (FWBT) communities, San Jose State University, and the City of San Jose. CommUniverCity (CUC) helps build community by engaging residents and students in community-engaged learning projects that accomplish neighborhood-driven goals. In November 2015, the City and the University signed a memorandum of understanding to set aside $270,000 over the course of the three years for both organizations to work on projects of joint interest.

In 2014, the College of Engineering launched the EPICS (Engineering Projects in Community Services) program to design, build, and deploy systems that help solve engineering-based problems in educational organizations and within the local community. The EPICS model was developed by Purdue University and aims to reach out to community partners, building multi-year partnerships in areas such as human services, access and abilities, education and outreach, and the environment.

SJSU's Marketing Communications 199 course, which is a campus student agency, took on the Facilities Development and Operations department (FD&O) as a client to promote the sustainability program on campus. A team was assigned from the campus agency, Dwight Bentel & Hall Communications, that consisted of creatives, media, social and public relations members. A strategic plan was developed, overseen by faculty advisors, approved by FD&O, and then executed over a number of months. The project began in the Fall 2015 semester and was an ongoing awareness program for the following year.

ACCOMPLISHMENTS

Of the 31,183 total SJSU students, 8,410 are engaged in community service (27%). SJSU students have contributed 133,734 community service hours in the past year.

STARS

The Sustainability Tracking, Assessment & Rating System™ (STARS®) is a transparent, self-reporting framework for colleges and universities to measure their sustainability performance. STARS is intended to engage and recognize the full spectrum of colleges and universities—from community colleges to research universities, and from institutions just starting their sustainability programs to long-time campus sustainability leaders. STARS encompasses long-term sustainability goals for already high-achieving institutions as well as entry points of recognition for institutions that are taking first steps toward sustainability. San Jose State University earned the second highest rating, gold.

STARS is designed to:

- Provide a framework for understanding sustainability in all sectors of higher education.
- Enable meaningful comparisons over time and across institutions using a common set of measurements developed with broad participation from the international campus sustainability community.
- Create incentives for continual improvement toward sustainability.
- Facilitate information sharing about higher education sustainability practices and performance.
- Build a stronger, more diverse campus sustainability community.

AASHE STARS Gold Rating

COMMUNIVERCITY

During Winter and Spring of AY 2015-16, SJSU and the City of San Jose's Environmental Services Department, along with neighborhood leaders, worked together to combat illegal dumping. With Terraflex, an innovative smartphone application, University faculty and students developed a system for geotagging the locations, and types of, illegal dumping. Students and faculty in the Sociology and Environmental Studies Department also conducted door-to-door surveys and focus groups to better understand community awareness. The collected data gave City staff and management better insights and understandings of what was being dumped and, using the information, develop effective community outreach strategies. Overall, this joint project between the community, City staffs third party waste haulers, and SJSU's contribution reduced illegal dumping in key hotspot areas by 5-10% over the course of six months.

Growing Sustainably Project: Collaboration between Silicon Valley HealthCorps of the Health Trust, McKinley/Bonita Neighborhood Association, CommUniverCity, and San Jose State nutrition students to increase access to healthy food and fresh foods within a local neighborhood that lacks access to fresh produce markets. This was accomplished through a six-week long cooking and nutrition workshop, a series of gardening workshops, and a community garden celebration.

- Safe and Green Halloween: CommUniverCity annually hosts this neighborhood fair centered on safety and the environment. Residents learn about sustainable living, receive recycled Halloween costumes or make their own using recycled or reused materials, and connects the City with community members.

- Bringing Elementary Weather and Climate Change Education to the Classroom: SJSU Meteorology students conducted a number of hands-on demonstrations and workshops for a local afterschool program that used digital media, satellite imagery, posters, arts and crafts, and other mediums to demonstrate how climate change can affect the everyday lives of students, and also promotes an interest in science among low-income minority girls and boys.

PG&E STEP UP AND POWER DOWN CAMPAIGN

In 2016, a number of energy savings competitions were held in partnership with PG&E to help reduce energy through behavioral changes.

The “Sweet Goodnight” campaign was held in the Spartan Shops Administration offices and Clark Hall by encouraging occupants to turn off their desktop equipment before leaving for the day and to permanently instill these habits. These campaigns have measured that potential annual savings of 10,000 KWh.

The Student Housing Energy Challenge pitted each housing building against each other to see which building could save the most energy by turning off lights and equipment the occupants have control of. The month-long competition saved 73,000 kWh and hopefully built habits that each occupant continues to do.

RESTORE COYOTE CREEK (RCC) PROJECT

In April 2014, SJSU’s Center for Community Learning and Leadership (CCLL) established the Restore Coyote Creek (RCC) Project, funded by the Santa Clara Valley Water District, through forming a partnership with the Santa Clara County Creeks Coalition/Friends of the Coyote Creek Watershed. This brought a partner/liaison on campus in July who promoted creek restoration across various disciplines, recruiting hundreds of SJSU students and community members to participate in monthly creek clean-ups. Since the conception of this project, hundreds of tons of legacy trash have been removed from the creeks.

Step Up and Power Down

Coyote Creek volunteers

PRIORITIES FOR 2017/2018

We will continue to build awareness generated in last year's program. Measurable objectives include the number of students participating in programming events, the amount of energy and volume of water saved attributed to behavioral changes associated with campaigns, and the volume or weight of solid waste reduced attributed to behavioral changes associated with campaigns.

Engagement campaign includes following strategies:

1. Utilize an online presence to reach target audience
2. Combine efforts with the Environmental Resource Center (ERC) for Earth Day activities
3. Spread awareness of to be completed projects in 2015-2016-2017
4. Scholarship Sustainability Opportunity
5. Organize and lead campus water and waste reduction challenges
6. Facilities Development and Operations will recruit a Sustainability Coordinator to develop a campuswide sustainability message and to fully integrate that messaging into campus engagement, marketing, and public relations.

SJSU Campus Scene, 1955. A few years after this photo was taken, Gaylord Nelson graduated from SJSU with an Honorary Master of Arts and went on to found Earth Day in 1970.

Buildings

MAIN STRATEGIES

All new buildings at SJSU are designed and built in accordance with LEED (Leadership in Energy and Environmental Design), a program administered by the United States Green Building Council (USGBC). Buildings have the potential to earn platinum, gold, silver or certified status in one of four categories of standards. LEED participation is consistent with SJSU's commitment to sustainability and the fulfillment of EO987 and Assembly Bill 32 by incorporating our local geography in building design, minimizing operating costs, maximizing energy and water efficiency, and choosing materials and systems whose total life cycle, from manufacture to replacement, minimize environmental impacts.

LEED STANDARDS

SJSU has implemented an energy efficiency design strategy for all new construction. Buildings will be designed and built with new, more efficient variable air volume HVAC systems. Staged systems and CO2 controls are installed to respond to varying occupancy. Buildings will have energy-efficient fluorescent and LED lighting and controls. Building management systems and metering help to monitor and improve performance. Options for solar photovoltaic or other emerging technologies are evaluated for each new project.

SJSU has also implemented a water and material efficiency strategy for new construction. The use of drought-resistant, native plants and recycled water irrigation are used for all new landscape projects. Low-water-use fixtures are used, and piping for municipal recycled water for non-potable uses is installed.

OBJECTIVES FOR 2030

- Double energy efficiency of state owned buildings by 2030
- Buildings designed after 2025 will be designed net zero.
- All new buildings to meet LEED Gold or higher standards effective 2014, LEED Silver since 2004.

ACCOMPLISHMENTS

STUDENT UNION

The Student Union Expansion was completed in fall 2015. The entire Student Union building has achieved LEED Gold Certification. 125kV solar photovoltaic (PV) panels on the roof are estimated to generate 100,000 kWh annually. This will save approximately $1.4 million in utility costs throughout the solar panels' 20-year lifespan.

The Student Union Expansion was completed with an estimated PG&E incentive payment of $550,000. Its mechanical design is 20% more efficient than Title 24 requires, amounting to energy savings estimated at $210,000 annually. A cool roof and water efficient fixtures have been installed. Dual plumbing was also installed for recycled water use in toilets, for an estimated annual water savings of 5.5 million gallons.

Student Union

Student Union

WATER EFFICIENCY

- Storm water quality to limit disruption and pollution of natural water flows
- Reduced potable water consumption by 92% through the installation of
  - low-flow water closets
  - low-flow urinals
  - ultra-low-flow lavatories
  - low-flow kitchen sinks
- 100% of landscape irrigation is supplied by non-potable treated water
- The use of drought-tolerant California native plants uses less irrigation water
- Water use reduction by 40%

ENERGY

- Project achieved an overall 33.3% energy cost savings
- 25% reduction in electricity use
- Roof top solar panels generate 125 kW of electricity
- Higher energy efficiency with the use of LED lights
- Sensor lighting and dimming controls
- Natural lighting throughout the building

INDOOR ENVIRONMENTAL AIR QUALITY

- The Student Union is enhancing the indoor air quality through providing adequate ventilation and by monitoring outdoor air delivery
- The Student Union building is designed to stay within a comfortable range of air temperature, air speed, radiant temperature, and humidity during various weather conditions
- Carbon dioxide concentrations are monitored and when conditions vary by 10% or more the equipment generates an alarm
- The Student Union uses environmentally-friendly cleaning materials and procedures, further enhancing their indoor air quality

INNOVATION AND DESIGN

- Green Housekeeping by using all green products
- Green Education program through case study, power point, tour guides, and brochures
- Access to Public Transportation

STUDENT WELLNESS CENTER

The project is a new three story 52,000 SF building located on 7th Street and Paseo de San Carlos. The building will house the Student Health Center, Counseling Services, and the Wellness Center. The Student Wellness Center is designed to LEED Silver standards. Its mechanical design is 20% more efficient than Title 24 requires. A cool roof and water efficient fixtures have been installed. The building will be plumbed for recycled water in toilets, saving an estimated 1.3 million gallons of water a year.

Student Health and Wellness Buildilng

Student Health and Wellness Building

Student Health and Wellness Building

SPARTAN COMPLEX

Spartan Complex (SPX) was completed in Fall 2015 and designed to LEED Silver standards. The primary project objectives are to upgrade the existing structural system of the complex to be concurrent with the current building codes, correct ADA deficiencies, correct fire life safety deficiencies, construct new infrastructure, make program modifications, and hazmat abatement. SPX is plumbed for recycled water and is estimated to save 5.5 million gallons of potable water annually.

Spartan Complex

CAMPUS VILLAGE 2

Campus Village 2 was completed in Fall 2016 and designed to LEED Silver standards at the corner of 9th Street and Paseo de San Carlos. The new building houses up to 850 beds, common study rooms, lounge, multi-purpose room, recreation space, and other support spaces. It is expected to be a ten story high rise building.

Campus Village 2

Campus Village 2

PRIORITIES FOR 2017/2018

STUDENT RECREATION AND AQUATIC

The proposed project will have gymnasium, weight and fitness center, exercise rooms, rock climbing wall, sports club organizations, and competition and recreation pools with support spaces. The project site is located at the south east corner of 7th Street and San Carlos across from the existing Event Center. The Recreation and Aquatics Center is estimated to be completed in 2018 and designed to LEED silver.

Student Recreation and Aquatic (outside)

Student Recreation and Aquatic (inside)

INTERDISCIPLINARY SCIENCE BUILDING

San Jose State University will create a state of the art science facility focused on faculty-led student research. The project will construct a new building of 107,000 square feet accommodating teaching labs, research labs, faculty offices and other interdisciplinary spaces. The project location is being proposed in the south-west quadrant of campus north of Duncan Hall. Anticipated start of construction is July 2018. Priorities for design for this building will be to build it to LEED Gold standards.

Energy & Greenhouse Gas Emissions

MAIN STRATEGIES

The CSU has committed itself to sustainable building practices by establishing CSU Executive Order 987 (EO987) and the 2014 CSU Sustainability Policy.

The University of California (UC), California State University (CSU), and California's four large investor-owned utilities (PG&E, SDG&E, SCE and SoCalGas) established an Energy Efficiency Partnership (CSU/IOU) in 2004 in order to provide a sustainable and comprehensive energy management program for the 33 UC and CSU campuses. SJSU has utilized this program for funding energy conservation projects such as building systems and central plant retrofits, lighting retrofits, and MBCx projects.

The Utility Master Plan for SJSU specifies the approach to continue providing the campus with sustainable and reliable energy. Strategies include considering the conversion of all buildings to 12kV as well as renewable energy sources such as solar panels (PV), fuel cells, and other low/no-fossil-fuel technologies. New renewable energy sources are continually being reviewed, and we continue to implement MBCx of campus buildings.

Demand Side Management has been implemented at the Central Plant since 2003 when the Central Plant installed a thermal energy storage tank that generates ice at night when electrical rates are lower and ambient temperatures cooler. The ice is then used to produce chilled water for pumping into buildings during the day when cooling is needed.

Continuous improvement in energy management and energy efficiency projects have maintained a steady decrease in our energy intensity (Figure 1) and greenhouse gas (GHG) emissions (Figure 2) despite an increase in square footage at the end of FY 15-16. Figure 3 below shows that the cost to produce our utilities, our overall amount of GHG emissions, and our overall energy intensity has decreased significantly due to energy efficiency projects.

OBJECTIVES FOR 2030

- 20% reduction of energy purchases from 2003 by 2018
- Renewable energy procurement
- Greenhouse gas emission reductions of 40%

ACCOMPLISHMENTS FROM 2015-2016

- Energy efficiency projects implemented from 2009 until 2016 save the campus
  - Over 24 million kWh annually, $4 million savings annually
  - Almost 1 million therms annually , saving over $300,000 annually
  - 6% reduction in GHG Emissions from 1990 levels, reaching the goal set by the CSU and AB32
  - 10% reduction in BTU/GSF for SJSU from FY09/10, illustrating our increasing energy efficiency even while we increase our building square footage.

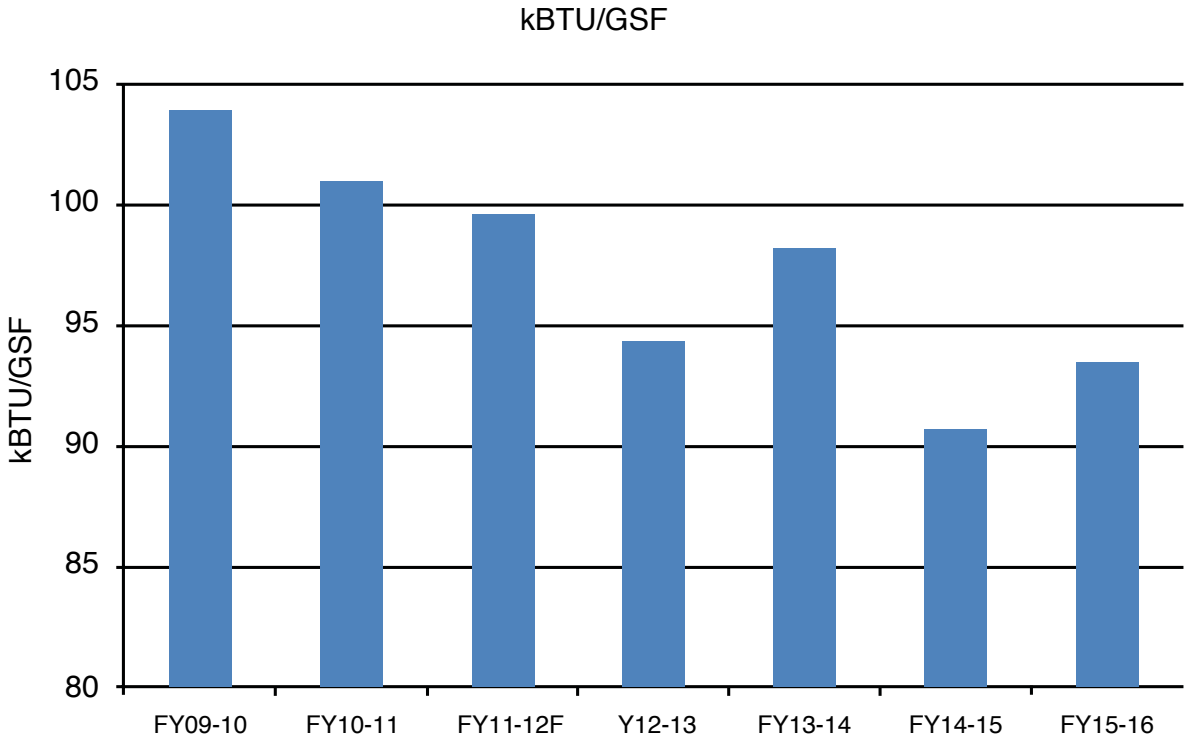


Figure 1

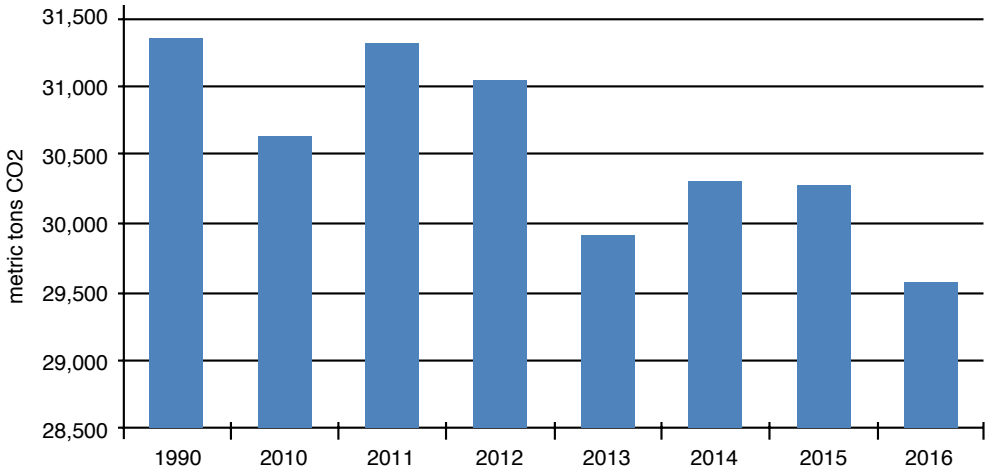


Figure 2

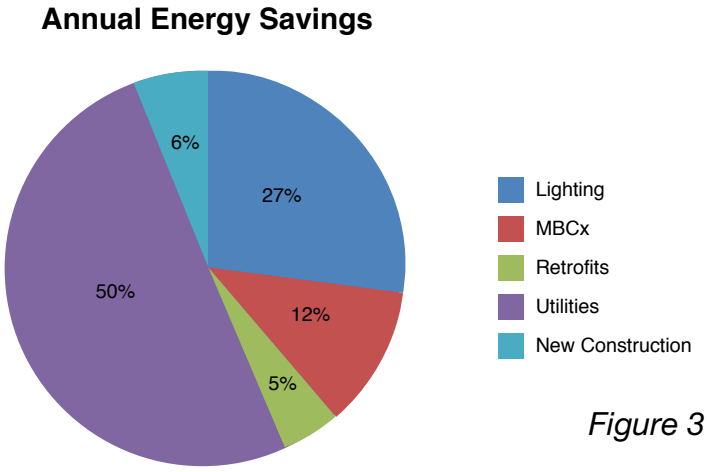


Figure 3

AWARDS

- 2015 CHESC (California Higher Education Sustainability Conference) Best Practice Winner in the HVAC Design/Retrofit category for “San Jose State University Chiller Plant Improvements”

Outdoor Lighting Retrofit

- Retrofit existing outside lights campus-wide, saving the campus over 500,000 kWh annually.

DUNCAN HALL AIR COMPRESSOR

- An existing air compressor was replaced with a more energy efficient model, saving more than 8,000 kWh per year.

STUDENT SERVICES CENTER BOILER

- An existing boiler was replaced with a more energy efficient model, saving more than 3,000 therms per year.

PRIORITIES FOR 2017/2018

DRAFT CARBON NEUTRALITY PLAN/ SIGN SECOND NATURE CLIMATE COMMITMENT.

- Facilities Development and Operations will draft a carbon neutrality plan that will map out our greenhouse emission strategy for the next 20 years.

NORTH AND SOUTH PARKING GARAGE SOLAR PANELS

- Solar panels will be installed on rooftop of the 7th and 10th Street parking garage that will generate 800 kW of electricity.

CAMPUS INTERIOR LIGHTING RETROFIT

- Reduce energy usage on campus by retrofitting lighting, controls and implementing day light harvesting.

CAMPUS STEAM UTILITY IMPROVEMENTS

- Reduce campus steam usage by making repairs on the system so leaks can be mitigated. Efficiency improvements are being piloted in Dwight Bentel Hall and will be rolled out to the rest of campus.

ACADEMIC SCHEDULING

- Consolidate scheduling of academic spaces during off hours to reduce amount of buildings that are in use.

Landscaping

MAIN STRATEGIES

SJSU campus area comprises of 167 acres, of which 41 acres are buildings and 126 acres are grounds managed sustainably. Sustainable landscape management practices includes integrated pest management, campus plant stewardship, soil stewardship, use of environmentally preferable materials, materials management and waste minimization, and hydrology and water use.

The University practices Intergrated Pest Management (IPM) , in which the least toxic option is always our first choice of deployment. If ineffective, the next least toxic option is used, insect problems are only treated if there is a lot of damage, if damage is minimal, only soapy water spray is used to tackle the infestations, and insects, diseases, and weeds are only spot treated, SJSU never use broadcast treatments.

In accordance with sustainable landscape management, SJSU practices plant stewardship, in which, if an area is not undergoing relandscaping, the existing vegetation is protected from construction sites/projects. Facilities Development and Operations (FD&O) also implemented a policy to promote climate appropriate plants on campus, in which SJSU only accepts native trees as donations. Since 2008, a majority of the trees planted on campus are native. The only exceptions are when the academic mission requests a specific species to be planted or when a specific species is needed to fill the void of a removed tree, such as the iconic arch of Mulberry trees lining Tower Hall Quad.

OBJECTIVES FOR 2030

CERTIFIED ORGANIC LAND CARE STANDARD
Incorporate an organic land care standard across all campuses such as IFOAM (International Federation of Organic Agriculture Movements), the SOUL Organic Land Care Standard, the Northeast Organic Farming Association's Standards for Organic Land Care or CCOF Tilth's Organic Land Care Policies & Standards.

ACCOMPLISHMENTS

FD&O finalized the campus Landscape Master Plan in 2014, an updated guide to the 1995 plan, which offers clear guidance to campus administrators, facilities staff, and designers for directions related to species selection and planting composition tailored to the various conditions and contexts around campus. The University practices thematic planting, in which six different planting palettes are utilized across the campus. Each palette uses existing, native, and climate appropriate (drought resistant) plant species. Because SJSU uses recycled water for irrigation, the plants were chosen based on their resilience to the recycled water quality used on campus. Each palette is also managed with preventive maintenance and mulch to discourage the growth of invasive species and weeds.

Both main and south campus grass turfs are mowed weekly with a large riding mower. SJSU practices grasscycling, in which grass clippings are left on the lawn to decompose, providing nutrients for the turf. This process reduces the need for fertilizers, act as mulch that helps retain water, reduce irrigation needs, and reduce greenhouse gas emissions.

Since SJSU converted campus irrigation to recycled water, our dependence on potable water has significantly decreased. Our irrigation also helps recharge the local underground reservoir.

Located on the north side of Duncan Hall is the Native Botany Garden, a national Wildlife Federation certified Schoolyard Habitat (site #1587). The garden was created by the SJSU Biology Department as a wildlife habitat area and as a place for the campus community to enjoy and learn about native plant species.

PRIORITIES FOR 2017/2018

BEE PROTECTIVE CAMPAIGN
Join the BEE Protective Campaign—an initiative to encourage universities, institutions, and local municipalities to resolve to eliminate the use of bee-toxic pesticides on their grounds and to foster a healthier habitat by planting pollinator friendly plants.

Purchasing and Procurement

MAIN STRATEGIES

Purchasing decisions represent an opportunity to choose environmentally and socially preferable products and service. SJSU supports sustainable economy through its purchasing powers in electronics, cleaning products, office paper, inclusive and local purchasing, and business partner standards.

The SJSU Standards Policy defines the campus policy for purchasing recycled copy paper. In addition, the SJSU Environmental Preferable Purchasing (EPP) Guide also emphasizes the campus policy by setting a goal of 30% post-consumer products for Printing & Writing Paper category. The EPP Guide is scheduled to be revised in FY 2016-17 for reference update.

SJSU purchases green cleaning and janitorial products to ensure non-toxic cleaning products are used on campus, reducing exposure for all building occupants and the environment. Cleaning products are purchased through one department on campus and the department supervisor ensures that only Green Seal and UL Environment products are purchased. Of the total expenditures on cleaning and janitorial products, 73% are products with Green Seal and/or UL Environment (EcoLogo) certified products.

OBJECTIVES FOR 2030

Incorporate purchasing into a Zero Waste strategy for the campus by implementing a materials management plan into all purchasing decision.

ACCOMPLISHMENTS

In October 2015, Staples became the CSU preferred supplier for office supplies. Since then, SJSU purchases a majority of its recycled content paper products from Staples. As the official CSU office supply vendor, Staples provides a web page designated for CSU campuses, offering select products and/or substitute products that help fulfill the State and CSU mandates to buy recycled content products. In addition, SJSU Purchasing Buyers have been instructed to ask vendors for recycled content paper options, when possible, in their solicitations to vendors.

By purchasing EPEAT, a global rating system for greener electronics, SJSU is supporting environmentally preferable products. The University's total expenditures on EPEAT registered electronics amounts to 88% Gold level and 12% Silver level.

Information Technology Services (ITS) provides the Workstation Refresh Program to University Departments. ITS specified brands and models adhere to the Workstation Hardware Standards and are products that are identified as environmentally preferable products. The University convened all campus technology staff at the Campus Tech Summit to distribute this information.

PRIORITIES FOR 2017/2018

Increase purchases of recycled material

Transportation

MISSION

The Associated Students Transportation Solutions (TS) is dedicated to serve the commute needs of students and employees at SJSU. Its region-wide operation emphasizes alternatives to driving alone. These alternatives are primarily made of carpools and vanpools, public and private transit including buses and shuttles, local and regional rail, and non-motorized travel, including bicycling and walking.

By increasing the usage of alternative transportation, TS fulfills the goal of reducing single occupant vehicle trips to SJSU and Downtown San Jose area, enhances students' educational experience and improves air quality. TS offers incentives for using alternative transportation, as well as providing commute information and services to the SJSU community.

Transportation Solutions

MAIN STRATEGIES

TS's mission is to alleviate automobile traffic to SJSU and reduce its impact on the University's parking facilities. The core strategies for accomplishing the TS mission are:

- Offering complimentary Eco Pass Clipper cards for all students and discounted cards for faculty and staff. Eco Pass Clipper cards provides unlimited access to VTA transportation, discounted ACE and Amtrak fares and an all-in-one transit card for Caltrain and BART.
- Program development and operations
    - Carpool matching and ride sharing
    - Bicycle enclosure facilities, bike sharing and resources to encourage bike ridership
    - Discount Highway 17 Express bus passes
- Communication, marketing, and outreach
- Corridor - mobility mapping and analysis
- Program evaluation and measurement through annual surveys
- Linking transportation demand management to broader initiatives and service improvements
- Funding opportunities and grants

ACCOMPLISHMENTS

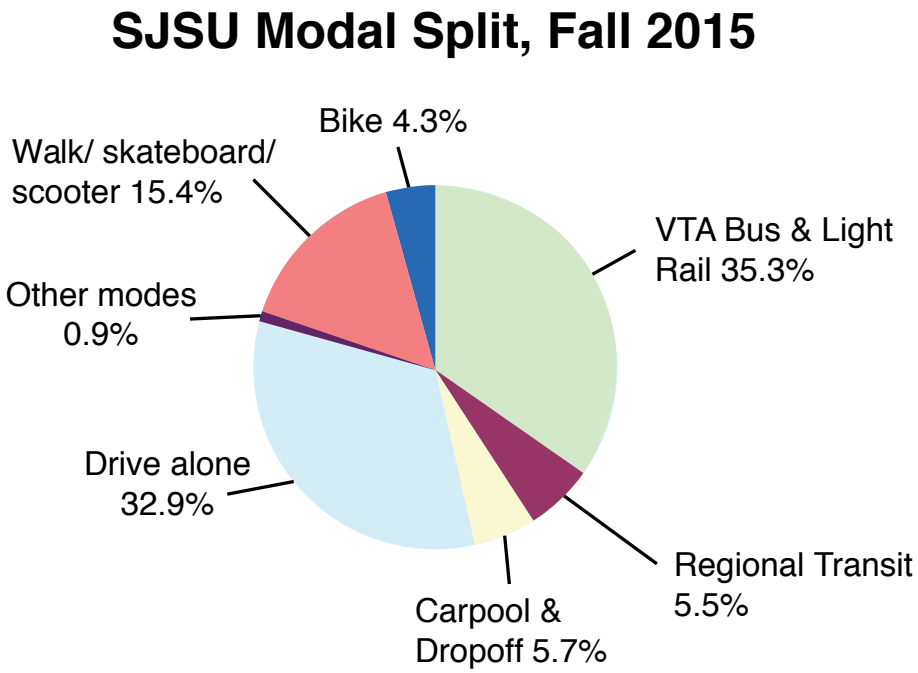
PROGRAM DEVELOPMENT & OPERATIONS

- With the collaboration of Student Affairs Systems, completed the customization of SAMI Interface for sign-up and distribution of Eco Pass Clipper cards. Successfully launched SAMI system for Eco Pass Clipper program.
- Administered annual transportation survey to 36,165 students (Regular & open U) in November 2015 with the response rate of 13.4%.
- Established a partnership with the Scoop carpool App at SJSU for all students and employees.
- Developed by two SJSU students, established a partnership with the Rydite carpool App for SJSU students for long distance ridesharing.

- Established a partnership with the City of San Jose Parks, Recreation & Neighborhood Services to promote San Jose bike trails to SJSU bicycle commuters (May 2016).

2016 ANNUAL TRANSPORTATION SURVEY

TS administered its fifteenth annual survey in November 2015 at SJSU. Utilizing SurveyMonkey, the survey instrument was emailed to 36,165 students (Regular enrollment, Open University, Special Sessions, etc.); 4,846 participated with a response rate of 13.4%. The total alternative transportation usage (VTA, regional transit, carpooling and biking) was at 50.8% (estimated 18,372). The VTA ridership increased 1.2%, from 33.2% in 2014 to 35.3% (12,759 riders) in 2015. The drive-alone rate decreased from 33.2% in 2014 to 32.9% (or 11,893) in 2015.



PRIORITIES FOR 2017/2018

- Low emissions or electric bus replacements for Park and Ride shuttle service
- Electric vehicle charging station installation

Waste Management

MAIN STRATEGIES

The University is committed to reducing waste generated on campus and adheres to the CSU Sustainability Policy by reducing solid waste by 80% by 2020.

Campus diversion is accomplished through a single stream collection process. All campus waste is picked up by SJSU's hauler, GreenWaste Recovery. All yard waste and food waste generated on campus is either composted at the hauler's facilities or used in a waste-to-energy facility. All other waste is taken to the GreenWaste materials recovery facility (MRF), in which any recyclable and compostable items are removed from the trash and processed appropriately. The remaining small amount of waste, which cannot be diverted, is transported to the landfill or to a waste-to-energy facility.

The University recognizes the importance of preventive measures and promotes the minimization of waste productions, thus nurturing a sustainable campus community.

OBJECTIVES FOR 2030

Become Zero Waste certified through the U.S. Zero Waste Business Council by achieving 90% waste diversion or more.

ACCOMPLISHMENTS

A waste audit was completed in 2016 that identified the campus diversion rate at 83%. The audit also identified recommended actions to get us to zero waste that will help us draft our zero waste management plan.

In the past year, SJSU diverted 1,272 tons of materials from solid waste landfill/incinerators, while disposing only 266 tons of materials. The Erase Waste Campaign, Taste Don't Waste Program, and Mug Life Campaign all contributed to the reduction of waste generated on campus. In the Spring 2015 semester alone, the Erase Waste Campaign saw an 11% reduction of food waste on campus.

SJSU makes an effort to minimize waste production by posting many of our informational materials on our website rather than printing them. The campus map/directories, course catalogs and schedules are all available online. Although SJSU offers a printed version of the catalog, it is only available for purchase at the bookstore. The online catalog is available for free and contains the most updated information.

To further reduce paper and ink consumption at SJSU, public services across campus all charge a fee for printing. Rates vary depending on individual departments, for example, the King Library charges 20 cents per black and white page. Charging for printing will limit the amount that people choose to print on campus.

To help reduce residence hall move-out waste, special collection bins are set up to collect used notebooks, clothes, leftover detergents, and other items that students usually throw away during move-outs. The residence hall staffs work with the Sacred Heart and Salvation Army to coordinate this donation program.

The Furniture/Equipment Re-Use Program was created in an effort to redeploy furniture and equipment no longer utilized by SJSU departments. This program gives departments the option of transferring unused furniture and equipment to other departments. This program helps match unwanted furniture to departments or people who need them on campus, reducing the amount of old furniture that are discarded in mixed recycling bins. The type and condition of the furniture/equipment determines whether the item is eligible for reuse on campus through the program or if it should be recycled.

All contracted construction and demolition projects at SJSU, as well as all CSU campuses, are required to recycle at least 50% of the waste generated during a project. Construction and demolition projects at SJSU recycled, donated, or otherwise recovered 4,809.91 tons in the past year. Only 238.09 tons of materials were landfilled or incinerated.

PRIORITIES FOR 2017/2018

Waste management strategic plan to be drafted and completed by 2018.

Waste Sorting

Waste Sorting

Mixed Waste Stream

Mixed Waste Stream

Water

MAIN STRATEGIES

Long term strategies to conserve potable water include converting the steam plant make up water from potable water to recycled water. This will save an estimated 20 million gallons of water a year. We will be installing water meters at individual buildings and landscaped areas. This helps identify heavy water consumption and opportunities for conservation. We installed dual plumbing for toilet flushing in all new construction and are currently installing a main line through San Carlos St. to provide recycled water to the rest of our campus buildings. We have a maintenance schedule to install or replace remaining toilets, urinals, faucets and showerheads to low flow fixtures.

Short term strategies to conserve potable water include requesting the campus departments to consider low water use and Energy Star dish washing machines. We have eliminated most automobile washing of State vehicles. All vehicles, except shuttle buses, will be washed by using self-service car wash stations, which use recycled water. We will be launching more educational and awareness initiatives such as flyers, signage and e-mails, informing the campus community to educate the campus of conservation efforts.

OBJECTIVES FOR 2030

- Water consumption reduction by 20% by 2020
- Increase awareness and influence behavioral changes of water related issues among students, faculty and staff

ACCOMPLISHMENTS

Major water usage reduction accomplishments since FY 12-13 include converting 400 toilet/urinal fixtures throughout the campus. This is estimated to save 80% of water usage in these fixtures, reducing water use by approximately 2 million gallons of water annually. Drought tolerant vegetation, native plants, and vegetation that have high tolerance for recycled water have been installed throughout most of campus landscaping. Green custodial and landscaping practices that require less water have been implemented.

South Bay Water Recycling, a program administered by the City of San Jose, has provided recycled water to both the main and south campus since 1999. We use only recycled water for irrigation, the Central Plant cooling tower, ornamental fountains, and steam make-up and for toilet flushing in the following buildings:

- Student Union connected in 2016
- King Library connected in 2010
- Campus Village 2, Student Wellness, Spartan Complex and Uchida Hall in 2017

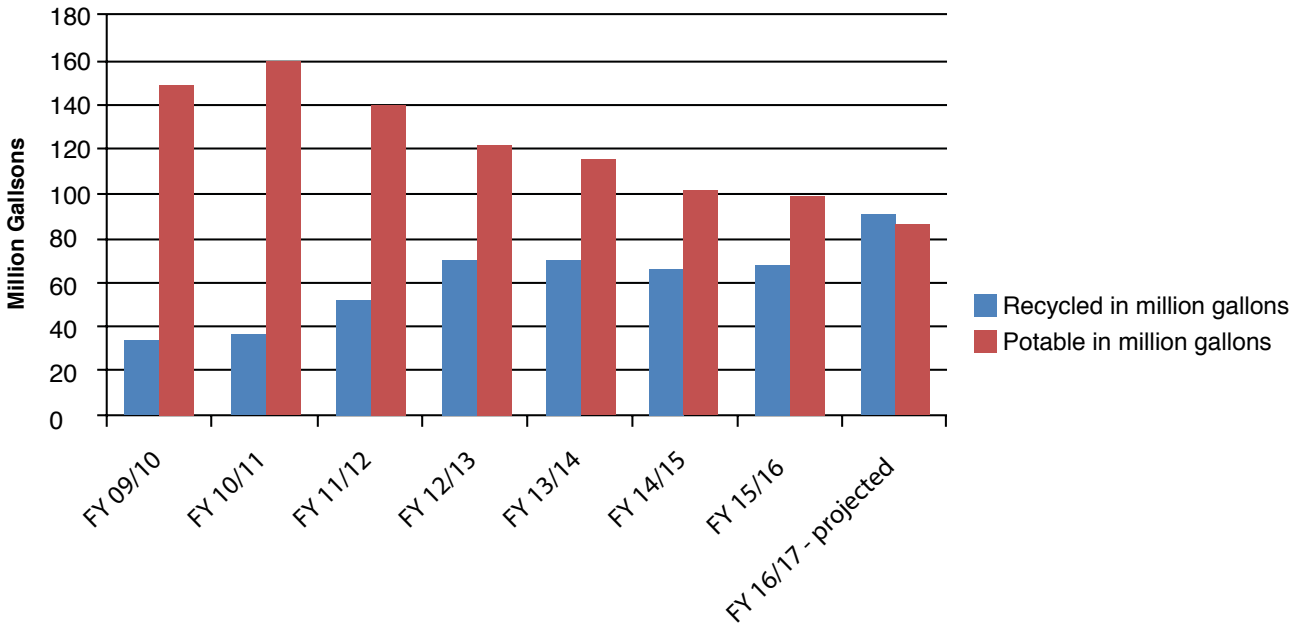
The Central Plant cooling tower began using recycled water in 1999, becoming one of the first industrial cooling towers to use recycled water. Since its implementation, we have saved over 240 million gallons of potable water and over $1.5 million.

Martin Luther King Jr. Library is the first building on campus to have dual plumbing installed (plumbing which uses both potable and recycled water). This has saved a total of 12 million gallons of potable water since the conversion of the library's water in 2011.

The conversion of irrigation on both the south and main campuses to recycled water saves almost 50 million gallons of potable water a year. In addition to reducing the amount of potable water used, this also saves the campus almost $600,000 annually in water costs.

AWARDS

- 2016 WateReuse California Section awarded SJSU Recycled Water Customer of the Year



PRIORITIES FOR 2017/2018

METERING AND LEAKS

- Install campuswide metering at the building level to provide transparency and data for academic uses. The metering system will also provide leak detection that would save an estimated 3% in water usage. Measure, record, and analyze water consumption for each building on all SJSU campuses.

RW MAIN LINE - CONNECTING TO REST OF BUILDINGS

- Completing a recycled water pipeline that will enable all new buildings on the main campus to use recycled water for toilet flushing.

FOUNTAIN CONVERSION TO RW

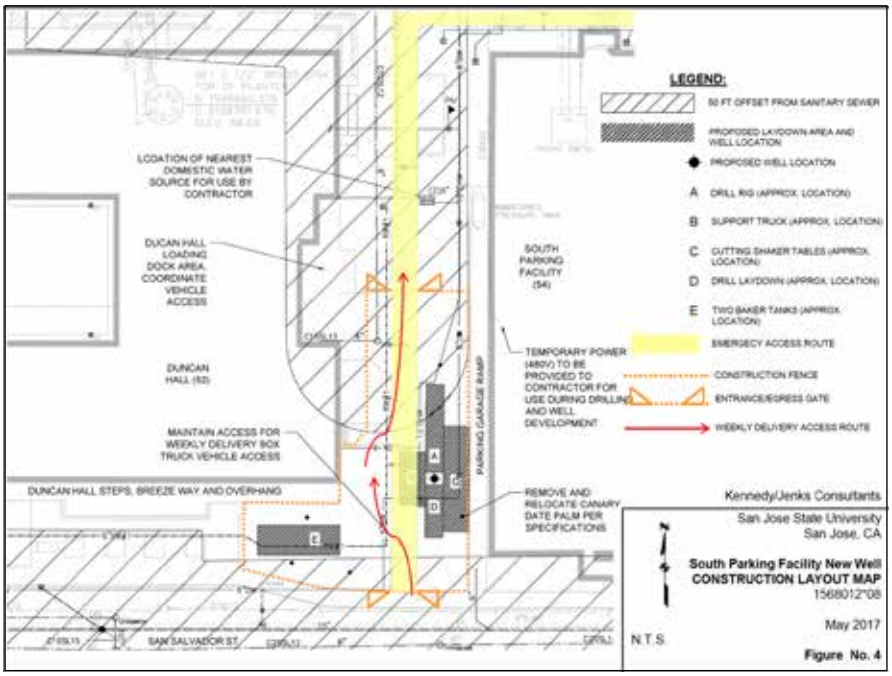
- Converting all main campus water fountains to recycled water.

BOTTLE WATER REDUCTION

- During the spring 2014 semester, Environmental Studies 128 conducted a study to examine the drinking water habits of students on campus. The aim of the study was to lay groundwork to create a campaign to encourage drinking water use from campus water fountains rather than single use water bottles, which are environmentally harmful. The study found that approximately 5 million bottled waters are purchased each year, costing students about $7.5 million in addition to the harm on the environment. A survey the class conducted showed that students would be much more likely to use drinking fountains if they were configured to more easily fill reusable water bottles. As a result of the study, FD&O will be installing water filling stations in every building throughout FY 17-18. This will potentially save students and staff millions of dollars and reduce the use of plastic water bottles.

NEW WELL CONSTRUCTION

- Relocating an existing well that provided the main campus with potable water from its previous site near the Aquatic Center to a new site. Having our own source of potable water will alleviate the dependency on a vulnerable external water pipeline.



Concept Design for New Well

Spartan Shops

Spartan Shops is committed to integrating environmental responsibility into our food sourcing, practices and products we purchase to support a sustainable SJSU community.

Erase Waste Campaign Signage

Spartan Shops Sustainability Map

Green Monday Event

MAIN STRATEGIES

Our most important practices are sourcing local and sustainable food, encouraging the use of reusable beverage containers, reducing food waste, donating excess food, and informing the university community of our practices through education and marketing.

Local Produce Infographic

Green Monday Event

OBJECTIVES FOR 2030

- Increase “Real Food” purchases on campus to 20%. “Real food” is fair trade, organic, humane or local.
- Get certified by the U.S. Zero Waste Business Council in our dining facilities.
- Promote the use of suppliers and/or vendors who reduce waste, re-purpose recycled material, or support environmentally friendly practices.

ACCOMPLISHMENTS

At Spartan Shops, we source locally whenever possible. We source local produce when in season, bread and pastries, sausages, tofu, olive oil, and more. We serve beef that is humanely raised, antibiotic and hormone free, and grass-fed; chicken that is pasture raised, antibiotic and hormone free, and fed a vegetarian diet; and seafood that is wild, sustainably caught, and MSC certified or Monterey Bay Seafood Watch Best Choice.

There are campus-wide campaigns that promote sustainability, including the Mug Life campaign which offers students, faculty, and staff $0.50 off their beverage purchase with the use of a personal mug, and the Erase Waste campaign which reduced food waste by 40% in the Commons from 2014-2016. Food waste is also reduced in The Commons through trayless dining and a program called Taste Don't Waste, which encourages students to try a sample of a dish before asking for a full serving. The kitchens at Union Square and The Commons give their eggshells, coffee grounds, and fruit and vegetable scraps to the A.S. Community Garden to be composted. All-day old bagels, pastries, and bread are donated to the Peer Connections Breakfast Club and the Student Wellness Center's Food for Thought program. Food that cannot be sold or donated to students is donated to local shelters and community centers.

Spartan Shops' sustainable practices include using eco-friendly cleaning products in our eateries; collecting and recycling 100% of our used cooking oil to be made into biodiesel fuel; being 100% Styrofoam free; purchasing ENERGY STAR rated appliances when purchasing new kitchen equipment; reducing energy waste in the Spartan Shops Administrative Office by 60% through a PG&E Step Up and Power Down campaign; and encouraging students to choose vegetarian dishes on Mondays in The Commons through a partnership with Green Monday, a company that advocates for more plant-based foods on college campuses.

Eco-friendly products include compostable utensils; biodegradable bamboo dishware in The Commons; recycled plastic to-go containers at In the Mix; recycled and unbleached paper pizza boxes at Sauced; and biodegradable fallen-leaf plates at Smokin' Sammy's. Spartan Shops educates the SJSU community about our sustainable practices through classroom presentations, tabling events, digital and print marketing, and working with our campus partners to make sustainability part of the campus culture.

Mug Life Campaign

Sustainable Fish Infographic

PRIORITIES FOR 2017/2018

- Establish "Real Food" baseline and complete Real Food Challenge initial assessment
- Increase staff trainings and presentations to the campus, including new student orientations
- Create a local/seasonal/organic/humane/fair trade catering menu option. In addition, have zero waste be an option with reusable cutlery and dishware
- Create a daily food donation program to reduce waste and give back to our community

SUSTAINABILITY

2016 REPORT

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GREEN INITIATIVE

SJSU | FACILITIES DEVELOPMENT AND OPERATIONS