



California State University
SAN MARCOS



CALIFORNIA STATE UNIVERSITY SAN MARCOS
Sustainability Master Plan



Report Published Spring 2014

INTRODUCTION

California State University San Marcos (CSUSM) is an active leader in sustainability. As an innovative public institution of higher education, the university has a strong record for early implementation of best practices in sustainability and conservation. Over the last decade Cal State San Marcos has received several high-profile national awards for the university's recycling efforts, as well as recognition for its energy and water conservation programs and green-building practices.

CSUSM is committed to remaining at the forefront of sustainability and environmental stewardship and has adopted the sustainability vision established by United Nations to "meet our present needs without diminishing the abilities of future generations to do the same." CSUSM intends to work toward this goal in campus operations, management and education, increasing our contributions as a regional and national leader in sustainability.

To date, campus initiatives to address these issues include the establishment of the Sustainability and Utilities Department, the Sustainability Advisory Committee and a variety of projects and classes focusing on resource conservation, urban agriculture, green buildings and utilities, and commuting. These actions begin our efforts to build a balance of positive social, economic and environmental impacts on the campus and surrounding region through promoting responsible resource use, lifelong learning experiences and changed cultural practices. They also speak to our commitment to our five strategic priorities: Student Life, Campus Climate, Academic Excellence, Community Partnerships and Educational Equity.

As a leading campus in sustainability, CSUSM relies on the commitment and participation of campus entities and individuals at every level. With flexibility and willingness to seek out additional improvements, the campus community works together and embraces each of the goals developed in the master plan on an ongoing basis. For example, success in reducing waste and increasing recycling requires the collaboration of the Sustainability and Utilities Department and the Facilities Department to improve how the campus waste is collected; but more importantly, it requires all campus divisions and departments to consider impacts beyond recycling, and continually re-think what and how much to purchase, in view of the impacts made as part of a social-ecological system. Most of the goals in this document similarly entail a long-term, campus-wide effort. In addition, recommendations for periodic assessment and re-evaluation will enable the university to respond and implement new approaches to sustainability, and improve awareness of both the university's and individual's impact on the local environment and surrounding community.

To that end, the Sustainability Advisory Committee developed the campus' first sustainability framework with goals and targets designed to advance CSUSM's sustainability efforts. Cal State San Marcos is a city within a city; it is a place of employment and for many of our students, the campus is not just their school, but their home as well. The cultural

events that regularly occur on campus make CSUSM a destination and venue of choice in the region. The university is also a living laboratory with professors leading cutting-edge research. Within these parameters, ensuring that CSUSM remains a sustainable campus requires flexibility and imagination to develop and embrace innovative strategies and new technologies, while rethinking traditional practices and policies. Through the university's sustainability efforts, the vision to become a distinctive public university known for academic excellence, service to the community, and innovation in higher education is becoming a reality.



Planning, Design and Construction

CSUSM is comprised of over 30 buildings with over 1.73 million sq. ft. of space, spreading across a 304-acre campus. Currently CSUSM supports a community of more than 14,000 students, faculty and staff. When completed, the [CSUSM Master Plan](#) will accommodate 25,000 Full Time Equivalent (FTE) students. As the university grows to accommodate more students, the estimated tripling of the university's square footage of constructed facilities will add challenges to meeting our sustainability goals since new space entails additional energy use, water consumption, waste disposal and other resource-related challenges. As the university expands in the years ahead, CSUSM will need to do so in a way that supports and advances sustainability academically, as well as physically, by making the campus a sustainable learning lab.

Goals for Planning, Design and Construction

1. All new construction shall meet the [Leadership in Energy and Environmental Design \(LEED\)](#) Gold standards set forth by the U.S. Green Building Council. LEED certified buildings have specific and determined standards with third-party verification to be considered "green" or environmentally friendly.
2. Campus energy standards should also meet or exceed the California State University system's energy standards (exceed [California Title 24](#) by 26 percent), which are the strongest energy standards in the country.
3. Projects of limited-scope and small-scope construction that do not qualify for LEED certification shall conform to campus sustainable design standards.
4. Require the design and construction teams to take a holistic

Building a 21st Century Campus



Ribbon Cutting for Public Safety Building Opened Spring 2011 - LEED Gold Rating



Social and Behavioral Sciences Building Opened Fall 2011 - LEED Silver Rating



University Student Union Opened Spring 2014 - LEED Gold Rating



Groundbreaking of the Student Health and Counseling Services Building Opening Summer 2013 Anticipated LEED Gold Rating

approach to the design and construction of new facilities. Consultants are to provide life cycle cost analysis reviews to ensure the most sustainable systems for buildings. This ensures the highest quality learning and working environment possible, utilizing the most up-to-date technology and design techniques while reducing the cost of ownership and environmental impact to a minimum.

5. Adhere to the Green Cleaning standards in building maintenance where available so that green cleaning products are used in all CSUSM owned and occupied buildings. Reduce the use of chemicals in the cleaning maintenance process.
6. Monitor the energy, water and waste from the moment the facility is completed to ensure that it is efficient, comfortable and maintains its level of sustainability in perpetuity.
7. All construction and renovation projects shall achieve the goals set forth in other sections of this plan for water management, energy conservation, environmental health, waste management, transportation, procurement and land management.
8. Support the training process and continuing education for Planning, Design and Construction department project managers who are LEED certified.

Transportation



North County Transit District's SPRINTER station at CSUSM



Student biking to campus



Parking Structure 1 opened in spring 2010

The largest contributor to the green house gases on campus comes from single occupant commuters. Vehicles take up valuable land that could be used for academic infrastructure. The traffic creates major impacts to the campus and surrounding community and region as well. Impacts may be minimized by implementing a variety of strategies and incentives to promote alternatives to driving solo, such as van pools, car pools, car sharing, bicycling, public transit and walking. Learn more by visiting CSUSM's [Parking and Commuter Services](#).

[North County Transit District's](#) light-rail commuter train, the SPRINTER, began operating in 2007. CSUSM has seen a steady increase in ridership each academic year. In 2013 the sale of transit passes resulted in approximately 380 less vehicles on campus per month.

Goals for Transportation

1. Reduce emissions by 2020 per AB 32, a State of California legislative bill that requires state entities to adopt a greenhouse gas emissions limit equivalent to the statewide greenhouse gas emissions levels in 1990 to be achieved by 2020. This goal may be achieved by implementing strategies such as adding electric vehicle charging stations.
2. Increase the bicycle infrastructure, such as expanding bike rack locations as needed, as well as bike lockers and access to other bike amenities.
3. Increase better accessibility to campus for non-motorized commuters.
4. Explore bike and car sharing opportunities.
5. Continue to subsidize the public transportation program to help incentivize it as a more economical option.
6. Encourage carpooling and vanpooling. Work with public agencies and service providers to provide funding and programming to those who would like to participate in these forms of transportation.
7. Work with public agencies to provide better access to the campus for non-motorized vehicles and public transportation.

Environmental, Health and Safety



Students test local fresh water systems



Student working in CSUSM's neuroscience lab



Students conduct environmental impact study

As CSUSM continues to increase the offerings of instructional laboratory courses and faculty research continues to thrive, the waste generated will proportionally increase. Accumulating more laboratory and facility maintenance waste impacts the environment and increases the use of campus and global resources, both fiscally and energy appointed. Appropriately managing this regulated waste and searching for environmentally friendly practices is a complex endeavor.

CSUSM continues to be an advocate of its instructional science departments and research-based laboratories performing microchemistry processes. Both the [Office of Risk Management and Safety](#) and the academic

departments are engaged in minimizing the use of hazardous materials to reduce the environmental burden, conserve resources and reduce the fiscal impact on the university.

CSUSM is engaged in researching and utilizing more sustainable laboratory practices to reduce our environmental impact. The [Emerald Energy Program](#), a new program recently implemented on campus, reduces landfill waste and generates electrical energy. With the success of the beta group, the program will be expanding to all applicable laboratories.

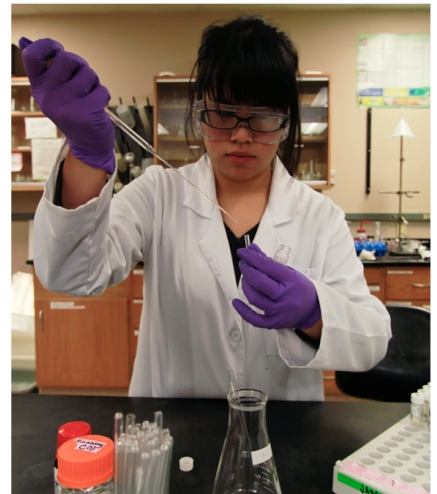
Goals for Environmental, Health and Safety

1. Continue to upgrade plans to reduce laboratory related waste and energy use, and promote the use of safer research materials as technology allows.
2. Expand the Emerald Energy Program to research labs. Reduce estimated Biological Waste entering the landfills by 85 percent and generate about 9,500 kWh of electrical energy annually.
3. Continue chemical waste consolidation and minimization processes.
4. Develop a Green Labs Certification program for CSUSM's laboratories.
5. Complete evaluation of the Fume hood energy management and determine whether the project can be expanded to all the laboratories.
6. Promote signage in the Science buildings that educate users in energy conservation and include sustainable lab practices in laboratory trainings.
7. Update and improve the chemical inventory system, which will promote user friendliness and provide web-based information on chemical surplus materials that will be made available to others, saving money and preventing waste.
8. Under the [San Diego Regional Water Control Board's](#) storm water permit, known as the Municipal Separate Storm Sewer Systems (MS4), research the feasibility of storm water reduction and the potential volume that could be collected.

Conducting Research Safely & Responsibly



Biological Sciences undergraduate researchers study black bear conservation



Biochemistry undergraduate studies natural products to develop a new vaccine and drug treatment for Tuberculosis

Energy Management/Green House Gases



Some of CSUSM's buildings have solar panels installed on the roof, including the USU



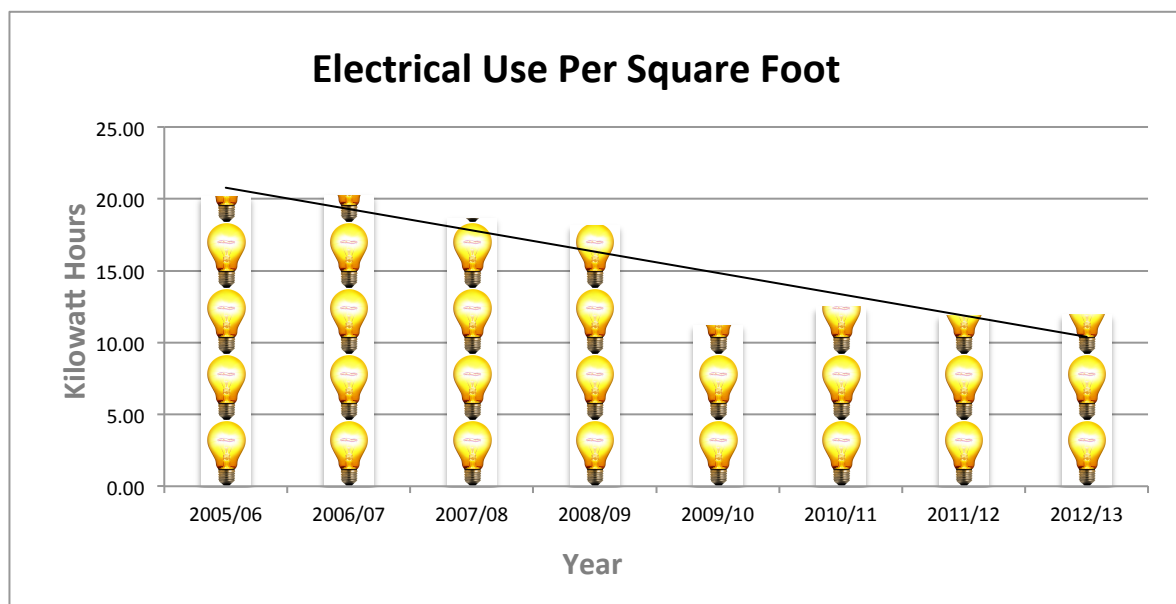
CSUSM continually evaluates its energy use and efficiency, including electricity usage



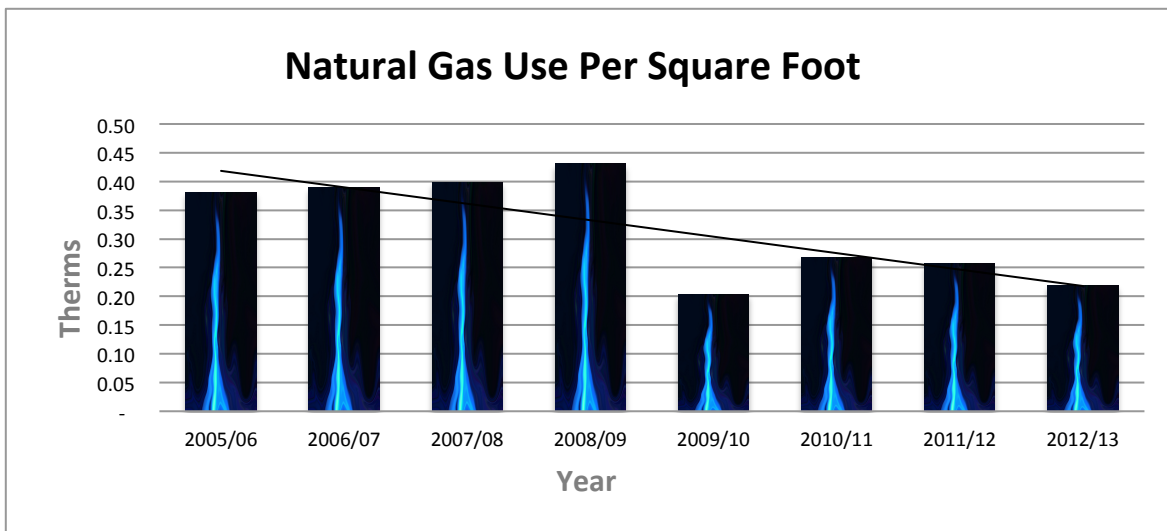
Utility usage is monitored and adjusted remotely to ensure energy is not wasted

Energy consumption is the second largest contributor of greenhouse gases following vehicle emissions and is the largest utility expense for the university. The impact of climate change has been associated with increased severe weather activities, polar ice melts and rising sea levels. The university strives to minimize the amount of energy consumed while increasing renewable energy production with the goal of one day producing as much renewable energy as the campus consumes. The campus has made great strides towards this end. CSUSM has reduced utility costs and consumption by 40 percent since 2008 while increasing the number of academic buildings on campus to meet the growing student population.

The campus' annual energy savings eliminates 9,000 metric tons of greenhouse gases each year from going into the atmosphere, which is the equivalent of taking 1,800 cars off the road or planting 231,000 trees.



The graph above shows that electrical consumption at CSUSM has decreased 40 percent through innovative energy conservation measures.



The graph above illustrates how natural gas consumption at CSUSM has decreased 50 percent through energy conservation measures.

Goals for Energy Management/Green House Gases

1. Continue to find innovative ways to reduce energy consumption per square foot.
2. Install automated local lighting controls in locations that currently do not have such technologies.
3. Continue monitoring energy consumption by building and identify buildings with persistent substandard performance.
4. Establish an aggressive outreach program to raise awareness and promote energy conservation via academic and professional training programs.
5. Develop access to real-time energy performance data. Explore behavior change strategies and energy-use feedback systems to enhance energy reduction.
6. Increase the supply of energy from on-campus and off-campus renewable sources.
7. Evaluate and expand a portfolio of different renewable technologies such as fuel cell and solar energy systems (where possible, to act as a hedge against different climate stresses) and other emerging technologies with long-term sustainable potential.
8. Evaluate and install solar hot water systems for application at multiple flat-roofed facilities.
9. Reduce workstation electricity consumption.
10. Evaluate campus use of fleet vehicles, equipment and other sources that may affect green house gas emissions, noise pollution and general air quality and substitute, reduce or eliminate these sources for more efficient, less polluting choices.

Water Management



CSUSM minimizes landscape water use by planting native, drought-tolerant plants



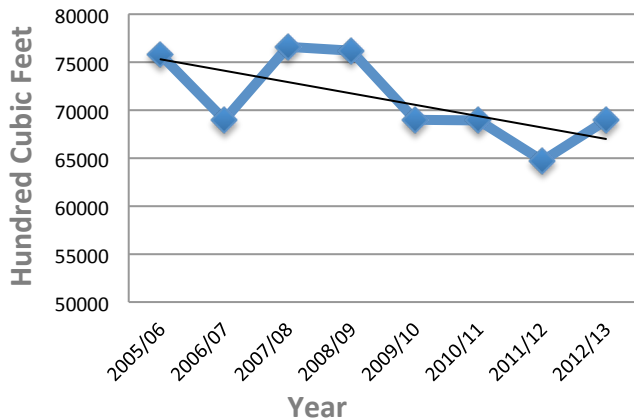
One of CSUSM's weather monitoring stations prevents unnecessary irrigation, watering



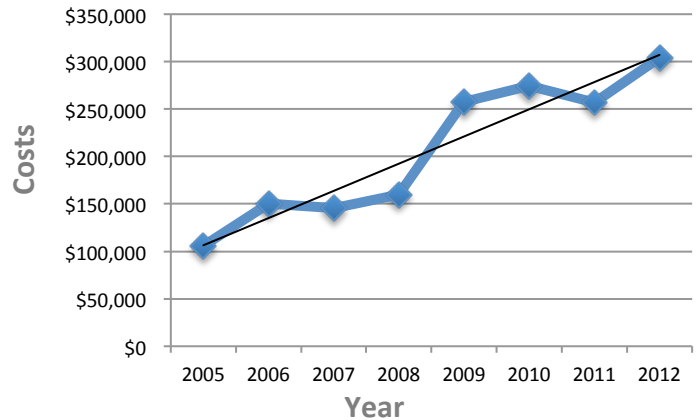
Architectural features, like the rain chain seen on the McMahan House, directs water in the ground

Water is our most precious resource. Because San Marcos sits within a Mediterranean climate between the Pacific Ocean and the Mojave Desert, most of our water is imported from hundreds of miles away in Northern California and the Colorado River. In addition, most of this State and Federal water is over-committed putting a strain on our ability to get the water we need. Using water wisely is becoming more and more imperative, especially as water needs increase. CSUSM currently utilizes a sophisticated water monitoring and control system for irrigation and domestic use and uses local well water for irrigation.

CSUSM Reduces Water Use



The Rising in Water Costs



The left graph above shows how water consumption at CSUSM has decreased 11 percent over the last six years, despite adding three new ball fields, five new buildings and doubling the student population.

The right graph above illustrates the rising cost of water.

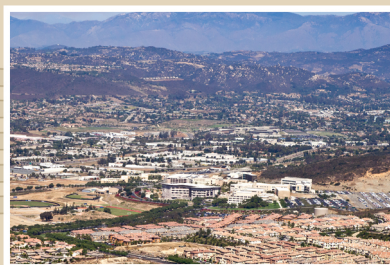
Goals for Water Management

1. Continue to improve the campus Water Management Plan.
2. Expand and further develop water indicators to track and measure data on an annual basis (i.e., measuring water use by type, such as landscaping, irrigation, residential use, dining, administrative, monitoring building water usage, etc.)
3. Investigate those areas of campus with high water usage and design systems to reduce that use.
4. Plant appropriate drought tolerant plants (xeriscaping) and edible landscape to minimize water use.
5. Investigate and use new technologies that will capture and recycle water on campus.

Land Management



Professor Vourlitis conducts environmental impact studies of the campus wetlands



The view from Double Peak of CSUSM and the surrounding region



Edible landscape is planted throughout the campus like these orange trees seen above

CSUSM is located in a chaparral hillside ecosystem surrounded urban and suburban area. The campus runoff feeds streams that eventually end up in the ocean south of Carlsbad through the Aqua Hedionda Lagoon. In addition, we have areas dedicated to open space and wetlands that contain sensitive species. The campus is committed to studying and maintaining these areas and ensuring the campus does not negatively affect our neighbors.

Goals for Land Management

1. Establish an Ecosystem Services Plan.
2. Conduct a biodiversity, watershed and land use analysis.
3. Develop university-wide sustainable landscape management standards that will reduce impacts on the local landscape and environment.
4. Use where appropriate edible landscaping and the use of native and low-maintenance species.
5. Minimize hardscape to allow water runoff to percolate into the ground.
6. Capture and contain runoff to minimize water and silt pollution down stream.

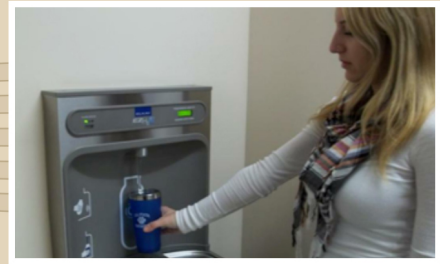
Waste Management



In 2013 CSUSM set a university-record recycling rate of 82.6 percent

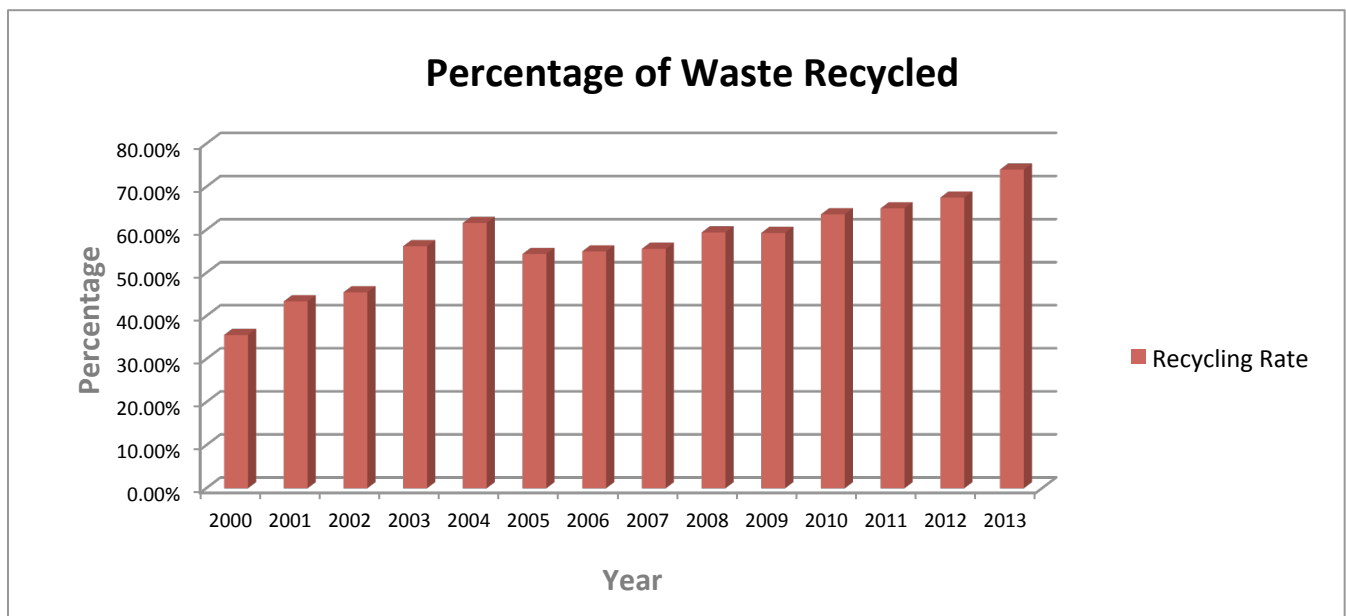


Students pick up reusable totes at the annual "Thank You for Recycling Day" at CSUSM



Convenient water bottle filling stations help reduce plastic bottle use and waste on campus

While Cal State San Marcos consistently excels in recycling, many consumers assume that sustainable waste management is simply recycling and that once an item is placed in the recycling bin, that's all that needs to be done. However, recycling is the last option; first reduce, then reuse and then recycle. At Cal State San Marcos waste management is considered a utility cost and, as such, the university strives to conserve these natural resources to keep costs to a minimum.



The graph above shows CSUSM's continued focus and successful efforts to reduce the amount waste going to the landfill. In 2000, 35.6 percent of waste collected at CSUSM was recycled. In 2013, Cal State San Marcos diverted 74 percent of waste from entering the landfill, making CSUSM one of the top university recyclers in the nation.

Goals for Waste Management

1. Accelerate Waste Minimization efforts in order to achieve Zero Waste by 2025.
2. Reduce waste by utilizing sustainable appliances, such as automated hand driers and water fountains with water bottle refill stations.
3. Help develop and support university administrative and purchasing policies that curtail the use of paper, increase the utilization of electronic bulletin boards for campus notifications and promotions, and encourage the increase of electronic communication and double sided printing.
4. Establish a permanent central campus “office exchange” to facilitate the “reuse” of office furniture, supplies and accessories.
5. Increase annual campus recycling rate average from current 70 percent to 75 percent by 2016, and then to 80 percent by 2020.
6. Accelerate and expand the university’s composting program for food and other compostables.
7. Establish a Source Reduction sub-committee as part of the University Sustainability Committee to produce new and innovative ways to build a Zero Waste campus culture.
8. Create awareness, interest and pride in the University’s waste diversion program.

Food and Dining Services



CSUSM makes it a priority to use fresh, local ingredients whenever possible



Student working in the campus garden



CSUSM has three coffee shops, five dining options and a convenience market

With over 14,000 students, faculty and staff on campus, CSUSM offers a variety of dining options, which are managed by our food service provider, [Sodexo](#). With these options come impacts such as the waste related to the type of packaging used for the food. Efforts to utilize the “farm to table” concept will continue to be made in food services, offering local produce, considering meat-free days, using more eco-sensitive service ware and packaging.

Goals for Food and Dining Services

1. Work with suppliers to increase availability of more sustainably raised and harvested meats such as poultry, fish and beef. Use fair trade items when possible.
2. Keep number of truck deliveries at a minimum through consolidation and bulk purchasing.
3. Use EcoLab and purchase eco-friendly products where feasible.
4. Annually revisit purchasing guidelines to capture best practices.
5. Reduce the pre-consumer and post-consumer solid waste produced in food service areas.
6. Increase the collection of food waste to put in campus compost.
7. Establish contracts with vendors for “take-back” of products or components, and for minimization of packaging where feasible.

Procurement



CSUSM encourages departments to purchase green, sustainable or recycled office supplies



Procurement utilizes best practices to increase productivity, streamline efforts across campus



Using technology like laptops or tablet devices to record, share information reduces paper waste

As consumers, we must be aware of what we use and how we use it. Some products may cost less up front, but end up costing more in the long run and may negatively impact our environment. At CSUSM we strive to investigate and purchase the most sustainable products that make economic sense.

Goals for Procurement

1. Develop procurement strategies specifying suppliers and vendors to optimize product packaging and/or food service packaging.
2. Support and emphasize a set of university-wide sustainable procurement standards for other common-use commodities. The sustainable procurement standards will be reviewed and updated on an annual basis as product cost and availability evolve.
3. Publish a roster of commonly used commodities that Procurement recommends as greener products. Aggressively market and encourage the use of those items to purchasing agents around the campus.

4. Assess the impacts of external deliveries to campus, and recommend changes to the current system to reduce those impacts.
5. Where applicable purchase [Energy Star](#) equipment and encourage the use of fonts that uses less paper space and ink.

University Business Practices



CSUSM's compost reduces campus waste and provides nutrient-rich soil for landscaping

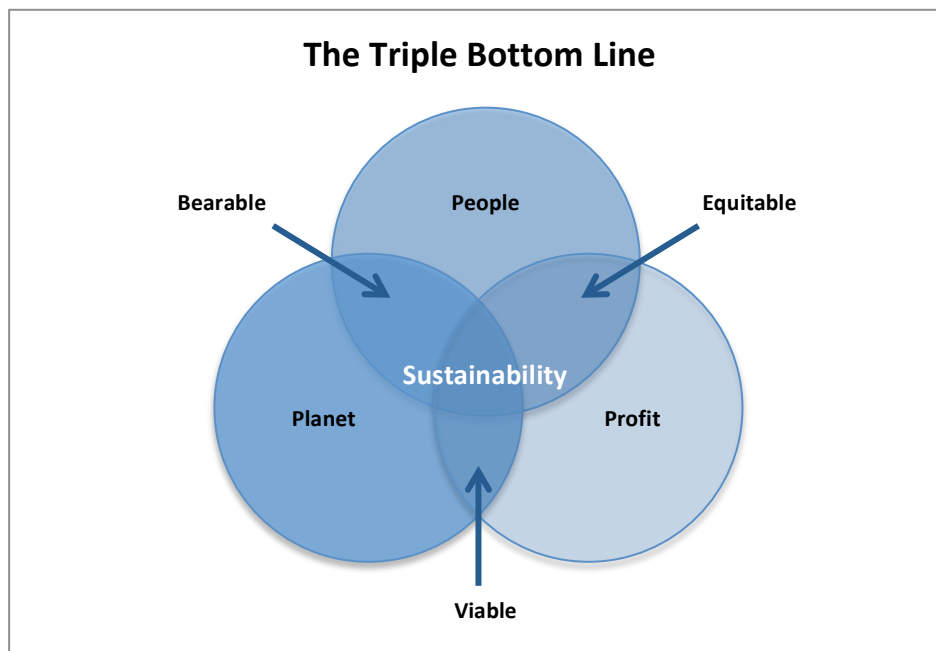


Since 2004, CSUSM has more than doubled its employees to nearly 1,900 faculty and staff



CSUSM professors deliver innovative curriculum that prepares students to solve critical issues

Many companies and entities both nationally and internationally focus only on the short term economic gain, allowing their concern for their financial bottom line to overshadow the importance of considering the long-term impact those practices have or may have on the local, regional and global community and environment. This may have a negative impact on the surrounding community, the environment and on a company's long-term viability. The sustainable business model that CSUSM is committed to the "[Triple Bottom Line](#)." This model requires consideration of not only the financial bottom line but also the impact a decision has on the community and the environment.



Goals for General Business Practices

1. Utilize the “Triple Bottom Line” model in all business decisions.
2. Streamline systems to reduce resource use and raise awareness about sustainability with user groups.
3. Establish and promote model business processes such as “certified paperless” or a similar qualification to reduce paper use in the office and classroom.
4. Establish a university portal as the place for faculty, students and staff to receive internal communications and conduct their administrative activities, thereby replacing the paper-based method of communicating and offering quick access to various websites, tools and tutorials.
5. Achieve a per capita reduction in the purchase of copy paper for printing and copying.



As a community engaged institution, CSUSM understands the importance that being a responsible steward of the environment has for the larger community. As we implement our own best practices in sustainability, we do so always within the context of how these practices impact the greater region of which the University is a part. From serving as a living lab for our students, to engaging our faculty in environmental and sustainability related research, to offering courses and programs focused on sustainability for the general public, to providing a beautiful, clean, environmentally rich campus for our community to visit, CSUSM is a regional exemplar with respect to sustainability. By engaging in productive public/public and public/private partnerships with key regional leaders and organizations, CSUSM works with the region to address critical issues pertaining to the environment and build stronger, more sustainable communities.

Using the “[Campus as a Living Lab](#)” concept adopted by the California State University Chancellor’s Office, students at CSUSM have the opportunity to connect their academic learning to their daily lives and work with University researchers to use the campus and its resources as a test site for new theories and innovations.

The ‘Campus as a Living Lab’ program is a unique opportunity to partner faculty with facilities development and 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.

Students in every discipline can benefit from general education courses that introduce theories and concepts in sustainability and environmental responsibility, including but not limited to the STEM fields of Science, Technology, Engineering and Mathematics.

Campus Gardens

The CSUSM Anthropology Department offers courses in ethnobotany focused on the uses of Western Hemisphere plants for medicines, foods, clothing, shelter, tools and cultural purposes. Students work with indigenous migrants and tribal communities to understand how these plants have been used for everything from baskets to anesthesia. The garden continues to evolve with new courses such as the peri-natal plant habitat for indigenous communities.

Cal State San Marcos' geography program offers a course focusing on farming, urban agriculture and food production. The course introduces students about the farm-to-table concept and using the campus garden teaches students to learn how to sustainably grow their own food.

Goals for Education and Community Engagement

1. The campus will participate in the [Power Save/Green Campus program](#).
2. Through CSUSM's [Extended Learning](#) programs offer classes and certifications in sustainability, such as Veterans Sustainable Agriculture Training, Environmental Leadership Academy and Water Resources Management Certification.
3. Through CSUSM's [Division of Community Engagement](#), identify opportunities for student civic engagement, faculty research and scholarship, community leadership development and meaningful community partnerships centered around sustainability.
4. Have outreach programs to educate on campus housing, auxiliary departments and the community about the plan and to engage them in its success.
5. Encourage residential energy conservation.
6. Become active members of sustainability organizations such as [AASHE](#) (Association for the Advancement of Sustainability in Higher Education).
7. Encourage curricular development related to sustainability, ecology, food and medicine production, and habitat studies that engage students to engage and further develop the campus as a living laboratory.

CSUSM Sustainability Committee, 2013

Barbara Sainz, Procurement, Contracts and Support Services | Bonnie Bade, Ph.D., Professor, College of Humanities, Arts, Behavioral & Social Sciences | Brad Fenton, Planning, Design and Construction | Carl Hanson, Sustainability and Utility Services | Charles De Leone, Ph.D., Professor, College of Science and Mathematics | Christine Vaughan, Communications | Deb Schmidt, Parking and Commuter Services | Devan Romero, Ph.D., Professor, College of Education, Health and Human Services | Donna Provost, University Dining Services | Ed Johnson -- Sustainability and Utility Services | Floyd Dudley II, Facility Services | Greig Guthey, Ph.D., Professor, College of Humanities, Arts, Behavioral & Social Sciences | Humberto Garcia, Jr., Risk Management and Safety | Jill Litschewski, Director of Science and Mathematics programs, Extended Learning | Jim Carr, Procurement, Contracts and Support Services | Luca Cataldo, Risk Management and Safety | Nick Tollison, Risk Management and Safety | Regina Frasca, Risk Management and Safety | Sarah Derho, University Auxiliary and Research Services Corp | Saul Garcia, Campus Housing, University Corporation | Alex Caratti, Associated Students, Inc. | Steven Holbrook, Sustainability and Utility Services | Ursula Berger, University Dining Services