

# **Our Committee's Mission**

The mission of the Chancellor's Advisory Committee on Sustainability is to ensure leadership in sustainability through teaching, research and public service.

# **Our Committee's Vision**

### **Teaching Vision**

- To impart the skills to advance social, economic and environmental sustainablity
- To graduate the world's thought leaders in sustainability





### **Research Vision**

- To foster the creation and transfers of knowledge in sustainability
- To cultivate student, faculty and staff entrepreneurship focused on sustainability

### **Public Service Vision**

- To serve as a living laboratory and role model for creating and maintaining a sustainable physical and living environment
- To collaborate to transform the Central Valley into a sustainable region.



### UC Merced's 21st Century Opportunity

As the first new research campus of the 21st Century, UC Merced has **a once-in-a-generation opportunity** to demonstrate — from the ground up — sustainable economic, social and environmental systems that preserve the ability of future generations to meet their own needs. **Our faculty, staff and students** embrace this opportunity and are building sustainability into every aspect of the campus.

Since 2005, **UC Merced has demonstrated success** in everything from green building to energy efficiency to procurement. These successes combined with **what we have learned** has enabled UC Merced to establish its Triple Zero Commitment: a goal for the campus to ultimately produce its power from renewable sources, to generate zero landfill waste and to achieve climate neutrality.

In the coming decade, UC Merced looks forward to advancing sustainability in **teaching, research and public service** for our students and the generations of students to come.

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Sustainability has been a curricular cornerstone since UC Merced's inception, and distinguishes our course offerings at all levels. The campus was founded as a living laboratory in a teachable landscape, a charge that continues to inform our academic programs, co-curricular activities, and service learning efforts.

Our commitment to sustainability is reflected in everything from our guiding principles for general education to our Sustainability Minor and Earth Systems Sciences curricula. Among the tenets of our required Core 1 general education course—which has grown from serving five hundred students in 2006 to almost two thousand in 2014—is that students actively explore environmental and societal responsibility. This intensively interdisciplinary course features lectures about environmental challenges and includes projects where students collaboratively investigate means of meeting them.

Our growing Sustainability Minor focuses on the application of concepts and methods from the physical, chemical, biological, and social sciences to the study of the natural environment and the problems it faces. It gathers faculty and curriculum from such areas as Earth and Atmospheric Sciences, Environmental Biology, Society and Environment, and Research, Communication, and Design, in an interdisciplinary effort to produce environmentally-informed graduates.

These coordinated curricula draw on an array of thirty courses whose focus on sustainability is already considerable. Across the university, at the undergraduate and graduate levels, students can study climatology, ecosystem ecology, biogeochemistry, hydrology, energy policy, environmental history, resource management, geoengineering, public policy, and environmental writing. As critical issues such as resource scarcity and climate change have dictated study of the environment, UC Merced has responded with courses dedicated to examining and alleviating them.

So rapid has been our growth in sustainability curricula, and so diverse and extensive is the range of faculty who are invested in it, that among our greatest challenges is the need for a unified means of promoting it. As curricular dedication to sustainability grows, so too should our capacity to organize our efforts.

1,000

Enrollment in courses that comprise the Sustainability Minor topped 1,000 during the 2013-2014 academic year.



UC Merced now has diverse and coordinated curricula of more than 30 sustainbility focused courses.

**Changing Faces** 

**F** Yosemite

Yosemite Leaders Program. Among others, the Sustainability curricula draws from faculty teaching in areas of Environmental Biology, Earth and Atmospheric Sciences, Communication, and Design.

### Milestones and Accomplishments

- The 2013–2014 academic year saw record enrollment in sustainability-based general education courses.
- Over one thousand students enrolled in courses that comprise the Sustainability Minor during the 2013–2014 academic year.
- The Merritt Writing Program has built out its science writing offerings to include a cross-disciplinary course in Environmental Writing for both science and humanities majors.

- In our curricula we have probed the extents of sustainability, but we can organize, define, and articulate our efforts in a more centralized way.
- Our curricula benefit from including stakeholders from across the university, both within the faculty and beyond it. This is particularly important as we continue to link our teaching to campus sustainability infrastructure and thus extend our capacity to work in a living laboratory.
- To ascertain students' applied sense of sustainability, we need to assess it within our curriculum.
- As a faculty dedicated to the study and practice of sustainability we would benefit from incentives for developing and coordinating sustainability curricula.



"One Campus, One Community", is an ideal mantra for our campus based student sustainability organizations. While sustainability is a global concern, we recognize that our efforts at preserving resources on our planet for future generations, begins at home, on our campus, with our now generation. Educating, inspiring, and creating a life-long commitment to planet stewardship is a goal in our efforts to engage our UC Merced students.

Looking to come together to promote sustainability on campus, the efforts of our students often involve collaborating with members of the staff, public, and other campus organizations to make our campus and community a model for local and cooperative leadership and innovation. UC Merced raises student sustainability awareness through a myriad of student based organizations and support through the Chancellors Advisory Committee on Sustainability.

Meeting an objective that enables elected officials to incorporate sustainability in their decisions and policies, students have made their passions felt through these organizations, as well as through the elected positions of the Associated Students of the University of California, Merced (ASUCM) Commissioner of Sustainability, and the ASUCM Sustainability Council.

Acting as liaison between the UC Merced students, community and administration, the purpose of the commissioner of sustainability is tasked to implement sustainable on campus projects in order to educate students, staff and faculty on energy efficiency consumption to reach the campus's triple zero commitment by 2020. Collaborating with the ASUCM Sustainability Council, the commissioner works diligently to deliver the message that students are vital to overall campus mission of sustainability.

As viable resources and vehicles to increase awareness both on and off campus, collaborative efforts among the various student organizations are encouraged. Creating opportunities that showcase group projects and community events about ways to incorporate environmental, social and economic sustainability into students' decision-making processes is also a main objective. "Establishing a network of student based organizations with the passion for making positive change, and working within the guidelines of the evolving campus, we are striving to encourage, support and educate our students to develop a culture of life-long commitment to sustainability," remarks David Noble, Associate Director of Rec and Athletics and member of the Chancellors Committee on Sustainability.



UC Merced is striving to encourage, support and educate our students to develop a culture of life-long commitment to sustainability.

Students are a critical element of UC Merced's sustainability mission.

### Milestones and Accomplishments

- Initiated an e-presence for sustainability
- Recreation and Athletics attended the College Sports Sustainability Summit at Georgia Tech University
- Established the "Rufus Recycles" Program (Re-Pycho Team)
- Created job position of Student Coordinator of Sustainability for Recreation and Athletics Department

- Recognition and alignment of all student sustainability groups to share messaging, disseminate information, share best practices and offer opportunities around collaboration
- Visibility on campus for student groups
- Succession planning is critical. Too often student leadership is personality-centric and the passion and commitment follows them after graduation.
- Developing a sense of structure and a set of guidelines to help offer structure for future groups



From the initial conception of the UC Merced campus, the goal of design and construction story is to lead by example in support of the University's teaching, research and public service mission. Setting ambitious sustainable planning and design goals, diligently pursuing them, and sharing the lessons learned is a core principle of our work.

In 2002, UC Merced was the first campus to set LEED Silver minimum as a goal for all campus projects. When Classroom Office Building 2, which starts construction this Spring, is completed in 2016, the campus will have completed one Silver, 8 Gold, and 8 LEED Platinum buildings, an unprecedented accomplishment. UC Merced was one of the original participants in the USGBC's LEED Multi-building Pilot Program, which led to the creation in 2011 of LEED guidelines for On-Campus building projects.

The success of UC Merced in exceeding its ambitious goals, while working within the restrictive parameters of state budgets, eventually led the University and the State to establish LEED Silver minimum as a requirement for all new facilities. UC Merced set project energy budgets to be employed in the design process for individual buildings, increasing expected performance as the campus learned over time. In the initial phases of development, buildings were expected to be 15% more efficient, then 35% more efficient, and at present campus buildings are designed to use less than 50% of the energy of their comparative benchmarks. A 40% savings in water consumption has been required since the campus program began. These efficiencies favorably impact the campus bottom line, saving well over \$2 million per year in purchased utilities. As envisioned, the campus has become a living laboratory for research on energy efficient design and interactive building energy management, due to its state of the art design and energy management systems (EMS). The campus has garnered over \$2.5 million in grants, which employ the campus EMS to provide and analyze this date and do real-time performance monitoring.



### **LEED Building Ratings (2005-2016)** Certified and Pending

25 state and national awards for environmental sustainability and design.

UC Merced's multiple building LEED Certification program enables projects to take advantage of campus wide energy solutions. It is the only campus in America that is entirely LEED certified.

### Milestones and Accomplishments

- 17 LEED certified or pending buildings (8 Platinum, 8 Gold, 1 Silver)
- 25 awards for sustainable planning and design including AIA COTE Top 10 Green Award
- Participant in National Renewable Energy Labs' Best Practice Case Study for Classroom Building and Research Laboratory design and comprehensive land use planning
- All buildings have exceeded California's stringent energy conservation code known as Title-24 by nearly 30%
- Participated in PG&E Savings by Design incentive program that has generated over \$1.5 million in rebates

- Participant in Smart Labs incentive that reduces laboratory building energy use.
- Hosted Architecture at Zero sponsored by AIA San Francisco and PG&E

- Having a LEED coordinator on staff is critical to acheiving campus targets
- Setting high expectations for our design and engineer teams will produce results
- Having our campus commissioning agent to manage the commissioning process ensures buildings are delivered as designed
- Campus development to date has set an achievable benchmark for the 2020 Project development program.



UC Merced sits at the epicenter of converging world challenges in water, energy, food, and the environment. To meet these challenges, research by faculty and students addresses a wide array of complex issues that bear directly on the energy efficiency, conservation of natural resources, and environmental sustainability. From campus institutes and research groups to the new Merced Vernal Pools-Grasslands Reserve, scientists from a variety of disciplines focus on critical issues important to California and beyond:

- Faculty, researchers, and students in the Sierra Nevada Research Institute conduct research in the San Joaquin Valley and the Sierra Nevada that examines natural resources, air, water and soil pollution, and climate change to answer basic questions that lead to improved environmental sustainability.
- The UC Merced Energy Research Institute conducts cross-disciplinary research that develops new and improved renewable and sustainable energy generation technologies, sets the standard for institutional energy efficiency and sustainable energy futures, educates the energy industry and the next generation of energy scholars and practitioners, and examines domestic and global energy policy.
- The UC Merced Center for Climate Communication analyzes and disseminates information to communicate climate and environmental information to the public. A current project evaluates language to develop a better understanding of how people speak and think about climate change, and the implications for policy-making.
- The Mountain Hydrology Research Group engages in collaborative research in the Sierra Nevada and other western mountains to study water and biogeochemical cycles in forested areas, above tree line, and in meadows, and streams.
- The University of California Advanced Solar Technologies Institute (UC Solar) is a multi-campus research institute centered at UC Merced. Current UC Solar research areas includes developing state-of-the-art solar energy generation technologies and examining solar energy economics and policy.



Graduate Student Ryan Lucas and intern Christine Hedge measure snow depth to compare with snow depth sensors



Professor Teamrat Ghezzehei and a team of researchers are trying to solve the issue of deadly famine in Senegal by taking a closer look at two shrubs that seem to help nearby crop plants thrive.



Graduate student Brendan Smith goes knee deep in a marsh to demonstrate the capabilities of an unmanned aerial vehicle that he created

Over a dozen research groups, centers and institutes at UC Merced are actively involved with sustainability research

## Milestones and Accomplishments

- In 2009, the University of California, Merced Foundation received a \$500,000 gift to establish the UC Merced Renewable Energy Scholarship/Fellowship Fund.
- Professor Teamrat Ghezzehei was funded by NSF-PIRE (Partnerships for International Research), which enables a partnership of U.S., Senegalese, and French researchers and students to examine how native shrubs of Africa's Sahel region improve crop production by influencing soil moisture and soil microbial composition.
- Graduate student Christian Moe is the recent recipient of the Dan David Scholarship for Solar Energy Research, a prize that recognizes innovative, interdisciplinary research that cuts across traditional boundaries.
- Wells Fargo Bank provided a grant to help provide long-term solutions to some of the world's greatest environmental challenges. Student teams will develop preliminary designs that focus on water, energy and food-related challenges in the Central Valley. According to Dean Dan Hirleman, "These are real projects with real effects targeted to the huge problems the Valley faces."
- An engineering capstone team of seniors tackled a complex real-world problem in Yosemite National Park where a vital communications link had been damaged by fire. The student team designed a solution concept that meets project standards of reliability. If the project is adopted, the PG&E line will be removed from the Mariposa Grove of Sequoias and this otherwise pristine natural area will revert to former wilderness conditions.
- The Mechatronics, Embedded Systems and Automation (MESA) Lab designs unmanned aerial vehicles that are used for such tasks as monitoring air quality in wildfires before humans are put in harm's way; monitoring natural gas pipelines for leaks; and monitoring crop growth, soil health and moisture.

- Professor Alberto Cerpa was awarded a \$550,000 CAREER NSF Award to recognize and sustain his work in the field of wireless sensor networks.
- Professor Tom Harmon's research group works on climate change as this relates to soil moisture, groundwater, wetlands and surface water quality. Professor Harmon was recently awarded grants to investigate climate-driven changes in hydrologic processes and risks to sustainable freshwater ecosystems.
- A recent five year, \$5 million NSF grant is enabling SNRI and other researchers in the Southern Sierra Critical Zone Observatory (SSCZO) to continue addressing challenges to California's water security and its link to the health of Sierra Nevada ecosystems.
- Professor Gerardo Diaz is designing and testing the next generation of solar-collecting units at UC Merced. With funding from the California Energy Commission, Professor Diaz and his students have built a solar water heater in which water flows through flat minichannels, or tubes made of aluminum with the coating applied directly to the tubes.

- Information on sustainable research on campus is not centralized at this time.
- In Fall 2014, the Office of Research Development Services will implement Cayuse SP (an electronic research administration system), part of a new "Contracts and Grants Ecosystem" that will make it much easier to track grants and proposals that focus on sustainability.



As UC Merced continues to prosper and grow, both in number of enrolled students and in square footage, Dining Services strives to keep up with the demand as well as proactively promote sustainability in the realm of healthy living, sustainable purchases, reduction of the impact of waste all while changing an immovable culture of quick meals on the go.

UC Merced Dining Services participated in national Food Day on October 24, 2013 and achieved one of the highest number of pledges UC wide, which is an accomplishment considering that our total population is merely 10% of other UC campuses. What this means for our campus community? We are taking small steps toward changing a culture of unhealthy eating habits and united to become a healthier community.

One thing every Dining department UC wide shares, is the unavoidable impact and accumulation of our waste. UCM Dining Services integrated a waste reduction program in the start of the 2012-2013 Academic Year that reduced the amount of paper waste accumulated by the Dining department by 40% and the purchase of paper goods went from 3.5% in 2012 to 1.5% in 2013. With the lead of the Campus Waste team, Dining Services took part in the Compost program on campus for the first time within the 2012-2013 academic year which greatly impacted the reduction of Landfill waste from the UCM campus.

As we move forward to the 2013-2014 Academic Year, our focus will be to increase our sustainable purchases by taking advantage of the rich agriculture available to us in the Central Valley. As well as continue to find innovative ways to decrease the amount of waste created by Dining.



### **"To Go" Orders** Up 13% since introduction of OZZI

### **OZZI Checkout vs. Returns** 2012-2014



UC Merced Dining Services serves 20% more customers but has reduced paper waste by 2%.

UC Merced's OZZI container return system has been instrumental in reducing waste from disposable containers.

### Milestones and Accomplishments

- Dining Services managed to serve 20% more
  customers while reducing the amount of paper
  waste generated by Residential Dining by 2% by
  integrating the use of re-usable food containers
  for customers choosing to take their meals to go.
  The innovative part of this re-usable container
  program was the partnership with the OZZI
  Corporation and the Campus Card to develop
  a return system that is unique to our campus
  population. Campus members take their re-usable
  container and return them to a return receptacle
  and swipe their card to validate the return.
  The use of the OZZI return kiosk here at UCM
  was recognized at the CHESC in 2013 for the
  Innovative Waste Reduction award.
- Dining Services is also making strides with local businesses to help manage the extra mouths to feed on campus. Starting during the start of the 2013-2014 Academic Year, local restaurants were brought on campus to help keep up with the demand for food on campus while we await the expansions planned in the developmental future.

Dining Services has also taken advantage of the many local resources available to us by ordering local organic produce from vendors such as T.D. Wiley, located in Madera, Californiand moving many of our pre-packaged merchandise from MTC Distributing, located in Modesto ,California.

- The campus community will adapt to change if it is introduced in a way that does not disrupt time and schedules
- Many local vendors are available to us and we can start to develop more sustainable purchasing practices by utilizing the help of our vendors
- Many campuses share the same struggles when it comes to waste generation so we can build communication between campuses to help us refine our already innovative practices
- Work alongside campus waste management to help continue to develop the compost program and better waste reduction



# **Recycling and Waste Reduction**

Education is the key to zero waste. All new employees are required to attend an orientation session. This allows the recycling staff to meet every new employee and help them understand sustainable practices at UC Merced. The recycling staff also gives presentations to all new students moving into campus housing and is a guest speaker for the CORE 1 class.

The recycling staff has an outreach booth at several events throughout the year including Club Week, the Earth Day Festival, the ACS Vendor Fair, and the Wellness and Safety Fair. The recycling website has a complete list of what recyclable or compostable, (http://recycle.ucmerced.edu). Special events have recycling staff involved in the planning and operation to ensure maximum waste diversion. Compost and recycling bins are monitored by recycling staff at events such as Bobcat Day and Staff Appreciation Day.



Data Source: UC Merced Facilities Management, Upper Campus Waste Audit, April, 12, 2013.



We have found that education and positive reinforcement are the most effective ways to modify wasteful behavior on campus.



Waste audits conducted by staff and student volunteers are used to determine campus diversion rates for recyclable, compostable and landfill items.

7130ND

UC Merced staff developed a patented multi-section recycling bin.

Designed and made in Merced, California.

## Milestones and Accomplishments

- In 2011, UC Merced started a composting program that took pre-consumer and postconsumer food waste from the cafeteria. This program diverted approximate 40,000 pounds of waste in 2013.
- UC Merced won the California Higher Education Sustainability Conference "Best Practice Award" for innovative waste reduction. The reusable to-go container program is first in the world to use student identification cards for tracking the reusable containers.
- UC Merced was awarded a patent for the multisection recycling bin the Lantern. The bin was featured on the front page of the *Fresno Bee* on April 14, 2013.
- Waste and Recycling News Magazine did an article on the recycling sign research done at UC Merced.

- The most effective way to modify wasteful behavior is through education and positive reinforcement.
- Everything that comes to UC Merced must be recyclable, compostable or durable. For example, every coffee cup must be reusable or compostable.



Water is Mother Nature's original zero-sum game. There is only a finite amount of water on the planet and—unlike energy—there are no substitutes for water. So, water sustainability is about sharing the available water equably between the economy, society and the environment.

UC Merced raises student water awareness through annual residence hall water conservation competitions. Almost one-quarter of undergraduate students have participated in one or more water conservation competitions. The fall 2013 water competition involved almost 2,100 students and generated a 10% reduction in potable water consumption during the month long event. UCM students have presented their water competition program at the Alliance to Save Energy's PowerSave Summit and the California Higher Education Sustainability Conference. In 2012, undergraduate Martin Figueroa won a Brower Youth Award in national recognition for his water conservation leadership.

The campus is "wired for water" with over 50 wireless data sensors capturing 100% of campus water use in real-time. This data is available online enabling continuous water use monitoring and rapid leak-detection by campus facilities, as well as providing water use data for student projects such as the residence hall water competition campus facilities identified and fixed water leaks totaling 2,500 gallons per day.

Water challenges and opportunities are location-dependent. In 2012-13, UC Merced used over 71 million gallons of potable water at a cost of \$440,000. Campus annual water consumption is projected to increase to 120 million gallons by 2020 and to 778 million gallons at full development. UC Merced's potable water comes from a 800-foot deep well on campus owned by the City of Merced. San Joaquin Valley groundwater is inexpensive compared to the water some other campuses use—which must be imported from hundreds of miles away or from out of state. Consequently, inexpensive local groundwater makes it challenging for UC Merced to create financial payback models to justify implementing reclaimed or reuse water solutions.



UC Merced Facilities Management



A network of wireless monitoring stations provides real time notification of water sources that require troubleshooting by campus staff.

### **Milestones and Accomplishments**

34%

- UC Merced included policies in its 2009 Long Range Development Plan requiring potable water use minimization, landscape design that minimizes water use and explores "water neutrality."
- All campus buildings have earned at least 80% of the USGBC LEED water credits resulting in a 40% reduction in water use compared to comparable buildings.
- UC Merced's first water use inventory was conducted by undergraduate student Danique Aalbu in 2009. Current campus water use is approximately 50% for landscape irrigation, 30% for buildings and 20% for building heating/cooling.
- Water was added to the UC Sustainable Practices Policy in August 2013, requiring campuses to reduce per capita water consumption 20% by 2020. UCM has already exceeded this target (largely by population growth on a fixed campus footprint).
- UC Merced's initial water baseline is 22,564 gallons per person per year. As of 2012-13, campus water use was less than 13,000 gallons per person per year or a 43% reduction from the baseline.

- White House Champions of Change finalist (2012)
- Alliance to Save Energy Campus Conservation Nationals winner (2012, 2013)
- UCM initiated its first campus water action plan in January 2014 with goals for water use reduction, watershed protection and outreach.

- Water should be used more than once before being discharged.
- Discussing water in terms of economic, social and environmental sustainability can moderate potentially polarized perspectives about water conservation and use.
- Campus planning, design and construction policies should require leading edge sustainable water solutions and systems.
- Full-cost pricing of water needs to be explored as a tool to more accurately capture total costs, benefits and financial justification for sustainable water solutions and systems.



At UC Merced we know that every procurement can have an impact on our environment, our community and our future. Whether we are contracting for energy efficient appliances or paper shredding services, our evaluation process is based on whole life cost or a "cradle to cradle" (C2C) philosophy.

Using the C2C philosophy, we take into account the entire supply chain; from the origin of raw materials, material properties (including recycled content and toxicity); sustainable manufacturing processes, packaging and delivery methods, operational costs and impacts and opportunities for potential reuse through, repurposing, recycling or composting. Through our cradle to cradle procurement practices we have achieved a zero percent landfill impact from equipment, supplies and scrap processed through our surplus program.

Sustainable products can be seen everywhere on campus. The furniture in our first student housing building is an example of this. The bedroom furniture is made of wood from renewable forests, the finishes have zero volatile organic compounds and the bed frames are manufactured with 100% steel from salvaged railroad tracks; the manufacturing facility that produced these products generates their own heat to dry the lumber and sends no waste to the landfill. The couch and chairs in the living area have fully renewable components and upholstery. The components of the furniture are recyclable. Our goal is to drive the market for best practices in sustainable procurement while delivering the best value in goods and services to the campus.



### **Examples of Environmentally Preferable Purchasing (EPP) Contracts**



UC Merced's Environmental Preferable Purchasing (EPP) contracts exceed UC system sustainabilty specifications.

UC Merced's library stacks are made from recycled steel, the furniture was manufactured with wood from renewable forests and the carpeting is 100% PVC free, exceeds Green Label VOC standards and contains more than 30% recycled content.

### Milestones and Accomplishments

- 2003: Awarded initial environmentally preferable purchasing (EPP) contracts that exceeded UC systemwide sustainability specifications to meet the high sustainability goals upon which the campus was founded in step with the Chancellor's environmental vision.
- 2004: UC Merced Purchasing introduced sustainability as an evaluation factor in the UC system wide strategic sourcing process.
- 2005: Eliminated virgin copy paper on campus; Set new standard of 30% post-consumer recycled copy paper.
- 2006: UC Merced Purchasing received the UC/CSU/CC Sustainability Conference "Best Practices Award."
- 2007: Hosted the first annual UC Merced Strategic Vendor Fair with a sustainability theme;
- 2008: Created sustainability provisions as standard language on all purchase orders.

- 2009: Initiated the first annual "Building Local Partnerships" in collaboration with local public agencies and institutions, an outreach forum with the purpose of building local capacity.
- 2012: Negotiated \$10,000 annual sponsorship funding through beverage partnership, specifically earmarked for campus sustainability initiatives.
- 2013: UC Merced spent over \$6.2 million on environmentally preferred products and recycled 49,572 pounds of paper; the equivalent of 421 trees.

- You build success through collaboration with both internal and external stakeholders.
- Every procurement presents an opportunity to further sustainability.
- People want to do the right thing and will do the right thing when they are aware of what the impact is on the environment.
- It's about changing the culture.



Since its inception, UC Merced has been a leader in sustainable planning and environmental design. As the campus has grown, new buildings have been designed, planned and sited to demonstrate innovation and and to minimize energy use. UC Merced's goal is to reach zero net energy through a combination of efficient facilities and renewable energy production.

UC Merced has a market-leading building energy-efficiency program that significantly reduces energy use and the climate impact of the university. The program requires new buildings to consume half the energy and demand of comparable university buildings in California and 30% less energy than required by Title 24, California's energy efficiency code.

UC Merced installed a 1-megawatt solar array in Fall 2009. The system occupies 8 acres and produces approximately up to 50% of campus electricity needs when the sun is shining. Through a power purchase agreement with a third party that designed, installed, owns and operates the system on UC Merced's land. The campus buys the power and owns the "green tags" or renewable energy credits associated with the green power. In the near future, UC Merced will install rooftop solar systems on up to eleven campus buildings - getting UC Merced that much closer to zero net energy. Future options include wind power, plasma arc waste to energy and biofuel micro turbine cogeneration.



Learn more about the Sustainble Plasma Gasification Laboratory at https://spglab.ucmerced.edu



UC Merced's 1 megawatt Solar Array.

### Milestones and Accomplishments

sources.

- Installation of 1 megawatt Solar Array
- Industry leading UC Merced energy benchmark
   system
- State of the art monitoring system
- Launched online real time energy use dashboard

- Bold but acheivable energy usage goals attract skilled building design and engineering teams
- Getting to zero net energy is achievable with energy efficient buildings
- Collecting and acting on energy usage data is key to cultivating a living laboratory and capturing the benefits of sustainabilty investments
- Continue to reinforce administrative and organizational structures, processes and policies to support sustainability

The mission of the Chancellor's Advisory Committee on Sustainability is to ensure leadership in sustainability through **teaching, research and public service.** 

http://sustainability.ucmerced.edu

### UCMERCED

5200 North Lake Road Merced, CA 95343