UNIVERSITY
OF
CALIFORNIA

# Annual Report on Sustainable Practices

2015

UNIVERSITY OF CALIFORNIA

# ANNUAL REPORT ON SUSTAINABLE PRACTICES 2015


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# A MESSAGE FROM THE PRESIDENT

This past year, communities across the world continued to grapple with complex issues such as climate change, drought, famine, and agricultural challenges. No other institution combines the power of research, public service, and operational innovations to help address these enormous challenges quite like the University of California.

In 2015, the University redoubled its efforts around climate change and energy, sustainable investing, food, and water conservation issues. We also looked for ways in which UC research and solutions could be replicated across the state, nation, and world. This unwavering commitment to environmental sustainability goals has led to UC's consistently high rankings among the nation's greenest universities.

Here are just a few highlights of UC's sustainability work in 2015:

**Climate and Energy:** As part of the University's initiative to achieve carbon neutrality by 2025, UC convened a summit last fall during which we unveiled a report on scalable climate solutions that drew from the work of 50 UC faculty members across multiple disciplines. The event brought together climate experts from inside and outside the University, fostering productive partnerships that will inform and influence policy and research priorities around climate change and carbon neutrality.

Also in 2015, UC's Global Climate Leadership Council approved 15 research and engagement projects to support our carbon neutrality goal. These projects leverage UC faculty expertise and student creativity to make the University a global leader in climate change research, education, and business practices. They include UC's Faculty Climate Action Champions and the Carbon Neutrality Student Fellows, selected at each of our locations.

The University also launched the systemwide Cool Campus Challenge in the fall, as part of our effort to create a strong culture of sustainability across our campuses. This was a friendly competition open to UC students, staff, and faculty that encouraged participants to form teams and take personal actions to reduce UC's carbon footprint. More than 10,000 people joined the Challenge in its first two weeks, and over 19,000 people participated by the time the Challenge ended in December.

UC's ambitious solar projects broke ground in 2015 and are on track to go online later this year. These represent the largest solar energy purchase by any U.S. higher education institution, and will help us power UC campuses and medical centers more sustainably.

**Sustainable investing:** Beyond research and operational activities, the University's commitment to environmental stewardship also extends to its investments. In February of last year, UC became the first university in the world to sign the Montreal Carbon Pledge, sponsored by the United Nations-supported Principles for Responsible Investment, an international network of investors with some $45 trillion in assets under management. This is a first step toward measuring the long-term investment risks associated with climate change and carbon regulation.

By becoming a signatory of the Pledge, the University of California has committed to measuring and annually disclosing the carbon footprint of its investments, with the goal of using this information to inform carbon asset risk and management strategies.

In recognition of this and other steps, the White House announced last year that UC would play a major role in its Clean Energy Investment Initiative, which stems directly from the University's commitment to profitably invest at least $1 billion over the next five years in solutions to climate change.

**Food and Agriculture:** The UC Global Food Initiative marked its first anniversary in July, and continues to harness University resources to find ways to sustainably and nutritiously feed a world population expected to reach eight billion by 2025. In its first year, the Global Food Initiative saw the formation of more than 20 systemwide working groups that are developing toolkits and best practices to be shared with other UC campuses, and beyond.

We also created the UC President's Global Food Initiative Student Fellowship Program, with a first class of 54 fellows and a second wave of 44 fellows announced this past fall. These students are putting their energy behind community gardens, food pantries, urban agriculture, and solutions to food waste, among other projects.

The University also hosted several food-related events and lecture series at its campuses last year, including the California Higher Education Food Summit at UC Santa Barbara, and a food and agricultural literacy symposium at UC Davis. The Global Food Initiative also supported UC Berkeley's lauded Edible Education 101 course, is supporting the development of online introductory food courses, and launched the UC Food Observer blog, a daily digest of food-related news and original content.

UC is also focused on amplifying the pioneering work of our Division of Agriculture and Natural Resources (UC ANR), which undertakes a wide breadth of research, education, and public outreach related to climate change and carbon neutrality. The efforts of UC ANR experts continue to make a significant impact across the globe on issues related to drought and water, sustainable farming, and energy. These techniques and practices are not just for the State of California—they can be exported further to places where climate change poses significant health risks and jeopardizes the livelihoods of the world's most vulnerable populations.

ANR's sustainable energy production work has linked engineering, agricultural, biological, and environmental sciences to study biofuel crops and production. This research examines new production technologies that minimize fossil fuel energy consumption and maximizes renewable energy sources throughout the food production system. UC ANR academics have also developed science-based, policy-relevant research to help guide policymakers as they grapple with energy challenges.

The Division's Cooperative Extension plays a key role in advising farmers on agricultural practices designed for a rapidly changing, more extreme climate. These experts were also involved recently in the development of new protocols that allow ranchers to increase carbon sequestration on their land, have it independently verified, and generate carbon offsets that can be traded.

**Water:** As California's drought persisted in 2015, the University continued to do its part through water conservation efforts at our campuses and our medical centers. UC faculty experts from our campuses and UC ANR also offer ongoing support and expertise for farmers, communities, and state agencies as they navigate this crisis.

ANR projects that focus on micro-irrigation technologies—techniques that allow water to drip slowly into plant roots—are just one example of the kind of drought-related expertise UC shares with California. These strategies can lead to significant water savings and increased crop yields. Research work on the automation of surface irrigation systems has already demonstrated a potential water savings of 57 billion gallons.

Read on for more about the University of California's sustainability work and our plans to tackle these issues anew in 2016.

Yours very truly,

Janet Napolitano

# EXECUTIVE SUMMARY

This 12th annual Report on Sustainable Practices highlights progress in the University's comprehensive sustainability program. This executive summary briefly profiles milestones from the Carbon Neutrality Initiative and Global Food Initiative.

In September of 2015, the Office of the Chief Investment Officer (UC Investments) published a Framework for Sustainable Investing, which finds its roots in the unique culture and practice of the University of California. UC will use this framework to integrate environmental, social and governance considerations holistically into investment decision-making, including but not limited to consideration of climate change, social inequality, human rights, food and water security, and diversity issues in asset management. UC also committed last year to allocating $1 billion over five years to investment in climate change and sustainability solutions, a decision that the White House recognized as part of its Clean Energy Investment Initiative. Building on this commitment, UC became a founding member of the Breakthrough Energy Coalition, a group of investors led by Bill Gates that is committed to investing in technology that can help solve energy and climate challenges.

The University's Carbon Neutrality Initiative builds on UC's pioneering work on climate research and furthers its leadership in sustainable business practices. In 2015, UC took major steps forward on the renewable electricity portion of its carbon neutrality strategy. UC Davis opened the largest onsite solar energy installation of any university in the country. The 16 megawatt (MW) solar farm more than doubled the total installed solar energy on UC campuses to 30.7 MW. This nearly triples UC's original policy goal to install 10 MW of renewable energy on campuses. UC campuses are developing an additional 26 MW of solar projects, so UC's on-campus solar numbers will continue to increase. However, the University purchases several times more electricity than can be produced by solar panels on its campuses, so in fall of 2015 the UC Energy Services Unit broke ground on the first of two solar projects totaling 80 MW. Those two projects in Fresno County are the largest solar purchase by any university in the country. Once operational by the end of 2016, approximately 60 percent of the total imported electricity at participating campuses will be from solar energy.

The financial benefits from the University's long-standing energy efficiency program continue to add up. UC received approximately $6.7 million in incentive payments in 2015 from the statewide Energy Efficiency Partnership program to implement 72 energy efficiency projects. Those projects are projected to save approximately 23 million kilowatt-hours of electricity and 1.2 million therms of natural gas annually. Since the program began in 2004, the University has implemented projects that help to avoid approximately $28 million in additional energy costs annually, and the program's cumulative avoided costs should exceed approximately $166 million by the end of 2015. However, the pace of the energy efficiency installations slowed down in 2015 and is not at the scale required to achieve the goal of carbon neutrality by 2025. For this reason, the University is evaluating new financing strategies that would enable the scale of energy efficiency investments needed to meet carbon goals and save more money on utility bills.

The operational goal for carbon neutrality draws inspiration from and complements UC's world-class climate change research and education. The Carbon Neutrality Initiative sponsored a climate research summit at UC San Diego in October that featured keynote speeches from Governor Jerry Brown, United

Nations Environment Program Executive Director Achim Steiner, Nobel Laureate Mario Molina and other state, national and international climate leaders. At the summit, UC released a groundbreaking report, "Bending the Curve: Ten scalable solutions for carbon neutrality and climate stability," developed by over 50 UC faculty and researchers from the 10 campuses and two affiliated national labs.

President Napolitano's Global Climate Leadership Council also launched a systemwide Cool Campus Challenge ("Challenge") in the fall. The challenge engaged students, staff, and faculty in a friendly competition that encouraged participants to form teams and take personal actions to reduce UC's carbon footprint. More than 10,000 people joined the challenge in just the first two weeks after it was launched, and over 19,000 people participated by the time it ended in December.

Work toward sustainable food service goals contributes to UC's Global Food Initiative's projects in sustainable procurement, small producer opportunities, food diversion and waste reduction, and agri-food literacy. The University's sustainable food procurement continues to increase, shifting $28.7 million (23 percent of total reported annual food expenditure) in 2015 toward local, fair, ecologically sound and humane food sources.

Even before the governor announced a drought emergency, President Napolitano had committed the University in 2014 to reduce per capita potable water consumption 20 percent by 2020 and called on the campuses to take immediate actions in response to the drought. These efforts were so successful that seven of the 10 campuses exceeded the 20 percent goal five years early. In order to continue to lead by example in addressing the state's long-term water supply constraints, the University committed in 2015 to even deeper water savings, with a goal of reducing per capita potable water consumption by 36 percent by 2025.

This annual report also highlights progress toward policy goals for zero waste, green buildings, and sustainable transportation, in addition to profiles of 2015 achievements from each campus and medical center beginning on page 62.

# OVERVIEW OF UC SUSTAINABILITY

## Introduction and Background

This 12th Annual Report on Sustainable Practices highlights the ongoing progress of the University's comprehensive sustainability program, including advancement in all areas of the Sustainable Practices Policy (Policy) as well as in research and education, sustainable investing, and students, faculty, and staff engagement.

UC's sustainability program and policy includes all ten campuses and five medical centers. UC's sustainability commitment began in 2003 with a Regents' action that led to the adoption of a Presidential Policy on Green Building Design and Clean Energy Standards in 2004. Since adopting that policy, the University has expanded the scope to include climate protection, transportation, recycling and waste management, purchasing, food, and water. The Policy can be accessed at: http://policy.ucop.edu/doc/3100155/SustainablePractices.

## External Recognition

UC campuses and medical centers received more than 20 awards for their leadership in sustainability in 2015.

For the second year in a row, UC Irvine was named the No. 1 "Coolest School" by Sierra magazine, while UC Davis placed No. 2 and UC San Diego placed No. 7. UC placed five campuses in the top 25 and seven in the top 50. UC Santa Barbara ranked No. 3 in Princeton Review's Top 50 Green Colleges and UC Irvine ranked No. 16. The journal *Nature* acknowledged UC San Diego and the Scripps Institution of Oceanography for its considerable leadership in the areas of climate change and marine biology research, ranking it first in the nation and fourth worldwide in the category of Environmental and Earth Sciences.

UC San Francisco's Medical Center was recognized by Practice Greenhealth's Top 25 Environmental Excellence Award and the Ronald Reagan UCLA Medical Center received Practice Greenhealth's Circles of Excellence food award.

UC's new emphasis on sustainable investing has already gained global recognition. The Asset Owners Disclosure Project's (AODP) 2015 Global Universities Index ranked UC first among universities worldwide in climate risk disclosure and 25th in AODP's Global Climate 500 Index of all institutional investors globally.

An annotated listing of all sustainability rankings and awards over the past year can be accessed at: http://ucop.edu/sustainability/policies-reports/reports-awards-rankings/sustainability-awards-and-rankings.html.

# LIVING LABORATORY

As California's higher education research arm, UC serves as a living laboratory for the state. The University's discoveries, its educational mission, and its operational reforms complement and support many of the strategies that the state has implemented. Every UC campus is a living laboratory for research and teaching across a wide range of sustainability topics. Carbon neutrality-related projects described below include integrating campus infrastructure into research and learning on sustainability; research on reducing greenhouse gas emissions from anesthetic gases; and two demonstrations of new technology that maximize the use of clean, renewable energy in buildings or by electric vehicles.

Professor Sue Carter, the Santa Cruz campus's Faculty Climate Action Champion, is collaborating with dozens of faculty across multiple disciplines and staff across several departments to establish a formal sustainability living-laboratory program on campus. Coined the S-Lab, the program will designate both indoor and outdoor laboratory space to support student-led research and experiential learning opportunities. This "sand box" will allow students the opportunity to develop research questions, implement studies, design systems, build structures, gather and analyze data, and manage projects and programs that support technology and behavior change to provide sustainability solutions. The S-Lab initiative is being partially funded through an overarching campus-wide planning effort, the Climate and Energy Strategy, which will develop a roadmap for UCSC to reach carbon neutrality. A climate-planning module utilizing this tool is being developed for integration into environmental studies undergraduate coursework.

At UCSF, Carbon Neutrality Fellow Nicole Jackman, MD, PhD (Resident Physician, Department of Anesthesia and Perioperative Care, School of Medicine) is analyzing the efficient use of fresh gas flow with inhaled anesthetics to decrease costs and greenhouse gas emissions (GHGs). This project aims to achieve more efficient utilization of inhaled anesthetics, which contain environmentally deleterious GHGs via a reduction in fresh gas flows (FGFs) used to deliver these agents. The hypothesis is that a reduction in FGFs could significantly decrease volatile agent consumption and resultant purchasing costs at UCSF while still providing a safe anesthetic for patients.

Sutardja Dai Hall at UC Berkeley recently deployed a novel emissions-reducing technology developed by WattTime, a Berkeley startup founded by two UC Berkeley alumni. The software automatically detects brief periods as short as 5 minutes when California power plants have an excess of available clean energy. It then wirelessly directs parts of the building's HVAC system to run its cooling systems to effectively use this surplus of clean energy. This process instantly reduces UC Berkeley's greenhouse gas emissions from its electricity use and, if implemented at scale, would also help California utilities integrate more renewable power plants. The project team includes WattTime, UC Berkeley Facilities Management, and the Office of Sustainability and Energy.

UC San Diego received funding from the California Energy Commission to test a new form of communication between electric vehicles and the power grid. New charging stations installed on campus recognize when excess electricity is available from the grid and use it for charging. If that electricity is needed elsewhere, the chargers are able to interrupt the process to help balance real time grid capacity and customer needs. The pilot project is also offering affordable leases on electric vehicles to UC San Diego students, staff, and faculty, who will then be part of the overall study.

# CLIMATE AND ENERGY

## Policy Goals

- Reduce greenhouse gas emissions to year 2000 levels by 2014 and 1990 levels by 2020.
- Achieve carbon neutrality for scope 1 and 2 emissions by 2025 and scope 3 emissions by 2050.
- Develop 10 megawatts of onsite renewable energy generation by 2014.

CLICK FOR DETAILS

### President's Initiative: Carbon Neutrality by 2025

The Carbon Neutrality Initiative builds on UC's pioneering work on climate research and furthers its leadership in sustainable business practices. UC is setting national models for energy efficiency programs and development of new sources of renewable energy.

By 2025, UC is committed to emitting net zero greenhouse gases, becoming the first major university system to achieve carbon neutrality. UC is working simultaneously to integrate carbon neutrality efforts into its research, teaching, and public service mission.

To achieve carbon neutrality, UC is taking bold steps to expand its energy efficiency efforts and to dramatically increase its use of energy from renewable sources. In 2016, UC will develop a framework and plan to articulate the portfolio of strategies that will allow it to achieve carbon neutrality by 2025.

### Global Leadership in Climate Research, Education, and Public Service

President Janet Napolitano formed a Global Climate Leadership Council (GCLC) to advise UC on achieving the ambitious goal of achieving carbon neutrality while also providing guidance for furthering its other longstanding sustainability goals. The GCLC will also integrate the Carbon Neutrality Initiative and other sustainability goals into UC's teaching, research, and public service mission. The council is comprised of faculty administrators, students and experts from inside and outside UC and is engaging the entire university community in its effort. Toward that end, in 2015 the GCLC approved funding for 15 research and engagement projects. These projects leverage faculty expertise and student creativity to accelerate and enhance the University's global leadership in climate change research, education, and business practices.

On the topic of research, the GCLC sponsored a summit at UC San Diego's Scripps Institution for Oceanography in October 2015 to put the University's climate solutions research leadership in the global spotlight.

The "Summit on Pathways to Carbon and Climate Neutrality: California and the World" brought together leading UC climate change researchers, state and federal officials, corporate sustainability leaders, and green technology entrepreneurs to discuss scalable solutions for achieving significant greenhouse gas reductions. Speakers included California Governor Jerry Brown; Achim Steiner, executive director of the United Nations Environment Program; Nobel laureate Mario Molina; Ellen Williams, director of Advanced Research Projects Agency–Energy at the U.S. Department of Energy; UC President Janet Napolitano, and more.

The summit and accompanying report, "Bending the Curve: Ten scalable solutions for carbon neutrality and climate stability," were chaired by UC San Diego's Scripps Institution of Oceanography Distinguished Professor Veerabhadran Ramanathan, and included the co-authorship and participation of over 50 UC faculty and researchers from the 10 campuses and two affiliated

national labs, drawn from the physical and natural sciences, social sciences, humanities, business and medicine. The report includes a set of recommended actions that researchers, policymakers, activists, philanthropists, and institutions like the University of California can implement immediately to achieve real progress around climate change, and make significant strides toward carbon neutrality. These recommendations include promoting current technologies that will help California meet its 2030 goals for carbon reduction, and developing new technologies to meet even loftier goals by 2050.

Professors Ramanathan and Daniel Kammen from the Berkeley campus presented the results of the report at the international climate negotiations in Paris in December 2015. The report and the University's leadership on climate solutions received attention and acclaim nationally and internationally.

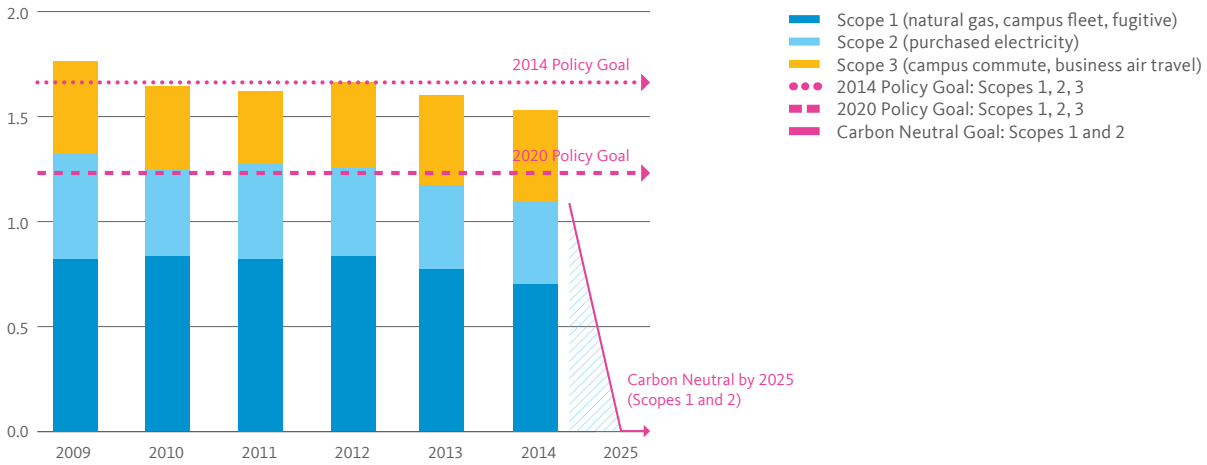
Connecting the realms of research and education, the GCLC provided funding for each campus to select Faculty Climate Action Champions and Carbon Neutrality Student Fellows. The Faculty Climate Action Champion awards were established by the GCLC to promote faculty leadership in scholarship and teaching about climate solutions. In the fall of 2015, each campus selected one Champion after soliciting proposals from faculty of all disciplines for activities that engage students and provide campus-wide leadership in carbon neutrality and sustainability issues. Faculty champions received a small grant to fund their proposals, which they are implementing during the 2015-16 academic year.

President Napolitano created the student fellowship program as a way to encourage student involvement in advancing UC's carbon neutrality and sustainability goals. Fellows have taken on a wide range of projects, from research aimed at scientific advances to policy analysis. At least one fellow at each UC location is dedicated to communicating the urgency of the carbon neutrality goal to students and campus communities.

To involve the entire University community in the Carbon Neutrality Initiative, the GCLC also launched a systemwide Cool Campus Challenge ("Challenge") in the fall. The Challenge engaged students, staff, and faculty in a friendly competition that encouraged participants to form teams and take personal actions to reduce UC's carbon footprint. More than 10,000 people joined the Challenge in just the first two weeks after it was launched, and over 19,000 people participated by the time the Challenge ended in December.

FIGURE 1: UC GREENHOUSE GAS EMISSIONS COMPARED TO CLIMATE GOALS

(Millions metric tons CO2e)



In addition to the Climate Action Champion awards, the GCLC approved funding for a series of campus workshops to incentivize, support and connect faculty across campuses who voluntarily choose to infuse existing course curriculum across various disciplines with relevant climate and sustainability concepts. Sustainability curriculum leaders from each of the 10 campuses plus the Division of Agriculture and Natural Resources attended a systemwide training session on how to organize the workshops on each individual campus during the 2015-16 academic year. The program will also include a follow-up networking event on each campus in 2016-17 that will be open to all faculty and will showcase the revised courses. Enriching existing courses in this way is very cost-effective and enhances the educational experience of many students, especially those for whom sustainability and climate may not be a major focus.

## Progress Towards Goals

As demonstrated in Figure 1, the University's GHG emissions totaled 1.5 million metric tons of carbon dioxide equivalent (CO2e) in 2014. Forty-five percent of the total emissions come from Scope 1 sources—natural gas, campus fleet, and fugitive emissions (such as refrigerants or certain gases used in research). Twenty-five percent come from Scope 2 sources—purchased electricity and steam. The final 30 percent come from Scope 3 emissions—campus commute and business air travel. Despite continued growth in building space, total emissions have been declining slightly over the past three years. The University's total emissions fell below 2000 levels at the close of calendar year 2014, meeting the UC policy goal for 2014. The campus profiles at the end of this report show each campus' progress toward the climate policy goals. In 2014, six campuses met or exceeded the 2014 policy target. Santa Barbara and Los Angeles joined Berkeley in reducing emissions below

TABLE 1: ON-SITE SOLAR PV CAPACITY

| | Solar Capacity (kW) | | |
|---|---|---|---|
| Campus | Installed | In Construction | In Planning |
| ANR | 74 | — | 6,800 |
| UCB | — | 1,000 | 1,400 |
| UCD | 17,060 | — | — |
| UCDMC | 145 | — | — |
| UCI | 4,271 | — | 7,000 |
| UCLA + UCLAMC | 39 | 138 | — |
| UCM | 1,000 | 1,000 | — |
| UCR | 4,000 | — | — |
| UCSD | 3,004 | — | — |
| UCSF | 250 | — | 1,250 |
| UCSFMC | — | — | 750 |
| UCSB | 625 | — | 4,856 |
| UCSC | 250 | — | 2,000 |
| **Total** | **30,718** | **2,138** | **24,056** |

TABLE 2: ON-SITE BIOGAS PROJECTS

| Campus | | Biogas Projects (kW) |
|---|---|---|
| UCD: | anaerobic digester | 925 |
| UCIMC: | natural gas fuel cell *(under construction)* | 1,400 |
| UCLA: | biomethane from landfill in cogeneration plant | 2,000 |
| UCSD: | biomethane fuel cell | 2,800 |
| **Total** | | **5,725** |

1990 levels, surpassing the 2020 policy goal five years early. All campuses have a climate action plan identifying measures to reduce GHG emissions. Campuses are currently in the process of updating these plans to include the 2025 carbon neutrality goal.

## Onsite Renewable Energy

All campuses are meeting a portion of their campus power load with carbon-neutral sources. UC exceeded its 2014 policy goal of installing 10 megawatts (MW) of on-site renewable energy generation two years early through deployment of solar photovoltaics (PV) and biofuels. As shown in Table 1, the University more than doubled its onsite solar in 2015 and now has a total of 30.7 MW of solar PV capacity installed across its campuses and medical centers and another 26 MW under construction or in planning. UC Davis provided the biggest contribution to the spike in solar by completing construction of a 16 MW ground-mounted solar PV system. In addition, solar hot water heaters partially offset hot water demand at seven residence halls at UCLA, the Maximino Martinez Commons at Berkeley*, and at Canyonview Pool and North Campus housing at San Diego.

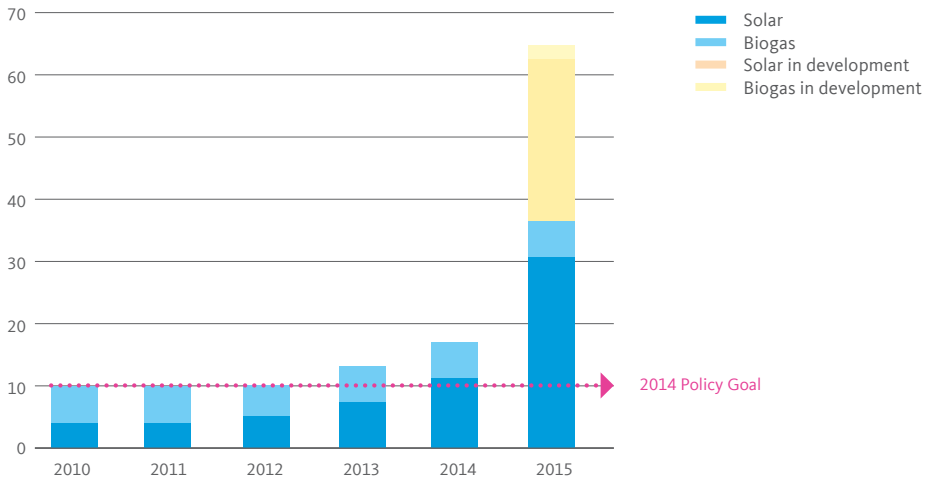
** Berkeley does not retain the environmental attributes for this installation.*

As listed in Table 2, biofuels also contribute to the University's renewable energy capacity. The San Diego campus operates a 2.8 MW fuel cell burning only biomethane harvested from a wastewater treatment plant. Five percent of UCLA's 40 MW cogeneration power plant is fueled by biomethane from a nearby landfill. The Renewable Energy Anaerobic Digester at Davis blends landfill gas with biogas produced by a biodigester that is fueled by organic waste from the campus and surrounding community. The digester generates approximately 5.6 million kilowatt hours of electricity annually when operating at full capacity.

## Wholesale Power Procurement

In 2015, the University began providing electricity directly to the five campuses and two medical centers that are eligible to procure electricity from entities other than investor-owned or publically-owned utility companies. In 2014, the Regents of the University of California obtained status from the California Public Utilities Commission (CPUC) as a registered Electric Service Provider (ESP), which allowed the University to provide electricity to those seven "direct access" campuses. Approximately 25 percent of the University's electricity use is eligible for direct access and is now served by the University's own ESP.

FIGURE 2: UC ONSITE RENEWABLE ENERGY CAPACITY (MW)



As part of the University's Carbon Neutrality Initiative, the University plans to provide 100 percent renewable electricity to its direct access campuses by 2025. In 2015, the University broke ground on the first of two planned solar photovoltaic projects in Fresno County. Both projects are expected to go online before the end of 2016 and will provide 80 MW of solar power to the University, making this the largest solar purchase by any university in the country. This will provide enough electricity for approximately 60 percent of the total imported electricity at the participating campuses. In 2015, the University also procured renewable energy from wind and geothermal resources within and outside of California.

## Energy Efficiency Partnership Program

In 2004, the University formed a unique statewide Energy Efficiency Partnership program with the California State University system and the state's four investor-owned utilities to improve the energy performance of higher education facilities. The partnership provides funding for equipment retrofits, monitoring-based commissioning, and training and education.

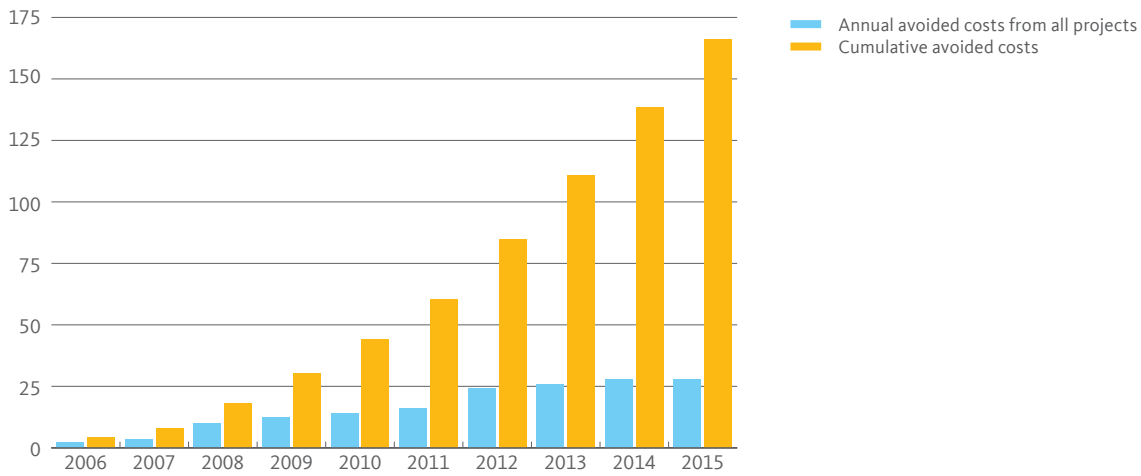
In 2015, the University received approximately $6.7 million in incentive payments from the partnership to implement 72 projects. Those projects are projected to save approximately 23 million kilowatt-hours (kWh) of electricity and 1.2 million therms of natural gas annually.

Through the partnership, the University is moving toward a whole building approach to energy efficiency. This effort combines advanced controls and complex building systems in "deep energy efficiency" projects to measure and optimize building energy use more holistically for maximum impact. A deep energy efficiency potential study estimated that approximately $650 million is needed to fund retrofits that could save the University nearly $59 million per year in utility costs, avoiding over 211,000 metric tons of $CO_2e$ annually.

As shown in Figure 3, energy efficiency projects since the program began in 2004 allow the University to avoid approximately $28 million in additional energy costs annually, and the program's cumulative avoided costs should exceed approximately $166 million by the end of 2015. While campuses have used a portfolio approach to balance projects with shorter and longer paybacks, the future focus on the remaining deeper energy efficiency retrofits to achieve climate goals will result in lower levels of net avoided costs due to larger up-front investments.

FIGURE 3: COST AVOIDANCE FROM ENERGY EFFICIENCY PROJECTS

(Millions of dollars, net of debt services)



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# TRANSPORTATION

## Policy Goals

- Achieve climate neutrality in business vehicle fleet emissions by 2025.
- Reduce transportation emissions generated from university-related commuting and business air travel.

Transportation-related emissions are the second largest source of campus GHG emissions, after building energy consumption. The Carbon Neutrality Initiative goal includes emissions from fleet vehicles. The University also works to reduce commute and air travel emissions by encouraging non-emitting commute transportation options and minimizing non-essential business air travel.

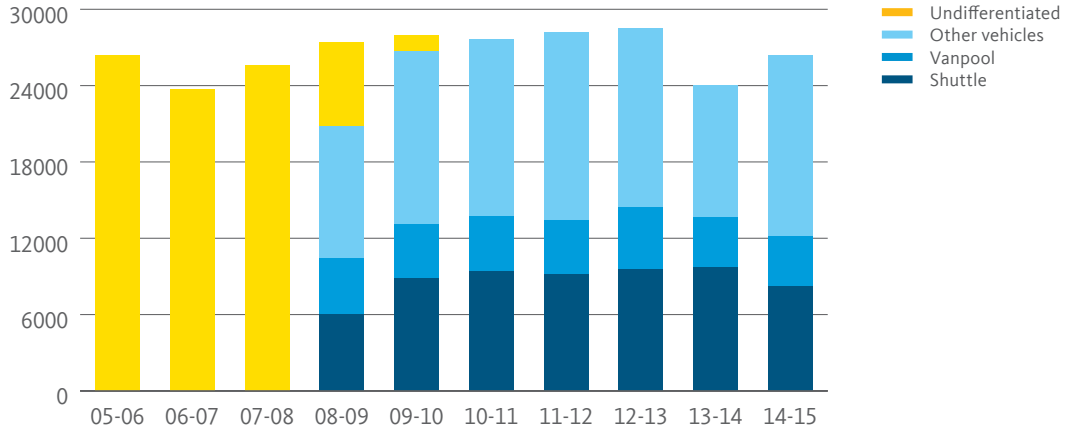
### Fleet Operations

As shown in Figure 4, despite growth in the number of fleet vehicles, GHG emissions from that fleet have remained relatively constant over the past decade. Fleet units will be developing action plans for achieving carbon neutrality by 2025 over the next few years. These plans will be supported by better data collection and reporting to track fleet emissions and fuel use across the UC system. In addition to starting a planning process to reach carbon neutrality, campus fleet programs took actions in 2015 that will lead to decreased emissions in the future. Those initiatives include:

- UC Irvine purchased the UC system's first hydrogen fuel cell transit vehicle, as well as an all-electric bus.
- UC San Francisco purchased a new natural gas powered shuttle bus for its extensive fleet.
- UC Merced added 12 electric vehicles to its fleet service.

FIGURE 4: GREENHOUSE GAS EMISSIONS FROM UC FLEETS

(Metric tons CO2e)



- UC Berkeley has been testing shared fleet vehicle options, such as departmental car share memberships and internal departmental sharing technologies, to provide more utility from existing fleet vehicles on the campus.
- More than 50 percent of UC San Diego's fleet now consists of hybrids and alternative fuel vehicles.

**Commute Transportation**

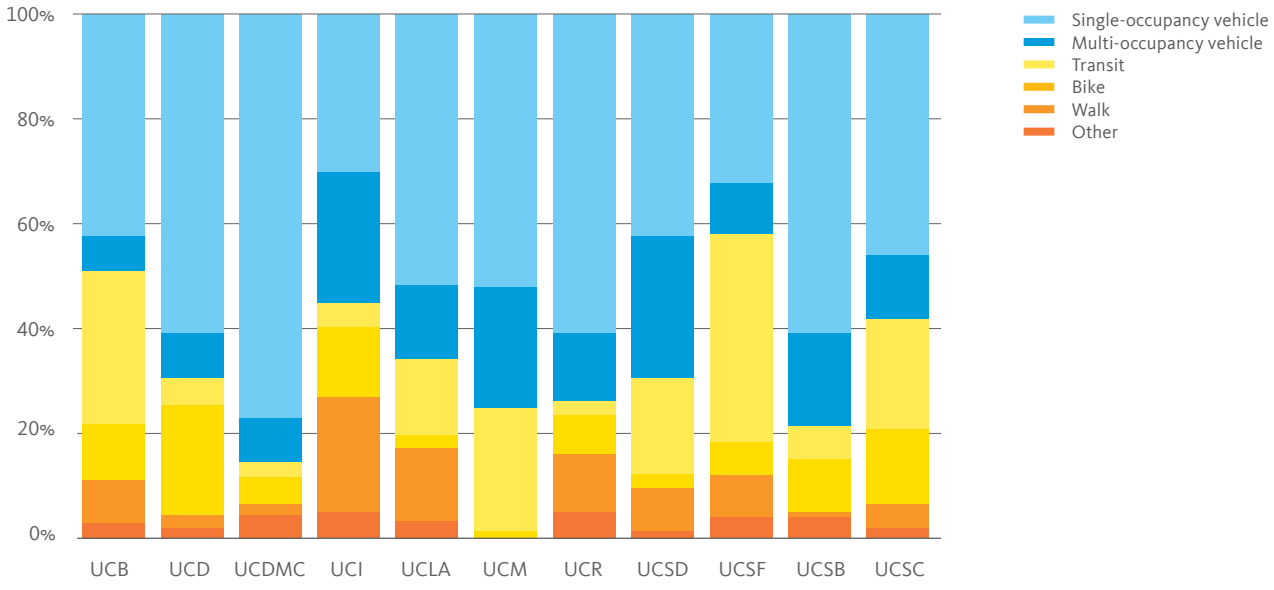
UC leadership in sustainable transportation is reflected in the multiple transportation awards received by its campuses. For example, the California Environmental Protection Agency (CalEPA) awarded UCLA the 2014 Governor's Environmental and Economic Leadership Award for the campus' success in reducing single-occupancy vehicle use. The League of American Bicyclists rated six UC campuses as Bike Friendly University campuses – Berkeley, Davis, Irvine, Los Angeles, Santa Barbara and Santa Cruz. Nearly all campuses have been awarded locally for their comprehensive employee commute programs.

Over half of all UC employees commute to work by transit, walking, bicycling, or in carpool or vanpool vehicles (Figure 5). Campus transportation programs reduce commute-related greenhouse gas emissions through programs that provide commute alternatives to the use of single-occupancy vehicles, as well as by providing support infrastructure for alternative fuel vehicles.

Initiatives this year included the following:

- UC Santa Barbara, UC Santa Cruz and UCLA are funding new bicycle infrastructure through local initiatives and grant programs. UC Santa Cruz will realign a major campus bike connection; UC Santa Barbara students approved a campus fee program specifically for bike path and parking improvements; and UCLA is installing modern, innovative bike facilities throughout campus.
- UC San Diego installed nearly 100 electric vehicle-charging stations as part of a program to evaluate next-generation "smart charging" technologies. These

FIGURE 5: EMPLOYEE COMMUTE MODES



smart charging technologies adhere to a new global standard for intelligent charging that allows the car and the grid to communicate to each other in real time to determine grid capacity and customer needs. This communication enables better integration of electric vehicles into the power grid. The program also provides a low-cost electric vehicle lease program.

- UC Berkeley's Transportation Sustainability Research Center is working with Zipcar to evaluate the impacts of car sharing on university campuses. UC Davis implemented a program to provide additional car share vehicles on campus during peak use times, such as weekends.
- UC Berkeley evaluated a more flexible daily parking permit as a way to encourage commuters to ride transit, bicycle or walk to campus on days when they did not necessarily need to drive to campus.

### Business Air Travel

Campuses continue working to improve data collection for accurate estimation of GHG emissions from air travel. UCLA, UC Merced and the Office of the President are evaluating air travel GHG offsets for business air travel emissions.

### UC Transportation Research

The University has several transportation research centers and is home to the National Center for Sustainable Transportation, a collaboration between UC Davis, UC Riverside for the U.S. Department of Transportation. Transportation research groups at UC Berkeley, UC Davis, UC Irvine, UCLA, UC Riverside, and Lawrence Berkeley National Laboratory are also doing collaborative and multidisciplinary research in sustainable transportation topics such as energy, technology and behavior change.

### Sustainable Transportation Policy Update

In 2015, the systemwide Sustainable Transportation Working Group recommended changes to the UC Sustainable Practices Policy to align that policy's transportation section with the Carbon Neutrality Initiative. The proposed revisions include a quantitative framework for tracking GHG emission reductions achieved in campus-owned fleet vehicles and through existing campus transportation programs for commuting. Consistent with other state transportation goals, the proposal recommends that all campuses reduce single-occupancy commuting (from already comparatively low levels) and increase electric or other alternative fuel vehicle use. Although Scope 3 emissions such as commuting and air travel are not included in the Carbon Neutrality Initiative's 2025 goal, employee commute and business air travel contribute significantly to each campus' GHG emissions.

# WATER

## Policy Goals

- Reduce per capita potable water use by 20 percent by 2020.
- Develop and implement campus-specific Water Action Plans

Governor Jerry Brown responded to a fourth consecutive year of severe drought with regulations mandating a statewide 25 percent reduction in urban potable water use. The University continued to support the state's drought response efforts through its considerable research, extension, education, and operations expertise.

In 2014, even before the governor announced a drought emergency, President Napolitano had committed the University to reduce per capita potable water consumption by 20 percent by 2020 and called on the campuses to take immediate actions in response to the drought. After seven of its ten campuses exceeded the 20 percent goal five years early in 2015, the University committed to even deeper water use reductions as a way to lead by example in addressing the state's long-term water supply constraints. The Water Working Group has proposed to the Sustainability Steering Committee to amend the sustainable practices policy with a goal to reduce per capita potable water consumption by 36 percent from a three-year average baseline of fiscal years 2005-06 to 2007-08.

## Drought Response

**Education, Research, and Public Service**

While continuing to do research on an array of issues from drought-resistant crops to snow sensors to climate change, the University also provided immediate and ongoing management advice to farmers and ranchers, and many educational resources for policy makers and the general public.

UC Agriculture and Natural Resources houses the California Institute for Water Resources, which has a mission to integrate research, extension and education programs to develop solutions to water resource challenges. The institute distributes UC developed drought-related information to communities throughout California and beyond. Through its website, the institute provides information on drought events, a list of UC drought experts and other current drought information and resources, including a number of tools like the SierraNet real-time hydrological data and a virtual tour of California's water system developed by UC researchers. In 2015, the institute started a new online newsletter and blog. UCANR makes many of its water conservation resources available in Spanish.

Communities served by UCANR, such as ranchers and farmers, were the first to feel the drought's impact. UCANR's work on water use efficiency, groundwater quantity and drought-resistant crop varieties has been particularly important to these communities. UCANR projects focus on increasing efficiency, which is critical to creating value from water supplies. These projects include:

- Micro irrigation technologies to maximize potential water savings and crop yields
- Canopy cover sensing to help determine orchard water use and water needs to increase yields and water use efficiency
- Increasing the performance of soil moisture probes and leaf pressure chambers to assist growers in managing irrigation to increase efficiency

A project at UCANR's Desert Research and Extension Center in the Imperial Valley of San Diego County is conducting research on the automation of surface irrigation systems. Preliminary results show a 7 percent reduction in agricultural water loss, which translates into a potential water savings of 57 billion gallons. The automation system will be installed in four commercial field crop farms in California for further study. In addition, UCANR is assessing the potential to use agricultural lands to increase groundwater recharge from storm events,

which would increase the amount of freshwater recharge and reduce salinity concentrations. This work will be increasingly important as precipitation variability increases with climate variability. Lastly, UCANR is testing drought-resistant varieties of oranges and grapes that send their roots deeper into the soil, thereby absorbing and retaining more winter rainfall and reducing dependence on irrigation.

### Campus Operations

UC is also responding to the drought in its own campus operations. The emergency drought response measures in 2015 built upon the extensive drought response actions the campuses initiated in 2014, including irrigation cutbacks, increased leak detection and correction efforts, recycled water expansion, turf removal, and fixture retrofits. Campuses also took outreach and education actions, including letters from chancellors to the campus community, educational websites, and signage posted in restrooms and elsewhere on campus.

The state's mandated water reductions became effective in June 2015. All campuses are working in partnership with their local water suppliers to reduce water use relative to 2013 baselines. Compliance with those mandates will be reported in next year's report.

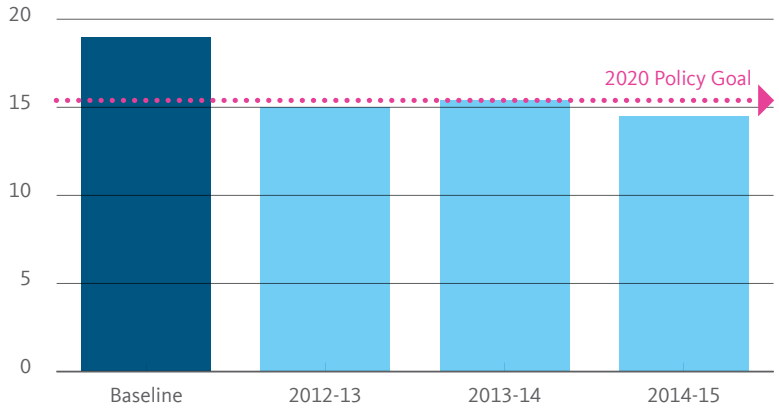
Building on previous year's conservation efforts, the University's campuses reduced total per capita potable water consumption by another 6 percent in FY 2014-15 compared to FY 2013-14. UC Davis, UC Santa Cruz and UC San Francisco all achieved greater than 10 percent reductions.

## Long-term Water Conservation

The University revised its Sustainable Practices Policy in 2015 to add a long-term water conservation goal of reducing per capita potable water use by 36 percent by 2025 from a three-year average of fiscal years 2005-06 to 2007-08. The campus profiles beginning on page 62 demonstrate each campus' progress toward the previous policy goal of a 20 percent reduction, which seven campuses and medical centers—Berkeley, Davis, Irvine, Merced, Santa Barbara, Santa Cruz, and San Francisco campus and Medical Center—have already achieved. Five of these campuses have set stretch goals beyond the policy goal. The impact of drought response measures will show more fully in the water consumption figures for FY 2015-16 that will be included in next year's annual report.

FIGURE 6: UC PER CAPITA POTABLE WATER CONSUMPTION

(Thousands of gallons per weighted campus user)



# GREEN BUILDING

## Policy Goals

New Buildings and Renovations

- Design and construct all new buildings to a minimum LEED-NC Silver rating.
- Design and construct all renovation projects with a cost of $5 million or greater (except acute care facilities) to a minimum LEED-CI Certified rating.
- Outperform the energy provisions of the California Building Code by at least 20 percent on all new construction and major renovation projects (except acute care facilities).

Existing Building Operations and Maintenance

- Each campus will submit for certification one pilot building at a LEED-EBOM Certified level or higher.
- Each campus shall seek to certify as many buildings as possible through the LEED-EBOM rating system.

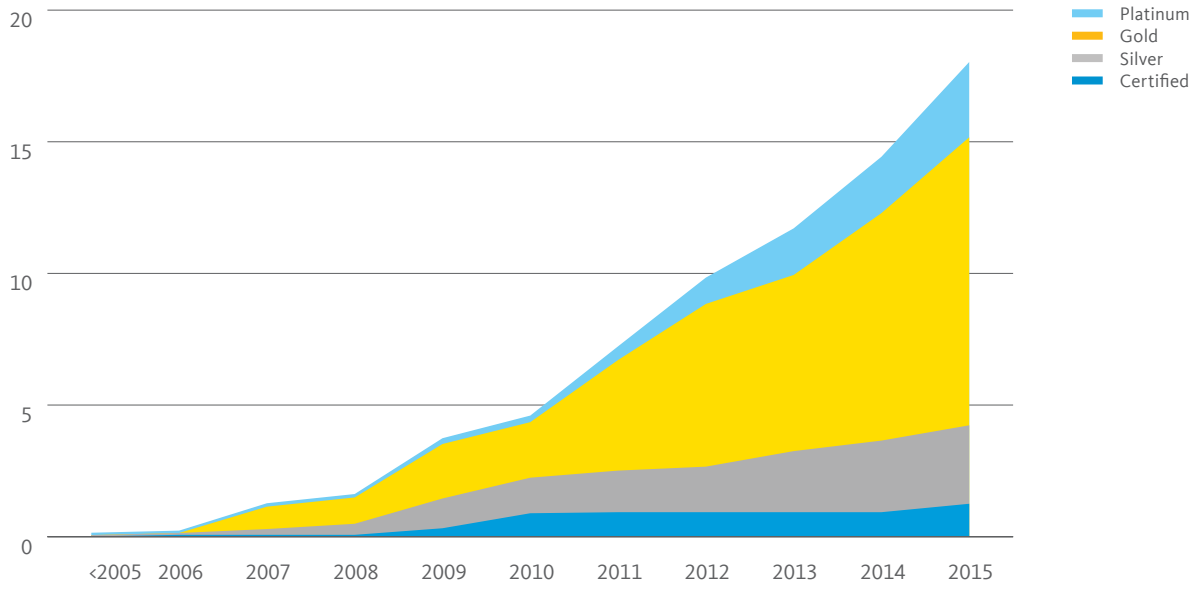
The University of California has 225 LEED-certified buildings, which is more than 18 million gross square feet (new construction, renovation, homes and existing building certifications), the most of any university in the country. In 2015, 6 projects earned LEED-Platinum certification, 14 Gold, 3 Silver, and 2 Certified. Campus profiles starting on page 62 track each campus' LEED certifications over time. A complete list of all UC LEED certifications is available at: http://ucop.edu/sustainability/programs-initiatives/green-building/uc-leed-certified-projects.html

### Energy Efficient Design of New Buildings and Major Renovations

The Sustainable Practices Policy requires all new construction and major renovation projects to register with the Residential or Non-Residential Savings By Design™ Program. These energy efficiency programs, offered by California's four investor-owned utilities and the Sacramento Municipal Utility District, provide design

FIGURE 7: CUMULATIVE GSF OF SYSTEMWIDE LEED CERTIFICATIONS BY YEAR

(Million square feet)



assistance, energy analysis, life-cycle costing and financial incentives to help projects exceed the energy provisions of California's Building Code (CBC).

To date, 861 University projects have registered with these programs, receiving $82.9 million in incentive payment and avoiding $46.7 million in annual energy costs. In 2015 alone, 72 UC projects participated in these programs, earning $6.7 million in incentives. Those projects are projected to avoid $3.2 million annually in energy costs due to their energy efficient design strategies.

In 2015, the Sustainability Steering Committee approved an update to the Green Building Policy to include benchmark-based, whole-building energy performance targets as an alternative policy compliance path for achieving energy efficiency in new buildings. The UC Office of the President and the California Institute for Energy and the Environment collaborated to develop energy performance targets for each campus based on the successful example of UC Merced, which has used energy performance targets since its founding. UC Merced piloted what is now an industry best practice, and this approach will be critical in enabling it to achieve its zero-net-energy and zero-GHG-emissions commitments as it builds out its campus.

## Green Building Operations

UC uses the LEED for Existing Buildings: Operations and Maintenance (EBOM) rating system to evaluate and improve the environmental performance of existing facilities. UC buildings have received 28 LEED-EBOM certifications to date, including five in 2015. UC Santa Barbara boasts ten certifications, more than any other university in the world. Seven UC campuses have initiated certification for campus-wide LEED-EBOM credits and prerequisites. The campus-wide certification option was pioneered by UC, resulting in streamlined documentation for individual projects. The Davis, Irvine, Merced, Riverside, Santa Barbara and Santa Cruz campuses have already earned certification for select campus-wide credits. The remaining campuses need more staff resources and funding for additional building metering in order to earn certification for campus-wide credits and prerequisites.

## 2014-15 LEED Platinum Certifications

**Additional projects:**

UC Merced Housing Phase 3

UC Los Angeles Hitch Commons

UC Santa Barbara Sierra Madre Villages

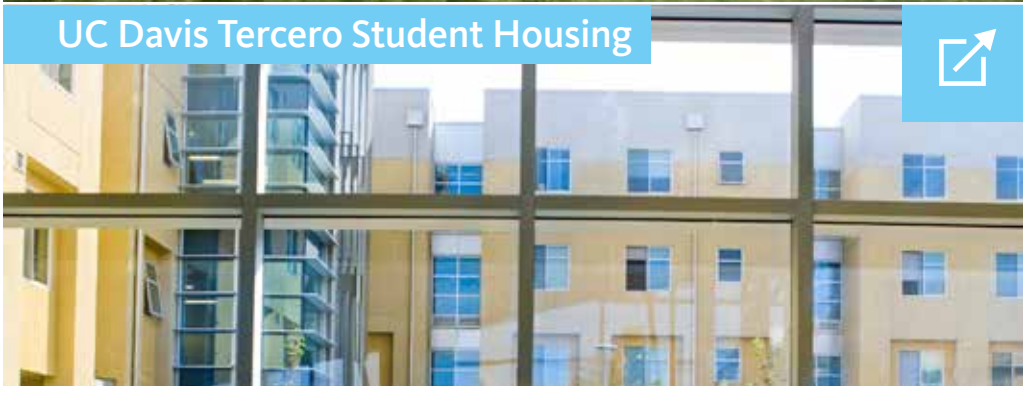
### UC Merced Housing

CLICK FOR DETAILS

### UC Irvine Newkirk Alumni Center

### UC Merced Science and Engineering Building

### UC Davis Tercero Student Housing



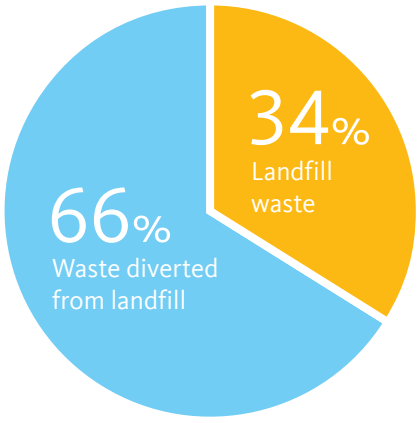
# ZERO WASTE

## Policy Goals

- Send zero waste to landfills by 2020.
- Prioritize waste reduction in the following order: Reduce, Reuse, Recycle, Compost.

As shown in Figure 8, the University diverted 66 percent of its waste from landfill in FY 2014-15. The campus profiles starting on page 62 show each campus' progress toward the ambitious 2020 zero-waste goal (defined as 95 percent waste diversion). For context, the statewide goal is to achieve 75 percent diversion of municipal solid waste by 2020. Only UC Irvine and UC Davis have been able to maintain the University's 2012 target of 75 percent waste diversion from landfill, although UC Riverside, UC San Francisco, and UC Santa Barbara came close. Waste diversion opportunities vary greatly from campus to campus depending on what recycling and compost facilities are available in the local region.

FIGURE 8: UC WASTE DIVERSION




Most campuses and medical centers increased their waste diversion rates between FY 2013-14 and FY 2014-15. The University reports waste diversion numbers both with and without construction and demolition (C&D) waste because C&D waste is highly variable each year and can make up a significant portion of waste weight, skewing and obscuring results of other waste diversion efforts. With an ultimate goal of zero waste, the University also tracks landfill waste in pounds per weighted campus user (also shown in the campus profiles starting on page 62). Waste generation per capita quantifies waste reduction efforts, whereas diversion rates do not reveal whether the total amount of waste is increasing or decreasing. The Irvine, Merced, Riverside, and Santa Barbara campuses lead the system with the lowest waste generation per weighted campus user.

Because the University's medical centers have different waste streams and different challenges than general campuses, the University is evaluating what would be an equivalent goal to 95 percent diversion of municipal solid waste for the medical center facilities. While the medical centers have unique waste management challenges, they also have unique opportunities. For example, in 2015 UCLA Medical Center diverted 90 tons of waste through an improvement in the management of isolation gowns.

UC Santa Barbara received the Sustainability Best Practice Award for Innovative Waste Reduction from the California Higher Education Sustainability Conference for "Optimizing Waste Management Services through Stakeholder Engagement." The winning project removed 350 unnecessary landfill receptacles through a collaboration between building occupants and custodial staff.

UC Davis earned an honorable mention in the Innovative Waste Reduction Best Practices category for its Gravel Washing Facility. An innovative collaboration between researchers and facilities staff developed a waste reduction solution for the large volume of gravel waste generated by outdoor animal research facilities. The campus developed a process at its wastewater treatment plant to wash and clean soiled gravel from outdoor animal facilities so that the gravel can be reused in other applications instead of being sent to landfill.

UC Berkeley won the RecycleMania Game Day Challenge: Basketball for the third year in a row with a 95.7 percent diversion rate. This zero waste performance also earned UC Berkeley a victory in the first annual Pac-12 Conference and Green Sports Alliance "Road to Zero Waste Challenge." For the Game Day Challenge: Football, UC Davis won in two categories (overall diversion and waste minimization), with a 93.4 percent diversion rate and only 0.01 lbs. per person of trash generated. In RecycleMania's Grand Champion Category (highest grossing tonnage of recyclables), UC Irvine ranked seventh in the nation.

Campuses continue to improve their waste management infrastructure in order to expand waste diversion practices. Highlights from FY 2014-15 include:

- UC Merced installed a waste sorting facility on campus that is expected to save over $20,000 per year and has already increased the campus' diversion rate from 45 percent to 74 percent for participating sections of campus.
- UC San Francisco received grant funding from the San Francisco Department of Environment to implement a waste study that has resulted in a 74-ton landfill reduction per month.
- UC Santa Cruz introduced the campus' first pilot zero waste collection model in the form of 48 waste disposal stations around campus that feature a four-stream collection system: clean paper, container recycling, compost and food waste, and waste to landfill.
- Lawrence Berkeley National Laboratory expanded its waste diversion program, "Rethink Waste," to more than 40 buildings.
- UC Riverside expanded their newly constructed transfer station and is now able to determine campus metrics at the level of individual dumpsters for all waste streams.
- UCLA introduced multi-stream bins in Pauley Pavilion, enabling the collection of compostables and recyclables.

LEMONS
RED GRAPEFRUIT

# FOOD

## Policy Goals

- Procure 20 percent sustainable food products by the year 2020 for campus and medical center foodservice operations.
- Certify at least one foodservice facility on each campus as a green business.
- Educate both patrons and foodservice staff about sustainable food products and sustainable operation.

### Global Food Initiative

In July 2014, President Napolitano launched the Global Food Initiative (GFI) to rally the UC community to work toward a world that can sustainably and nutritiously feed itself as the population grows to an expected 8 billion people by 2050. Numerous GFI subcommittees support implementation of the Sustainable Practices Policy section on Sustainable Food Services, including those examining sustainable food procurement, small producer opportunities, food diversion and waste reduction, and agri-food literacy.

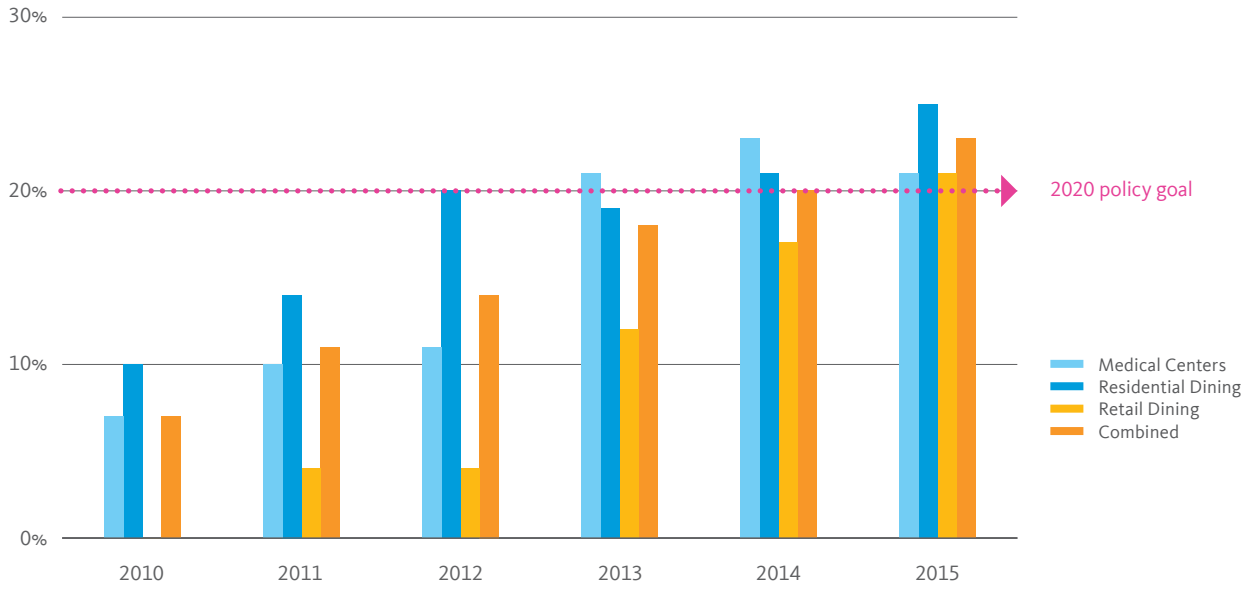
The systemwide Sustainable Food Service Working Group (SFSWG) works with GFI's subcommittees to provide data, best practices, and resources in support of President Napolitano's Initiative.

### Sustainable Food Procurement

As shown in Figure 9, the University's sustainable food procurement practices shifted $28.7 million (23 percent of total reported annual food expenditure) toward local, fair, ecologically sound, and humane food sources. The average percentage of reported sustainable food purchases increased for residential dining (24.6 percent), medical centers (21 percent) and reporting retail vendors (21 percent).

FIGURE 9: SUSTAINABLE FOOD PURCHASES

(Percent of total food spend)



The campus profiles beginning on page 62 demonstrate each campus and medical center's progress toward the 2020 policy goal of procuring at least 20 percent sustainable food. In FY 2014-15, residential dining at Riverside and San Diego as well as retail dining at Riverside and Berkeley campuses joined eight other dining units across UC in surpassing the policy goal: Berkeley, Davis, Irvine, Santa Barbara and Santa Cruz for residential, Irvine for retail, and UCLA and San Francisco for medical center dining.

UC Berkeley's Cal Dining provided continued leadership in advancing sustainable food procurement. Cal Dining launched "Brown's: a California café" with a menu that is all local and sustainable except for 14 ingredients. Overall, Cal Dining increased sustainable food spending for residential dining to 47 percent by sourcing organic bread, eggs and milk, Marine Stewardship Council-certified fish, and locally produced tofu. Cal Dining's residential dining menus are now over 50 percent vegan.

Furthermore, the systemwide strategic sourcing initiative introduced multi-campus, sustainability-focused contracts for produce, eggs, poultry, seafood and other goods. Once these contracts are fully implemented in 2015-2016, they should enable a further increase in sustainable food procurement.

## Education and External Stakeholder Engagement

Campus dining staff have worked to advance UC's commitment to sustainable food systems by educating students, staff, and faculty about the university's goals. The GFI sponsored a locally themed meal on three campuses as part of National Food Day, while other campuses featured sustainable vendor fairs, food producer discussion panels, and other activities to increase food awareness.

In spring 2015, UC Santa Cruz hosted the Pacific Northwest Regional Conference for the National Association of College & University Food Services (NACUFS). More than 80 campuses and nearly 400 attendees exchanged information on sustainable food best practices. NACUFS granted the Grand Prize award for a Residential Dining Special Event to UC Berkeley for its hyper-local Food Day meal in all Cal Dining cafes. UC Berkeley also ranked third in the country in the food category in Sierra magazine's 2015 Cool Schools competition.

UC Davis Dining Services' "Aggie Grown" initiative received the CHESC Best Practice Award for Sustainable Foodservice in 2015. The initiative sources student-grown products from Russell Ranch on the UC Davis agricultural operations campus.

UC Riverside launched UCR FarmShare, a community-supported agriculture program, providing five types of seasonal fruits, five types of seasonal vegetables, and one type of herb each week to participating members.

Campuses celebrated Earth Week 2015 with sustainable food fairs and festivals, as well as hyper-sustainable events, such as UCLA's "Catch of the Day" themed meal, a 100 percent sustainable seafood dinner.

## Sustainable Foodservice Operations

Campuses continue to improve upon sustainable foodservice operations. For example, Ronald Reagan UCLA Medical Center's dining commons joined the ranks of the University's certified green restaurants, UCLA Dining Services certified its second green restaurant and Bruin Plate received a Three-Star Green Restaurant Certification through the Green Restaurant Association.

Demonstrating leadership in response to the drought, UC foodservice operations continue to implement innovative best practices in water conservation. These efforts include medical center and campus installations of non-boiler-based food steamers, infrared controls for dish scraping water nozzles, low-flow spray head installations and limited force thawing.

All UC campuses have post-consumer composting as part of their overall operational sustainability efforts.

# INVESTMENTS

## Introduction

The Office of the Chief Investment Officer of the Regents (UC Investments) is responsible for managing the University of California's endowment, pension, retirement savings, and working capital assets, which totaled $98.2 billion at the end of the 2015 fiscal year.

Balancing the need to meet both current and long-term obligations catalyzes UC Investments' commitment to sustainability – a fundamental input that guides UC Investments' decision-making. The Brundtland Commission defined sustainable development as economic activity that meets the needs of the present without compromising future generations' ability to meet their own needs. UC Investments uses this same framework to think about its role as sustainable investors and stewards of the University of California: UC Investments must meet the needs of the University's current operations and retirees without compromising its ability to serve future students, staff members and faculty.

## Our Framework for Sustainable Investing

The world is changing and investors must keep abreast of how growing awareness of environmental, social and governance risks spreads rapidly via social media and other mediums to influence markets. UC Investments believes that environmental, social and governance factors can present both risks and opportunities, and that addressing these factors is in line with UC Investments' fiduciary duty.

In September of 2015, UC Investments published a Framework for Sustainable Investing (Framework), which finds its roots in the unique culture and practice of the University of California. The Framework considers sustainability in risk assessment and due diligence, not just from a values perspective.

Key environmental, social and governance factors are driving new economic and financial trends and can guide UC's investment decisions and fund manager selection and monitoring. The list below is not intended to be static, but represents important core universal principles UC Investments will use to ensure the best return on investment for the University and its many stakeholders:

- **Climate Change:** Continued emissions of greenhouse gases will cause further warming and changes in all components of the climate system. A transition to a lower carbon economy, including low carbon sources of energy, is necessary to ensure the health and well-being of future generations. Given the scale of existing infrastructure and the challenge of quickly shifting the transportation sector to low carbon fuel sources, this transition requires a multi-generational effort.
- **Inequality:** Addressing inequality is not only a responsibility but also an opportunity. Solving inequality of opportunity can create new demographics that can contribute to economic progress and widen the market for goods and services, thereby creating a more profitable and sustainable business climate.
- **Human Rights:** Businesses whose profits are derived from direct harm to public safety, the unlawful deprivation of human dignity, or the exploitation of children or other vulnerable workers undermine universally approved United Nations principles and create a serious threat to the conditions needed for a well-functioning, market-based global system.
- **Food and Water Security:** Global climate change, population growth and rapid urbanization are intensifying the strain on global water and agricultural systems. Human well-being is inexorably linked to water and food security, and failure to adequately ensure these basic needs for future generations will undermine global economic welfare, human security and political stability.

- **Diversity:** Diversity enhances economic, social and environmental outcomes for business and society.
- **Aging Population:** Rapid aging of populations will be a transformational force affecting society and the global economy, requiring new approaches to health systems, workforce organization, intergenerational relations and public finance.
- **Circular Economy:** The "take, make, dispose" pattern of growth is an unsustainable economic paradigm. We must transition to a more circular economy in which intelligent design allows us to decouple economic growth and development from consumption of finite resources.
- **Ethics and Governance:** Our market economy system relies on trust as a fundamental cornerstone. Good corporate governance and proportionate, transparent and responsible regulation are vital to well-functioning and sustainable financial markets. As long-term investors, UC Investments seeks the sustained returns associated with strong governance, rather than the rapid gains that can vanish quickly if they are rooted in corruption, fraud or falsification. Recent financial crises highlight how destructive such fraud and corruption can be to the proper functioning of credit markets and the preservation of personal and corporate wealth.

### Integration

The University's assets are managed both internally by UC Investments staff and externally by carefully selected and monitored investment managers. Over the past year UC Investments has developed processes for integrating environmental, social and governance considerations holistically into investment decision-making across the portfolio:

- Where assets are managed externally, managers' environmental, social and governance policies and practices are diligently reviewed by UC Investments staff to ensure best practices and alignment with UC's framework for sustainable investing. For those that have not already done so, UC Investments requests that managers develop strong environmental, social and governance policies and encourages them to become signatories to the Principles for Responsible Investment.
- Where assets are managed internally, UC Investments draws on internal and external expertise and resources, including UC research expertise, to assess material environmental, social and governance risks and opportunities for all new and existing investments. For example, UC Investments is working with UC researchers to develop a framework for integrating carbon pricing into investment valuation.

### Active Ownership

Investors have an important role to play in influencing the quality, sustainability and continuity of companies and markets through active engagement on environmental, social and governance issues.

Over the past year, the UC Investments has:

- Signed a statement of Investor Expectations on Corporate Climate Lobbying and is engaging with companies on the issue
- Become a signatory to the Japan Stewardship Code
- Signed a Global Investor Statement on Climate Change
- Signed an open letter on climate change to Finance Ministers in the Group of Seven
- Signed a Statement of Investor Expectations for the Green Bond Market
- Signed a letter to the SEC on carbon asset risk disclosure by oil and gas companies.

UC Investments is developing a new active ownership strategy to ensure that engagement with portfolio companies, policymakers and regulators best supports the fund's long-term, sustainable growth and is in alignment with UC's sustainability values and goals.

### Investing in Solutions

UC Investments is committed to making investments that can provide solutions to environmental and social issues while earning a competitive return. UC Investments is building strategic partnerships with the public sector, with its peers, with industry groups and with all parts of the University to access and scale sustainable investment opportunities.

Over the past year, UC Investments:

- Committed to allocating $1 billion over five years to investment in climate change and sustainability solutions, a decision that the White House recognized as part of its Clean Energy Investment Initiative
- Launched UC Ventures, an independent fund to pursue investments in UC research-fueled enterprises, with an initial commitment of $250 million
- Became a founding member of the Breakthrough Energy Coalition, a group of investors led by Bill Gates that is committed to investing in technology that can help solve energy and climate challenges

### Collaboration

UC Investments is dedicated to collaborating with its peers, industry groups, the public and private sectors, and the UC community to deepen its knowledge of environmental, social and governance risks and opportunities, build strategic partnerships, access new opportunities, and magnify our collective voice in the pursuit of sustainability. To this end, UC Investments is a member of the Principles for Responsible Investment, Ceres and CDP, and participates in a number of collaborative research and engagement initiatives, including:

- PRI Asset Owner Climate Change Strategy Project
- PRI Private Equity Steering Committee
- Ceres Carbon Asset Risk Initiative
- Ceres Investor Water Hub
- CDP Carbon Action Initiative
- The Investment Innovation Benchmark

As part of a leading global academic research institution, UC Investments looks to optimize access to the specialized knowledge within the UC system and is doing so in a number of ways, including engaging UC faculty and students to expand its knowledge of important environmental, social and governance trends.

### Reporting and Transparency

UC Investments is committed to transparency and accountability across its operations. UC Investments incorporates sustainable investment updates into its regular reporting to the Regents' Committee on Investments, which may be viewed here. As a signatory to the Principles for Responsible Investment, UC Investments will report annually to the PRI beginning in 2016 and publish its results in a Transparency Report. UC Investments has also chosen to report to the Asset Owners Disclosure Project, which publishes an annual assessment of the world's 1,000 largest asset owners pertaining to their management of climate change risks and opportunities. UC ranked 1st in AODP's 2015 Global Universities Index and 25th in their Global Climate 500 Index.

To enhance communication of UC's sustainable investment efforts, UC Investments created a sustainable investing section on its website where UC Investments will publish the results of its annual reporting as well as regular updates to its stakeholders on actions taken, research published, and other relevant content.

For additional information please visit the UC Investments website.

# RESEARCH AND EDUCATION

This year's report focuses on four specific programs that make substantial contributions to sustainability research: the UC Natural Reserve System, UC Agriculture and Natural Resources, UC Research Initiatives, and President Napolitano's Technology Commercialization Initiative. The research and education projects of the Carbon Neutrality Initiative are also described in the Climate and Energy section.

This report also highlights campus-level Academic Senate bodies that are working to advance sustainability education programs. The information below is only a fraction of the multitude of sustainability education and research activities within UC. Systemwide working groups established last year are working to inventory that universe of sustainability education and research and allow for more comprehensive reporting in the future.

## Natural Reserve System

The Natural Reserve System is a 756,000 acre network of 39 wildland areas that include most major types of California habitats. Reserves are used primarily for scientific research, university-level instruction and strengthening public appreciation of nature.

In fiscal year 2014–15, reserves were visited by 1,390 research scientists, including faculty; 1,267 graduate students; 9,290 undergraduates and 6,817 schoolchildren. Virtually all of these reserve users came to study the natural environment.

With climate change considered the greatest threat to global security and ecosystems, President Janet Napolitano awarded UC researchers $1.9 million to fund the Institute for the Study of Ecological and Evolutionary Climate Impacts (ISEECI). ISEECI uses the varied habitats of the NRS as a platform for understanding and potentially mitigating the effects of climate change on California's native species and natural processes.

Research already underway at NRS sites continues to demonstrate how climate change is causing significant changes to California's ecosystems. For example, over the past year researchers showed that:

- Ocean acidification due to increased carbon dioxide in the atmosphere is affecting the growth and shell of exoskeleton formation of marine animals such as sea urchins and mussels.
- A warmer, drier climate is altering the structure of California's forests.
- Wildflower diversity is diminishing due to extreme weather fluctuations.

In 2014, the GLORIA study, which monitors alpine environments at more than 120 sites around the world, conducted a 10th annual resurvey of plant range shifts at White Mountain Research Center.

In addition, a National Research Council Report on the role of field stations in the 21st century showcased the NRS as a prime example of a reserve network fostering interdisciplinary collaborations, supporting landscape-scale research and utilizing shared infrastructure efficiencies.

Over the past fiscal year, the NRS continued to demonstrate its commitment to energy efficiency and sustainability in its operations in several ways. The NRS's Sierra Nevada Aquatic Research Laboratory opened its Page Center meeting hall in June, giving UC one of its first zero-net energy buildings. Elsewhere, the Sedgwick Ranch House building received energy efficient windows and kitchen appliances, and Blue Oak Ranch Reserve completed construction of user accommodations that will require virtually no energy from the grid. To help improve resource usage efficiency throughout the NRS, graduate student Hope Pollard, a UC Irvine Carbon Neutrality Initiative Student Fellow, is conducting an energy audit of all NRS reserves.

## Agriculture and Natural Resources

The Division of Agriculture and Natural Resources (ANR) is the major land-grant arm for the University of California and the state, as part of the nationwide public university system. The national land-grant system is a unique three-way partnership with federal, state and county governments with the mission to provide local and statewide information to address critical agricultural, environmental and societal issues. ANR's research, education, and outreach connect and deliver resources from the entire UC system — forming integrated teams to work on complex issues and develop innovative, multidisciplinary, science-based solutions to enhance the sustainability of food systems and natural ecosystems to improve the lives of Californians.

ANR includes the multi-campus Agricultural Experiment Station (AES) and statewide Cooperative Extension (CE). AES includes over 650 academic faculty members conducting research and teaching in three colleges and one professional school on the Davis, Berkeley and Riverside campuses. AES faculty have professorial appointments representing dozens of scientific disciplines, working to develop cutting-edge research that can be applied to find sustainable solutions to real-world problems in agriculture and natural resources. CE is the principal outreach arm of UC with around 110 CE specialists, located mostly in campus departments, and 175 CE advisors, located in local offices delivering programs across California's 58 counties. These CE academics translate and test research findings for practical, sustainable, local solutions.

ANR operates nine Research and Extension Centers throughout the state. The REC system provides premier research management services, including land, labor, facilities and equipment, to researchers and students across UC. These centers educate and engage their regional communities on current and relevant agricultural and natural resource sustainability topics through on-site field days, workshops, seminars and tours. The REC system has demonstration gardens that host UC Master Gardener Program events delivering science-based, sustainable gardening information to home and community gardeners. Several RECs also have robust youth education programs. On-site 4-H youth development programs foster sustainability concepts and help make the connection to where food is grown.

ANR is committed to sustainably managing the facilities it operates in 10 counties across the state. The majority of ANR's nearly 13,000 acres are at its nine Research and Extension Centers (RECs). Both to save costs and reduce greenhouse gas (GHG) emissions, the ANR facilities have worked to improve the efficiency of their operations and increase the onsite capacity of renewable energy systems. Currently, ANR has a 73.55 kW solar system, located at the Kearney Agricultural Research and Extension Center (KARE), which was installed in three phases over the past four years and provides renewable energy to the postharvest, sensory laboratory and sample handling laboratories. In 2015, the system was expanded to provide energy for a renovated insectary facility. KARE's solar installation and 11 other energy savings projects, implemented over the past 13 years, have resulted in a 60 percent reduction in energy use for the entire facility. Two additional solar projects are planned for the South Coast REC (2,800 kW) and West Side REC (4,000 kW).

ANR's two most recent building projects were designed with green building features. In 2013, ANR renovated the interior of a former indoor hockey rink to consolidate and house over 150 employees in Davis. This project is in the process of becoming a LEED-certified interior. It includes three refillable water bottle stations, which have diverted close to 70,000 plastic water bottles from the landfill to date. The seven bathrooms have low-flow toilets and sinks to conserve water. The transportation plan includes a bicycle fleet with helmets that can be borrowed for staff to go to meetings on the main campus or for short lunch trips to downtown — a great complement for people who use public transportation for their commute. In fact, since the building opened there has been a 10 percent increase in alternative transportation use by occupants. In addition, ANR's Rod Shippey Hall, located at the Hopland REC, features water bottle refilling stations, rain chains to capture rainwater and energy efficient radiant heating.

ANR uses recycled water when available to irrigate field research and extension projects. The South Coast REC converted all urban and agricultural research and extension projects to use tertiary treated recycled water in July 2011. Although use of recycled water has its challenges due to its salt content, the change has allowed researchers to begin looking at the use of alternative water sources for production of food and fiber, as well as for maintaining the aesthetics of urban environments.

ANR's strategic vision for 2025 includes a focus on sustainable energy production. ANR conducts innovative research linking engineering, agricultural, biological and environmental sciences to study biofuel crops, biofuel production and woody biomass. ANR conducts research for new production technologies that minimize fossil fuel energy consumption and use renewable energy sources throughout the California food production system. ANR develops new genetic, genomic engineering and agronomic techniques to produce sustainable biofuels from forest, waste and agricultural resources for renewable energy production. ANR also develops science-based policy-relevant research and information to guide policy makers on issues related to energy.

To create innovations in biofuel production, and generate energy savings in food and water systems, ANR forms highly interdisciplinary teams across UC, federal and state agencies and private sector partners. For example, one project developed a re-vegetation study for a new 4,200 acre solar farm. It was important to identify which species would provide the appropriate vegetative ground cover within the project site to prevent erosion and provide habitat for endangered species like the kit fox, kangaroo rat and burrowing owl. In addition, long-term vegetation management is needed to prevent shading of solar panels and reduce fire risks. ANR worked with scientists from Cal Poly and a consulting firm. Cooperative Extension helped to set up a grazing trial to determine if sheep could be used to control vegetation instead of mowing or use of chemicals. The trial was successful and sheep are now used to control the vegetation around the panels. This allows for multi-purpose use including solar energy generation, grazing and wildlife habitat.

ANR conducts over 800 sustainable food research, education and outreach projects on the Riverside, Davis and Berkeley campuses and in every California county. Projects cover a broad range of sustainable food related topics, including food access and diversity in the food system, specialty crops, food safety, plant production and genetics, animals and their systems, technological innovation, and economic, markets and policy. For example, a series of projects on precision technologies for specialty crop production, some using wireless sensor networks, has had positive economic and environmental impacts through reduced water usage and more precise application of inputs to enhance crop yields. Another project focuses on agricultural sustainability and food labeling policy to develop an understanding of the types of sustainability-related labeling standards, and to determine the conditions under which a uniform sustainability standard would be socially preferable to the existing multiple standards.

In addition, ANR is leveraging significant resources around the areas of urban agriculture and local/regional food systems. This research and extension work includes production information, economic studies, small producer/beginning farmer training, food safety training for small-scale producers, the development of an urban agriculture portal, edible landscape guides, volunteer training, farm-to-school work (with schools, with districts and with producers seeking to access this model) and work in public policy on food councils.

## UC Research Initiatives

UC Research Initiatives (UCRI) offers funding to UC researchers who are working collaboratively on systemwide projects that synergize expertise and infrastructure to address key issues affecting California and the world. Awards are made on a competitive, peer reviewed basis, ensuring that only the highest quality projects are awarded. Since 2010, UCRI has invested over $32 million to support collaborative multi-campus and UC national laboratory research in sustainability and climate research. Funded projects span topics like ocean acidification, sustainable transportation, water planning support systems and climate forecasting, among others. The projects inform public policy, improve technology and position UC as the national leader in sustainability research.

A sampling of recent funding demonstrates the breadth and impact of these investments:

- In 2015, the Multicampus Research Initiatives awarded $3.5 million to a research team led by professor Roger Bales of UC Merced to launch the UC Water Security and Sustainability project. Researchers from at least five campuses are blending technical advances in identifying and quantifying California's diverse water resources with parallel innovations in policy analysis and decision support to meet the state's water-security challenges.
- The MRPI program has also made a nine-year, $4.8 million investment (2009-2018) in the nine-campus UC Solar research collaboration. Headquartered at UC Merced and led by Professor Roland Winston, UC Solar faculty collaborators develop technologies that make solar energy systems more efficient and affordable while educating and developing tomorrow's solar energy leaders and entrepreneurs. Projects include advanced photovoltaics, thermoelectric materials, solar thermal systems and solar-driven water splitting. Demonstration projects have been run in California as well as internationally in Mongolia and Saudi Arabia. More information can be found at http://cast.ucmerced.edu/.
- With a $2 million award, Richard Arnott, an economist from UC Riverside, and collaborators at two other UC campuses and local metropolitan planning organizations in the greater Los Angeles area, developed an online data co-laboratory to revolutionize planning, decision-making and policy analysis for smart growth and transportation. Their system was adopted by the city of Paris. The project was expanded to cover all of California over a five-year period.
- UC Riverside's Javier Garay partnered with scientists at Los Alamos National Laboratory to develop the UCR-LANL Energy Storage Research Institute with a $1.5 million research grant from the UC Laboratory Fees Research Program. This collaboration is developing next generation thermal storage materials, which are crucial for the widespread use of renewable energy sources such as solar and wind energy. Besides the technical benefits of this collaboration, the project provides a platform for student training and contributes to the development of personnel for tomorrow's energy industry.

There are many more compelling examples from the UCRI funding portfolio, for projects that span policy and decision-making support to cutting-edge technological innovations. For more information about UC's systemwide funding opportunities and research portfolio, visit: http://ucop.edu/research-initiatives/index.html

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## Tech Commercialization

President Napolitano's Innovation and Entrepreneurship Initiative enhances all stages of UC technology commercialization by providing increased financial support and flexibility for campus-led technology transfer activities, more streamlined technology transfer processes, and improved communication to create greater awareness of UC's innovation successes. Many of the technologies and startup companies that result from UC's research innovation directly impact sustainability.

Through FY 2013-14, 60 startups were founded to commercialize UC technologies with sustainability applications. These technologies come from research at eight campuses and Lawrence Berkeley National Laboratory. To date these startups have secured in total over $7.9 million in Small Business Innovation Research (SBIR) funding and over $76 million in venture funding. In calendar year 2014 they generated combined annual revenue of $207 million and employed 1622 people.

Here are examples of startups formed by UC inventors during this period that commercialize research in renewable energy production and environmental remediation:

- Soliculture, Inc. develops solar power-generating greenhouse panels that absorb wavelengths of light that plants do not efficiently absorb while still allowing sufficient light for plant growth (UC Santa Cruz)
- Picoyune LLC develops nanoparticle-based mercury sensors for on-site measurements to improve our understanding of mercury's complicated biogeochemical cycle and to characterize the extent of contamination in the environment. (UC Berkeley & Berkeley Lab)

UC technology startups often begin as basic and applied research endeavors that leverage UC expertise in key scientific domains. The UCLA Water Technology Research Center, for example, advances technologies to develop new and economical alternative sources of potable, irrigation and consumptive water. For example, researchers demonstrated the first practical use of reverse osmosis desalination in the 1960's. Other projects include a portable desalination plant module for agricultural water remediation and reuse and Com2RO, a system that reclaims dirty water from building operations and home gray water to reduce potable water use.

Startup companies founded by the center's faculty and graduate students have formed based on the center's research. These include:

- NanoH20, Inc.: Nanostructured reverse osmosis membranes for seawater desalination (company acquired by LG Chem Ltd of Korea)
- Water Planet, Inc.: Advanced membrane products for water desalination and remediation
- Noria Water Technologies: Water technology and service solutions for various industries

More information on UC research successes in technology commercialization and startup company formation appears in the annual UC Technology Commercialization Report.

## Academic Senate Leadership

The Academic Senates at UC San Francisco and UC Santa Barbara have created bodies to advance sustainability topics in education.

The UCSF Academic Senate Committee on Sustainability sponsored two projects last year. The UCSF Green Challenge was developed as a competition open to faculty, students, staff and trainees to make UCSF a leader in innovation for sustainability in health care, research and education. The challenge provided $5,000 to award the winner and $25,000 for project costs. Participants were invited to submit new, impactful and quantifiable ideas to engage the UCSF community in specific ways to reduce waste, carbon pollution, production of toxic substances, and/or that improve efficient use of energy, water and resources at UCSF. Of the 19 project ideas received, two finalists were selected to fully develop their project proposals with input from campus stakeholders.

The winning project will develop dynamic public displays of building-specific energy use to be located at places such as elevator lobbies. The UCSF Academic Senate Sustainability Committee is working with the UCSF Green

Challenge winner, Campus Life Services and the Office of Sustainability to plan and implement this project.

The UCSF Academic Senate Committee on Sustainability also sponsored a program that called for sustainability project proposals from faculty preceptors. The program provided $3,000 to hire a student or postdoctoral researcher on a contract basis and $2,500 to cover costs to complete a faculty-mentored project in sustainability. Project proposals had to be focused on energy efficiency, toxic reduction, waste reduction, carbon impact, environmental impact or impact of climate change related to health science education, research or clinical care. The preceptor had to be committed to supervision of the student.

The winning project, submitted by Dr. Sheri Weiser and Dr. Peter Chin-Hong, proposed conducting a systematic review of the existing literature regarding the bidirectional links between global climate change and the HIV/AIDS epidemic. The research will be used to produce a documentary film explaining how global climate change affects HIV transmission and outcomes worldwide.

The UCSB Academic Senate's Sustainability Working Group launched the Chancellor's Sustainability Summer Graduate Research Program in the summer of 2015. This program offers funding to students from a wide variety disciplines to explore a research area related to sustainability that they otherwise might not have been able to pursue. The program funds selected students as graduate student researchers for 20 hours per week, giving them enough support to explore significant summer projects. The program awarded its inaugural recipients from the sociology and political science departments. The sociology graduate students' project addressed best practices for developing an inclusive, diverse and justice-oriented sustainability program. The political science students' project focused on further development of UCSB's campus sustainability literacy assessment.

The UCSB Senate's Sustainability Working Group also launched a Chancellor's Sustainability Undergraduate Research Program, which gives undergraduate students an opportunity to partner with faculty to propose a research project related to sustainability. During its first year in FY 2014-15, the program funded a study by environmental studies students on the use of organic soil supplements and compost applications on campus landscaping as well as a study by geography students of the long-term effect of reclaimed water use.

Environmental
Club
Every Other

# STUDENT ENGAGEMENT

Much of the credit for the University's sustainability programs belongs to students, whose call to action led the Regents to adopt a green building and clean energy policy in 2004. Since then, student sustainability programs have grown substantially and students continue to play a crucial role in educating faculty, administrators, staff, and their peers about environmental stewardship and campus sustainability.

## Student Fellowships

The UC President's Global Food Initiative (GFI) and Carbon Neutrality Initiative (CNI) Student Fellowship Programs launched in 2014-15 with 52 GFI fellows and 36 CNI fellows, involving undergraduate and graduate students throughout the UC system. In July, the fellows from both initiatives met at a symposium to learn, network, build leadership skills and share information about their projects. Based on their feedback, the fellowship program was further developed to enhance collaboration and engagement across each campus and initiative. The second class of GFI and CNI fellows includes a student ambassador at each campus to help communicate about the initiative within each campus and between campuses. Planned activities for the fellows include an orientation, leadership training, spring field trip and joint GFI-CNI summer symposium.

In 2015, two to four fellows were selected from each campus, UCANR and Lawrence Berkeley National Laboratory. In total, 44 GFI and 37 CNI fellows will spend the academic year working on projects addressing topics as varied as climate action plans, carbon offset studies, building efficiency data systems, community gardens, food pantries, urban agriculture and food waste.

## Student Sustainability Funds, Courses, and Internship Programs

Demonstrating their commitment to sustainability, students on seven undergraduate campuses have approved one or more fee referenda to fund sustainability projects and student sustainability internships. Students on most campuses call these funds "The Green Initiative Fund," or "TGIF." For example, UC Berkeley's TGIF awarded $213,000 during the 2014-15 academic year toward campus sustainability projects. Those projects included a solar charging station prototype, a sustainable algae bioreactor, expansion of bicycle parking on campus, and the development of a "tiny house" (a small, resource efficient model house) at the new Berkeley Global Campus. UC Santa Cruz awarded over $180,000 through its student-generated Carbon Fund for projects, including a pathway lighting retrofit, energy and water efficient dining equipment replacements, and electric vehicle upgrades.

TABLE 3: UC STUDENT ORGANIZATIONS BY CAMPUS

| | |
|---|---|
| Berkeley | 50 |
| Davis | 30 |
| Irvine | 13 |
| UCLA | 44 |
| Merced | 4 |
| Riverside | 12 |
| San Diego | 24 |
| Santa Barbara | 45 |
| Santa Cruz | 13 |
| **Total** | **235** |

This year students at the nine UC undergraduate campuses organized 235 sustainability clubs and organizations. The California Student Sustainability Coalition (CSSC) galvanizes these organizations to advocate more effectively on major environmental issues. CSSC also leads the Education for Sustainable Living Program (ESLP), which enables students to get academic credit for student-led courses and to conduct research. The Davis, UCLA and Santa Cruz campuses currently have active ESLP programs. A biodiversity survey of the UCLA campus is just one example of the ESLP projects in the past year. The CSSC's newly launched Solidarity Organizing Program (SOP) takes ESLP to the next level by directly addressing the intersection between diversity, empowerment, and the environment. SOP aims to teach students how to work against oppression and pairs them with local frontline communities.

The Carbon Neutrality Initiative sponsored a systemwide student energy conservation competition in February and March on all nine undergraduate campuses. Spurred on by the slogan "Gauchos Do It in the Dark," the occupants of eight residence halls at UC Santa Barbara teamed up to cut their combined electricity use by nearly 8 percent to win the competition. The contest marked the first time that all UC campuses participated in the Campus Conservation Nationals, which challenges students, faculty and staff at 186 university campuses to reduce energy and water use.

The Alliance to Save Energy's PowerSave Campus program organized the student energy competition and also supported a variety of other student engagement activities on the eight UC campuses where it funded student interns. PowerSave Campus projects on UC campuses collectively saved over 168,000 kilowatt hours from January through September 2015 and reached over 128,000 people through everything from energy-themed poetry slams to providing energy education to high school and middle school students.

# UC HEALTH

UC Health has unique opportunities and challenges for creating healthy, sustainable business practices. Highlights in the past year include advances in water conservation, green buildings and energy conservation.

UC's medical centers actively responded to the drought crisis in 2015. UC Davis and UCLA medical centers initiated turf replacement projects that save over 400,000 gallons at UCDMC and 57,000 gallons at UCLAMC. UC Davis, UC San Diego and UC San Francisco medical centers implemented water efficiency projects in their heating, cooling and ventilation systems. At UCSDMC, a new more energy efficient central plant includes cooling towers designed to run on reclaimed water, which are estimated to save over 4.2 million gallons of potable water annually. UCSFMC's water efficiency projects included replacing the electric chiller and medical air compressor with more efficient equipment. This has put the medical center on track to reduce potable water use by 33 percent from its baseline.

UC's medical centers continue to expand their green building portfolios. Notably in 2015, UCSFMC's Mission Bay campus earned three LEED for New Construction Gold certifications for the Ron Conway Gateway Medical Building, the Betty Irene Moore and Bakar Cancer Hospital and the Benioff Children's Hospital, and Mission Bay Energy Center. PG&E granted UCSFMC an energy efficiency incentive of $829,839 in recognition of the new hospital complex reducing energy demand by 50 percent compared to a conventional hospital. In May 2015, Practice GreenHealth awarded UCSFMC with its highest honor, the Top 25 Environmental Excellence Award, in addition to three Circles of Excellence Awards in the categories of climate, green building and leadership. These awards recognized the leadership of clinical and operations leadership and staff in reducing waste, energy, water, and toxic cleaners, increasing adoption of sustainable food, and construction of LEED-certified medical center buildings.

UCLAMC and UCSDMC also added new LEED certifications for medical center projects this year, including the UCSD LEED-NC Silver certified Jacobs Medical Center and the LEED for Commercial Interiors (LEED-CI) Gold certified Connie Frank Kidney Transplant center at UCLAMC.

Medical Centers are tackling energy use in existing facilities as well as in new construction. UCLAMC and UCSDMC partnered with the UC Carbon Neutrality Initiative and the Environmental Defense Fund Climate Corps to each hire a graduate student fellow to identify energy efficiency projects at their respective medical centers to reduce utility consumption and cost. Projects include metering upgrades, a proposal to hire an energy manager and proposed lighting upgrades. In 2015, UCSDMC implemented eight of these projects and expects to save 1.4 MWh and roughly $500,000 per year.

Energy efficiency projects at UCDMC included a trial retro commissioning project in the fall of 2015 for one of its clinic buildings as well as a pilot lighting retrofit project for a medical clinic that will include installation of circadian lighting in selected areas in partnership with the California Lighting Technology Center. UCSFMC benefited from PG&E incentives of more than $153,000 for a chiller retrofit project and a monitoring-based commissioning project. Both of these projects are expected to save more than $142,000 per year in utility costs.

Campuses are also exploring alternative energy sources. UC Irvine Medical Center developed a 1.4 MW fuel cell and 200 refrigeration ton absorption chiller, which is much less carbon intensive and produces a fraction of the air pollutants associated with a conventional combustion system.

Another way that medical centers are helping to tackle UC's carbon footprint is through transportation programs. UCDMC's Parking and Transportation Services (P&TS) was selected as the Business of the Year by the Sacramento Metro Chamber and the Sacramento Regional Transit District. UCDMC participates in a number of programs that support public transit in the Sacramento region. In addition, P&TS installed four bicycle repair stations and air pumps in locations across the facility. These are seeing heavy use, and have resulted in many requests for similar stations in other locations. Finally, membership in the "Green Commuter Program"—which registers cyclists, walkers, carpoolers, transit riders and vanpoolers—grew 23 percent in FY 2014-15.

UCLAMC, Santa Monica partnered with the city of Santa Monica to provide the space for a nine-rack bike rental station near the hospital's parking structure, as part of the city's new Breeze Bike Share program. There are plans to expand the program to the Ronald Reagan Medical Center in order to give staff an opportunity to use bikes to travel between campuses.

Waste diversion continues to be a unique challenge for the medical centers. However, projects like UCLAMC's reusable gown initiative demonstrate the immense opportunities for both waste diversion and cost savings. In May 2012, UCLAMC began removing disposable precaution gowns and replacing them with washable gowns unit-by-unit. The utilization of the disposable gowns had reached over 2.6 million annually, contributing to 234 tons of waste each year. The project was completed in June 2015, diverting a total of 270 tons of waste and saving the organization over $1 million. Furthermore, a change in the isolation precaution policy in July 2014 reduced the use of the gowns by 50 percent. UCDMC is exploring the possibility of piloting a similar program.

UCLAMC also utilizes a single-use device reprocessing program. According to the reprocessing vendor, the program diverted an estimated 32,000 pounds of waste from landfills and saved $854,602 in FY 2014-15. UCSFMC has a similar program and saved $1.04 million in FY 2014-15.

UC's medical centers continue to incorporate more sustainable options into their food and nutrition services. UCDMC, UCLAMC, and UCSFMC have all met the 20 percent by 2020 policy goal early, and UCSDMC and UCIMC are on track to meet it as well. Thirty-nine percent of the produce purchased by UCDMC is locally sourced, and 50 percent of its seafood purchases are Seafood Watch-labeled "best" or "good." Community outreach and education continue at events like the farmer's markets at UCDMC and UCSFMC.

The cafeteria at the UCLAMC, Santa Monica is now a certified Green Business through the city of Santa Monica. Contributing to the sustainable food numbers, UCLAMC now only purchases beef and poultry raised without the routine use of non-therapeutic antibiotics. Ronald Reagan UCLAMC received the Circles of Excellence food award, one of Practice Greenhealth's newest honors. Both medical centers received the Partner for Change award for the fifth year in a row.

UCSDMC and UCSFMC are also focused on purchasing antibiotic-free, grass-fed, and free range proteins. UCSFMC has transitioned one third of its beef and poultry for patients and customers to antibiotic free sources.

UCSFMC and UCLAMC have been working hard to engage their communities on these sustainability issues. UCLAMC's Green Talks were created to engage staff in current sustainability initiatives taking place in the hospitals. They also serve as a way to connect staff with local resources, programs and rebates. The city of Santa Monica Sustainable Works program offers residents and businesses informational sessions on many topics. Sustainable Works provided information to UCLAMC about the current drought and how employees can change personal behaviors to save water. UCLAMC also celebrated Earth Day by showcasing to staff and community members the sustainable practices and products it is using to reduce its impact on the environment.

Similarly, UCSFMC's Living Green Fair was held at Mission Bay and included several local biotech firms from the neighborhood. The fair showcased green laboratory practices as well as sustainable products, food, and transportation. The LivingGreen.ucsf.edu website received more than 121,000 unique visitors during the past two years and inspired doctors and healthcare officials from Europe and Asia to visit UCSF in person.

# SOCIAL RESPONSIBILITY

### Social responsibility and UC licensing programs

UC continues to work to improve workers' rights globally. There is much work still to be done to ensure that ethical labor standards—as exemplified in the UC Code of Conduct for Trademark Licensees—are fully implemented within supply chains producing products with UC's name, logos, and other trademarks. Supply chain transparency/accountability, freedom of association, and fair compensation are just a few of the fair labor standards that require regular monitoring and enforcement. UC licensing and bookstore directors are the primary conduits for executing on these efforts, but it is critical that the entire campus community, including campus buyers of logoed products for internal and promotional use as well as consumers, play an active role to enable UC to meet this challenge.

UC campuses enter into and manage agreements with companies that wish to apply its trademarks on apparel and other goods. These agreements, at a minimum, hold the companies (i.e., trademark licensees) to high quality standards, ensure that UC's trademarks are used correctly and appropriately, and adhere to fair labor principles. Everyone can do their part by looking for the "Officially Licensed" label on goods, buying products at reputable outlets (instead of from vendors hawking merchandise outside of venues), and learning more about supporting UC's social responsibility efforts, all of which is highlighted on UC's Social Sustainability website.

### Improving building and fire safety in Bangladesh

In FY 2014-15, UC licensing programs implemented the requirement for trademark licensees who manufacture goods in Bangladesh to join the Accord on Fire and Building Safety in Bangladesh, and/or the Alliance for Bangladesh Worker Safety. UC received completed acknowledgment letters from trademark licensees confirming their participation in either the accord or alliance (or both), or stating that they are not manufacturing UC-logoed goods in Bangladesh. This was a first but important step to support improved building and fire safety in a country that has experienced significant tragedies from building collapses and fires before and after the Rana Plaza collapse in April 2013.

UC continues to monitor the progress of both safety organizations, which have faced issues associated with funding structural building improvements as well as engaging in timely renovation to mitigate future incidents. Despite these challenges, the Worker Rights Consortium (WRC) reports that "much has been accomplished under the Accord: tens of thousands of individual building repairs, renovations and upgrades (from installation of fire doors to strengthening of structural columns) have been reported complete in more than 1,000 factories." The alliance said in its 2015 report and "Accomplishments at a Glance" that it completed 661 inspections and 591 corrective action plans.

### Alta Gracia update

A recent study conducted by researchers from the Stanford and UC San Francisco medical schools and the UC Berkeley School of Public Health in collaboration with the WRC found that workers at Alta Gracia factory in the Dominican Republic had significantly fewer symptoms of clinical depression compared with workers who were not earning a living wage. The report compares, specifically, the mental health status of workers who earn a living wage at Alta Gracia with those of workers at a control factory, also in the Dominican Republic, that pays the lower prevailing wage. A key objective of the Alta Gracia project has been to promote high labor rights standards in order to demonstrate a model of garment manufacturing that enhances quality of living – both physical and psychological health – for workers who produce collegiate licensed apparel. UC was an early supporter of the "Above and Beyond" initiative, as it was initially called, and views the study results as an indication of the positive impact it has had in improving labor standards. Although Knights Apparel, the company that established Alta Gracia, was recently sold to HanesBrands, the factory will continue to function as a stand-alone entity, retained by the former owner of Knights Apparel.

# STAFF DEVELOPMENT

## CHESC: Sustainability Conference

President Napolitano keynoted the 14th annual California Higher Education Sustainability Conference, a unique statewide collaboration between UC, California State University (CSU), California Community Colleges, and private colleges and universities in the state. San Francisco State University hosted the conference, which attracted 1,223 registrants, including 242 students, from 67 campuses. Programming on sharing sustainability best practices and learning about innovative research and new technologies spanned five days. The UC Office of the President organized the 11th Annual Energy Efficiency and Sustainability Best Practice Awards to recognize UC and CSU energy and sustainability projects at the conference. Case studies of energy efficiency-related best practice award winners are available online at: http://greenbuildings.berkeley.edu/best_practices.htm

## Training

UC promotes excellence in sustainability through workshops and professional certifications for staff. The Energy Efficiency Partnership program with CSU and the state's four investor-owned utilities provides funding for energy efficiency and green building training. UCOP manages this training program to impart skillsets necessary for successfully implementing the partnership's investments in energy efficiency while also targeting training topics to achieve the UC sustainability policy's goals. The program delivered 181 person-days of training in 2015 for UC and CSU staff, including professional certification trainings for building operators and energy managers. In addition:

- The partnership convened all UC and CSU energy managers three times during 2015 to share best practices in energy efficiency, climate action planning, training and education, metering, and renewable energy.
- 31 staff attended a training workshop on the new version of LEED certification.
- 44 staff attended the six-session Building Operator Certification training series.
- 4 staff completed a week-long Certified Energy Manager training and passed the certification exam.

# THE CAMPUSES

# BERKELEY

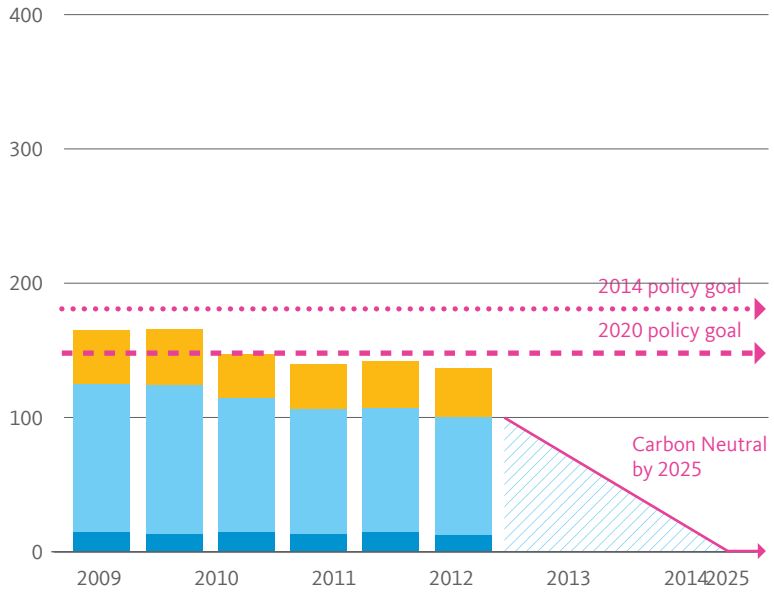
UC Berkeley has achieved or is on track to achieve the majority of its environmental sustainability goals. Greenhouse gas emissions continue to drop, while purchases of sustainable food increase. Waste sent to landfill has dropped 15 percent per capita in the last four years, while the campus continues to work on increasing the overall diversion rate. Water consumption is down 26 percent relative to the baseline years of 2003-2005, and the campus added another LEED certified building this year. Additional reporting on campus sustainability metrics is included in the campus' annual Sustainability Report that now conforms to the Global Reporting Initiative's international reporting standards.

Other highlights this year include reaching the milestone of over 50 registered student sustainability groups. The campus won two Best Practice Awards at the 2015 California Higher Education Sustainability Conference. The PowerSave Campus student group was honored for its LED Microscope Retrofits Project in the Student Energy Efficiency category and New Campbell Hall won in the Overall Sustainable Design category, in part for the user engagement efforts during design and move-in. UC Berkeley also won the inaugural Green Sports Alliance PAC-12 Zero Waste Challenge, in addition to defending its Recyclemania Game Day title for a third time.

On the academic side, three new chairs have been established within the Department of Engineering to help create better technology, policy, and products to address global energy and sustainability challenges. In addition, the campus added a minor in food systems, which explores the role of food within the environment and society.

## GREENHOUSE GAS EMISSIONS

(Thousand metric tons CO2e)




- Scope 1 (natural gas, campus fleet, fugitive)
- Scope 2 (purchased electricity)
- Scope 3 (campus commute, business air travel)
- 2014 Policy Goal: Scopes 1, 2, 3
- 2020 Policy Goal: Scopes 1, 2, 3
- Carbon Neutral Goal: Scopes 1 and 2

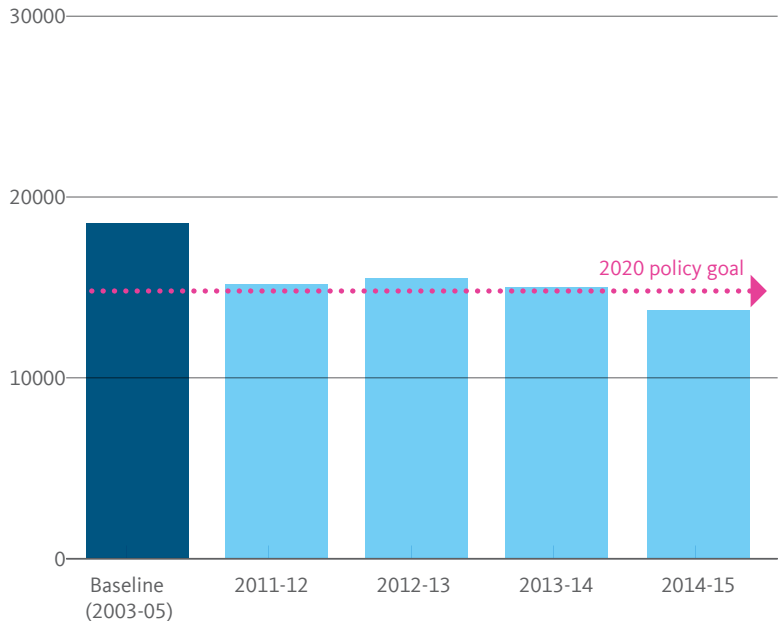
UC Berkeley has achieved the 2014 and 2020 policy goals of reducing greenhouse gas emissions to 2000 and 1990 levels, respectively.

In 2014, Berkeley's GHG emissions totaled 136,094 metric tons, down slightly from the previous year.

UC's goal for achieving carbon neutrality by 2025 requires Berkeley to achieve net-zero emissions from scope 1 and 2 emissions.

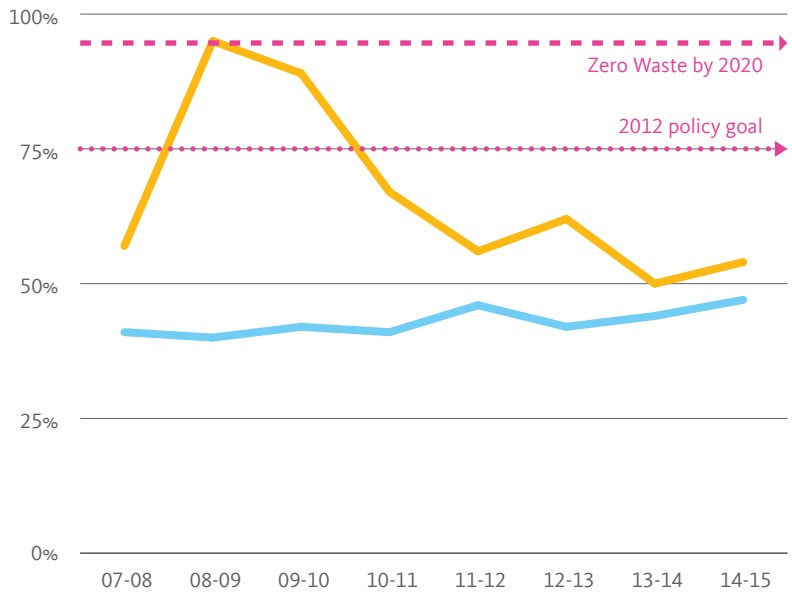
## POTABLE WATER CONSUMPTION

(Gallons per capita)




In FY 2014-15, Berkeley consumed 13,749 gallons of potable water per capita. This is a 26% reduction from its 2003-2005 baseline. The campus has outperformed the 2020 Policy goal of reducing potable water consumption by 20% below the baseline.

## SOLID WASTE DIVERTED FROM LANDFILL



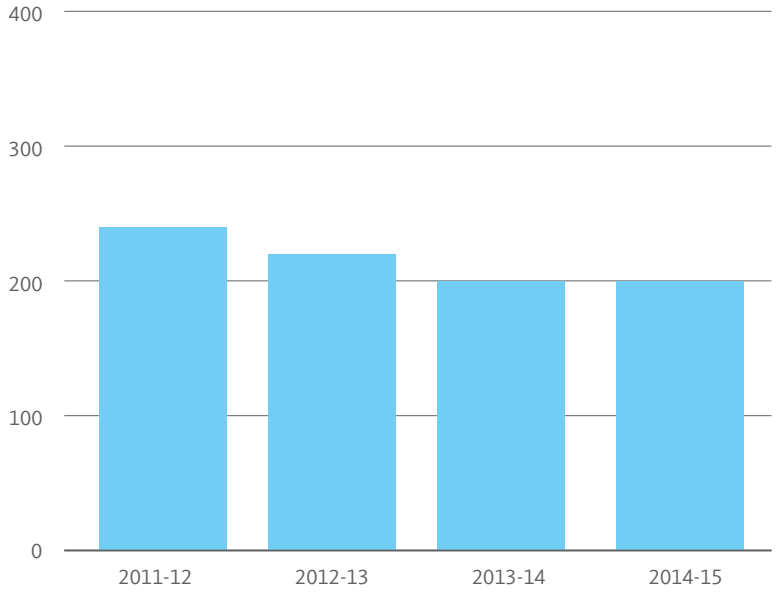

In FY 2014-15, Berkeley diverted 54% of its waste from the landfill, an increase of 4 percentage points from FY 2013-14.

When waste from construction and demolition (C&D) is not included, the amount of waste diverted from the landfill was 47% in FY 2014-15.

Berkeley has still not met the 2012 Policy goal of 75% waste diversion.

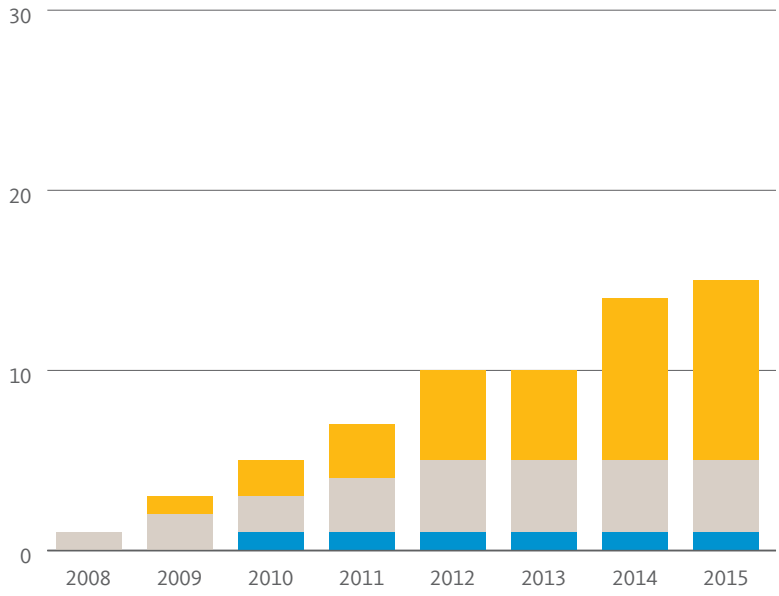
## LANDFILL WASTE (NOT INCLUDING C&D)

(Pounds per capita)



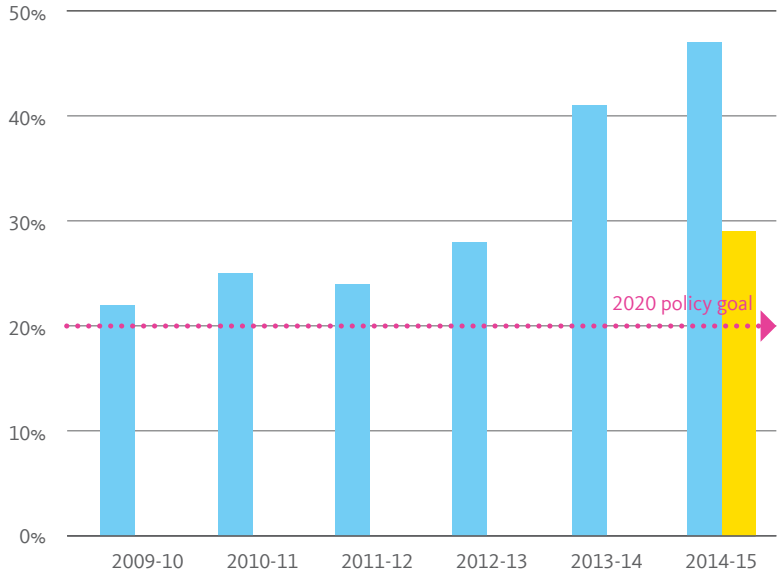

In FY 2014-15, Berkeley sent 200 pounds of solid waste per capita to the landfill, same as the previous year.

## TOTAL NUMBER OF LEED CERTIFICATIONS




In 2015, Berkeley received one new LEED Gold certification, contributing to its total of 15 LEED certifications.

## SUSTAINABLE FOOD PURCHASES




In FY 2014-15, the amount of food purchased by Berkeley's residential dining services that met one or more sustainable food criteria reached 47%. Reporting in previous years included retail food and therefore demonstrated a lower percentage.

Berkeley's residential dining services outperformed the 2020 Policy goal of 20% sustainable food purchases seven years early.

# DAVIS

UC Davis implemented a project to save 61 million gallons of potable water annually (about 9 percent of the campus's total yearly potable water use), using recycled water instead of well water to help chill the water that keeps campus buildings cool. With this project and other conservation measures, UC Davis is on target to meet a 25 percent reduction in water use compared to 2013. Among other actions, the campus continued to convert selected turf areas to low-water use landscapes, engage the community to report leaks and water waste, take pledges to reduce water use, replace fixtures, and tune water purification systems to reduce the amount of waste water generated.

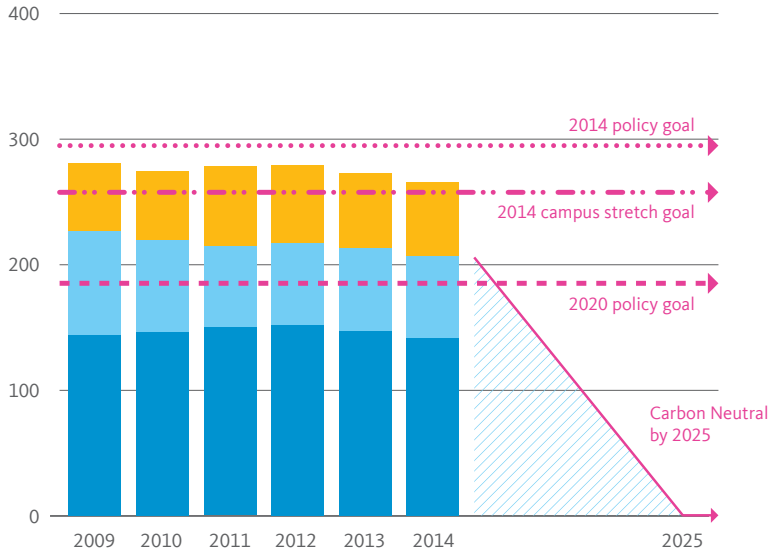
Total sustainable food purchasing reached 29 percent this year in residential dining, up from 23 percent in 2013-14. Dining Services won a California Higher Education Sustainability Conference Best Practice award for "Aggie Grown – Harnessing the Hyper-Local," which is a project connecting students and staff to develop a campus-based food system supply chain in partnership with the local Russell Ranch.

The campus's LEED-EBOM program, which now has three gold, three silver, and one certified level buildings, actively involves students in carrying out assessments, program implementation and documentation for certification. In the spring quarter of 2014, students in an energy policy course worked with staff on several campus-based projects, including developing an energy-water savings factor to describe the relationship between water and energy use on the campus. Campus staff members plan to use the factor to calculate potential water savings associated with future energy conservation and efficiency projects.

UC Davis placed fourth and was the highest placed U.S. institution in the 2014 edition of the annual Universitas Indonesia GreenMetric World University Ranking. The campus also placed second in the 2015 Sierra Cool Schools ranking.

## GREENHOUSE GAS EMISSIONS

(Thousand metric tons CO2e)




Scope 1 (natural gas, campus fleet, fugitive)
Scope 2 (purchased electricity)
Scope 3 (campus commute, business air travel)
2014 Policy Goal: Scopes 1, 2, 3
2020 Policy Goal: Scopes 1, 2, 3
Carbon Neutral Goal: Scopes 1 and 2

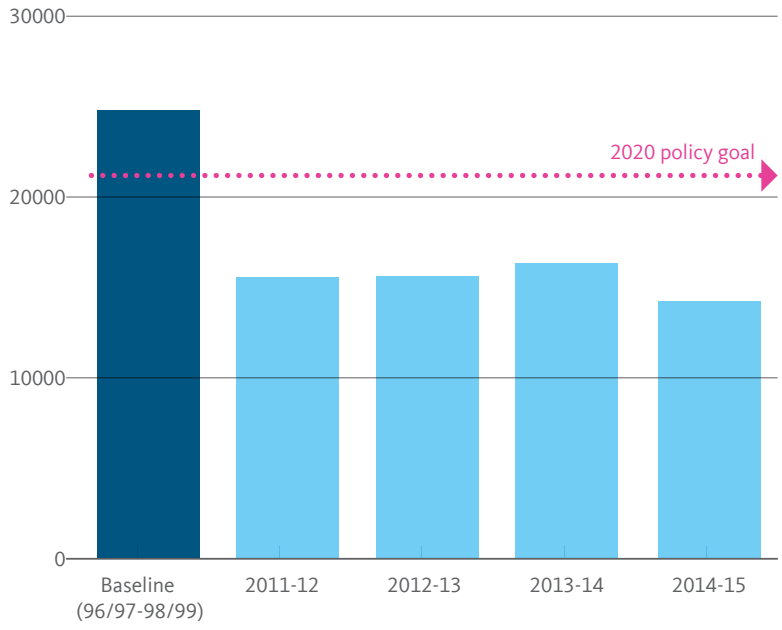
In 2014, Davis' GHG emissions totaled 265,711 metric tons, a slight decrease from 2013.

Total emissions in 2014 were lower than 2000 levels; therefore, Davis has met the 2014 policy goal. The campus needs to reduce its total emissions by 79,073 metric tons to meet the 2020 policy goal.

UC's goal for achieving carbon neutrality by 2025 requires Davis to reduce all of its scope 1 and 2 emissions.

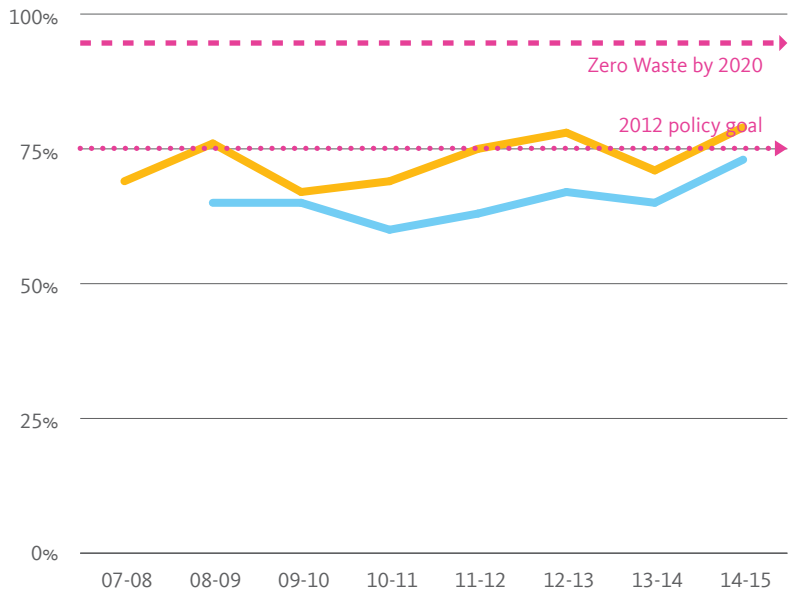
## POTABLE WATER CONSUMPTION

(Gallons per capita)




In FY 2014-15, Davis consumed 14,249 gallons of potable water per capita. This is a 43% reduction from its FY 1996-97 to FY 1998-99 baseline. The campus has outperformed the 2020 Policy goal of reducing potable water consumption by 20% below the baseline.

## SOLID WASTE DIVERTED FROM LANDFILL



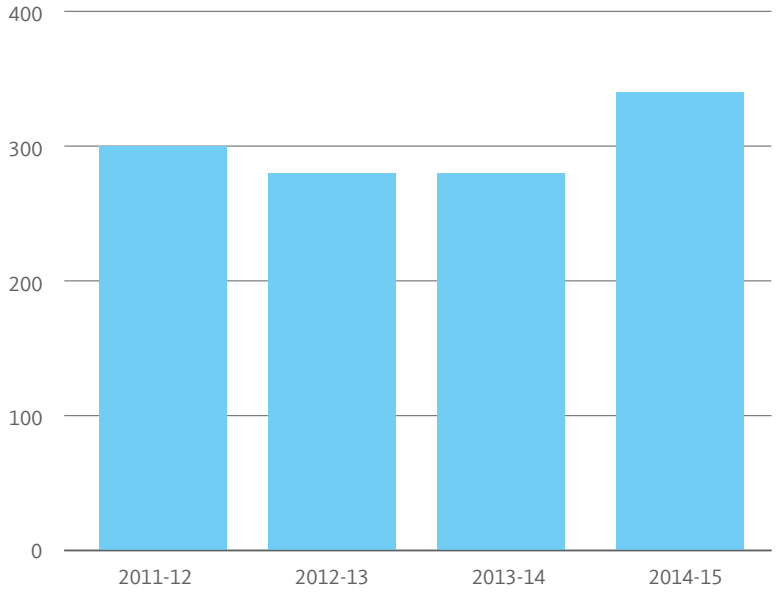

In FY 2014-15, Davis diverted 79% of its waste from the landfill, an increase of 8 percentage point from FY 2013-14.

When waste from construction and demolition (C&D) is not included, the amount of waste diverted from the landfill was 73% in FY 2014-15.

Davis is close to maintaining the 2012 Policy goal of 75% waste diversion.

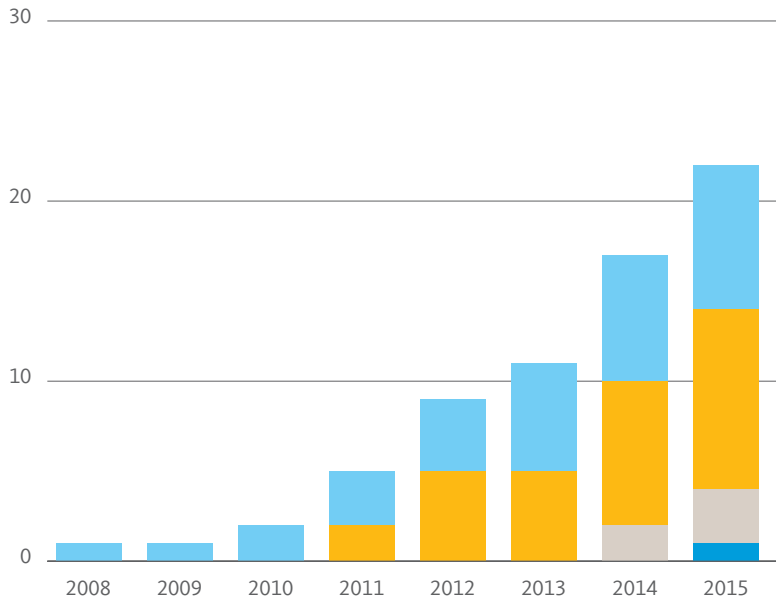
## LANDFILL WASTE (NOT INCLUDING C&D)

(Pounds per capita)



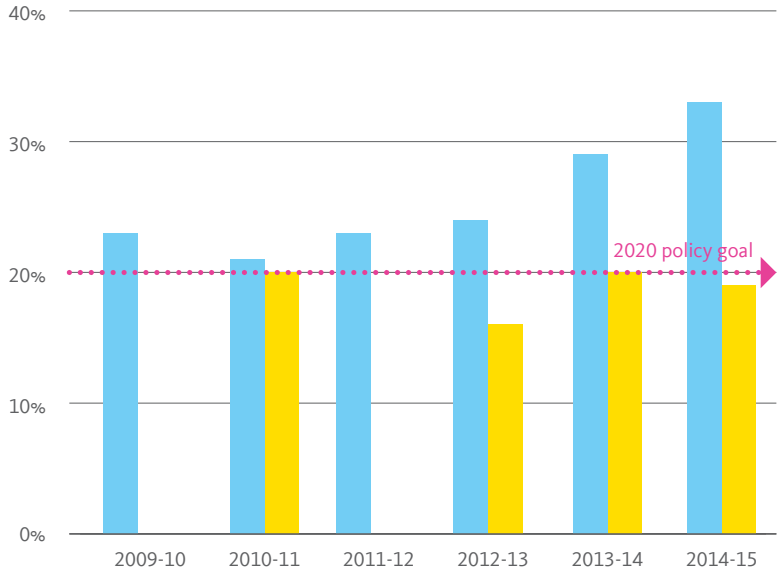

In FY 2014-15, Davis sent 340 pounds of solid waste per capita to the landfill.

## TOTAL NUMBER OF LEED CERTIFICATIONS




In 2014-15, Davis received five new LEED certifications, including one Platinum and two Gold contributing to its total of 22 LEED certifications (including LEED EBOM projects).

## SUSTAINABLE FOOD PURCHASES




In FY 2014-15, the amount of food purchased by Davis' residential dining services that met one or more sustainable food criteria stayed at 33%.

Davis' residential dining services has outperformed the 2020 Policy goal of 20% sustainable food purchases seven years early.

# IRVINE

For the second consecutive year, UC Irvine was named the No. 1 “Coolest School” in the United States by Sierra magazine, the first time any university has received top honors two years in a row.

The U.S. Department of Energy recognized UC Irvine for reducing energy use by 26 percent, which exceeds the 20 percent by 2020 commitment made by the campus under the Better Buildings Challenge.

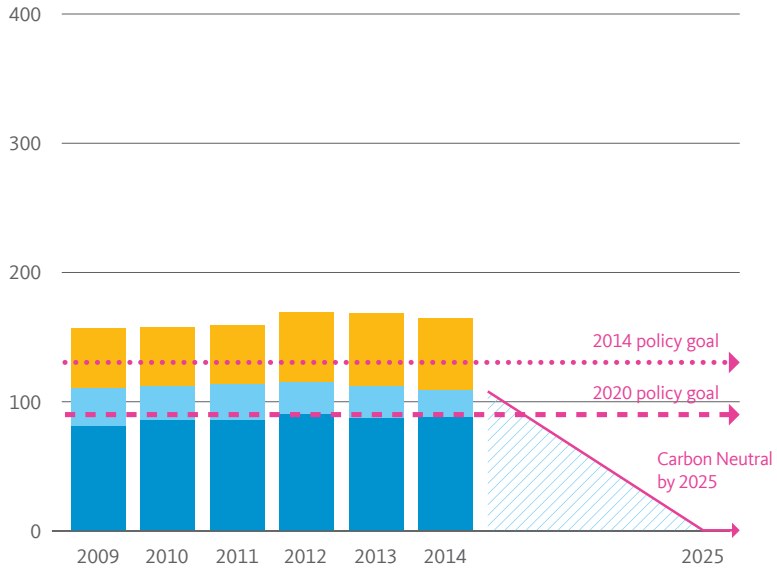
UC Irvine quadrupled the amount of on-site green power with the installation of photovoltaic canopies on top of three parking structures.

The U.S. Green Building Council awarded UC Irvine its 13th LEED NC Platinum certification for the Newkirk Alumni Center. The campus now has 21 LEED-NC Platinum and LEED-NC Gold certifications.

The campus waste diversion rate increased in 2015 to 83 percent. In the past year the Food Scrap Program has diverted nearly 550 tons of food waste, and since inception in 2010 the program has diverted 1,800 tons of food waste. UC Irvine has 162 water bottle filling stations across campus, which avoided the one-time use of approximately 65 tons of plastic water bottles in 2014.

## GREENHOUSE GAS EMISSIONS

(Thousand metric tons CO2e)




Scope 1 (natural gas, campus fleet, fugitive)
Scope 2 (purchased electricity)
Scope 3 (campus commute, business air travel)
2014 Policy Goal: Scopes 1, 2, 3
2020 Policy Goal: Scopes 1, 2, 3
Carbon Neutral Goal: Scopes 1 and 2

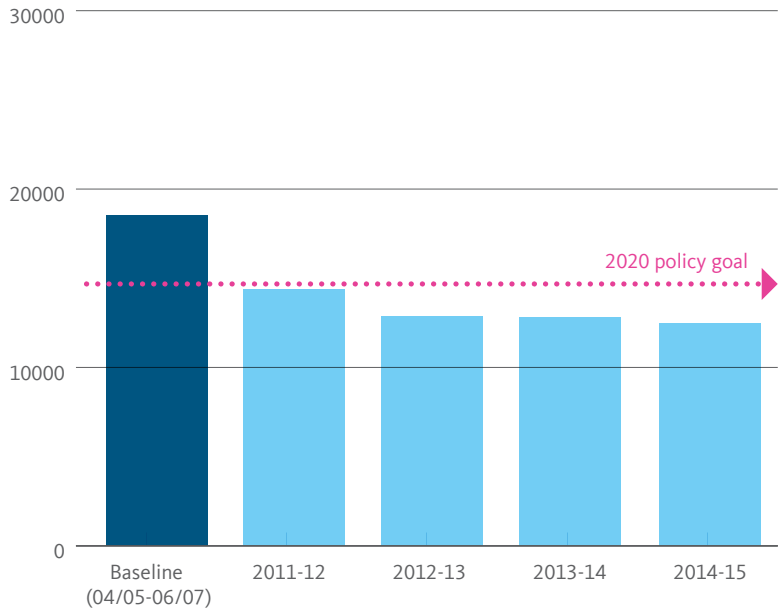
In 2014, Irvine's GHG emissions totaled 163,877 metric tons. Scope 1 emissions remained relatively constant while Scope 2 emissions decreased by 12% and Scope 3 emissions by 2% from 2013.

Irvine needs to reduce its total emissions by 33,773 metric tons to meet the 2014 policy goal and 73,877 metric tons to meet the 2020 policy goal.

UC's goal for achieving carbon neutrality by 2025 requires Irvine to reduce all of its scope 1 and 2 emissions.

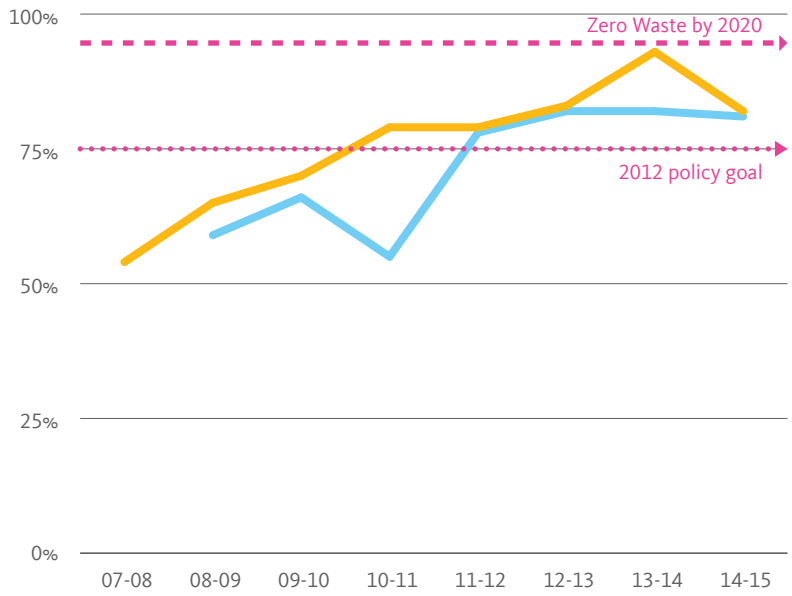
## POTABLE WATER CONSUMPTION

(Gallons per capita)




In FY 2014-15, Irvine consumed 12,139 gallons of potable water per capita. This is a 35% reduction from its FY 2004-05 to FY 2006-07 baseline. The campus has outperformed the 2020 Policy goal of reducing potable water consumption by 20% below the baseline.

## SOLID WASTE DIVERTED FROM LANDFILL



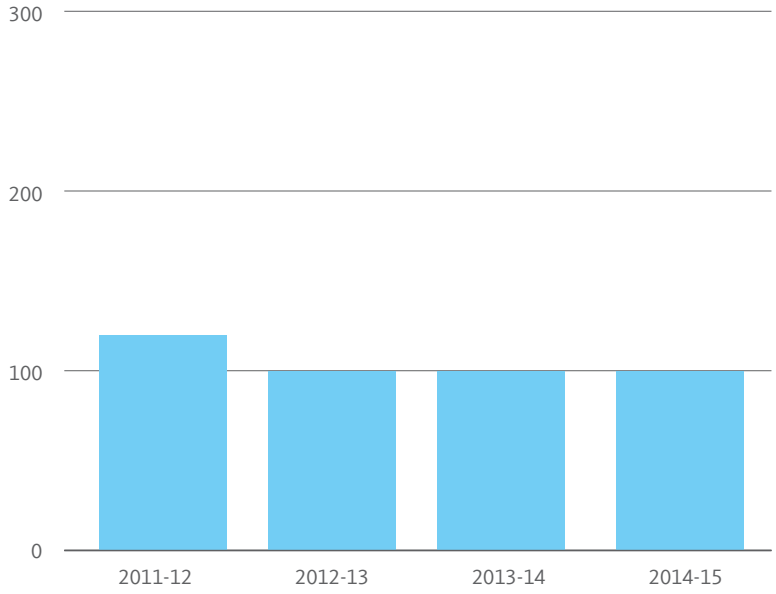

In FY 2014-15, Irvine diverted 82% of its waste from the landfill, a decrease of 9% from FY 2013-14.

When waste from construction and demolition (C&D) is not included, the amount of waste diverted from the landfill was 81% in FY 2014-15.

Irvine is 13% away from meeting the 2020 zero waste Policy goal.

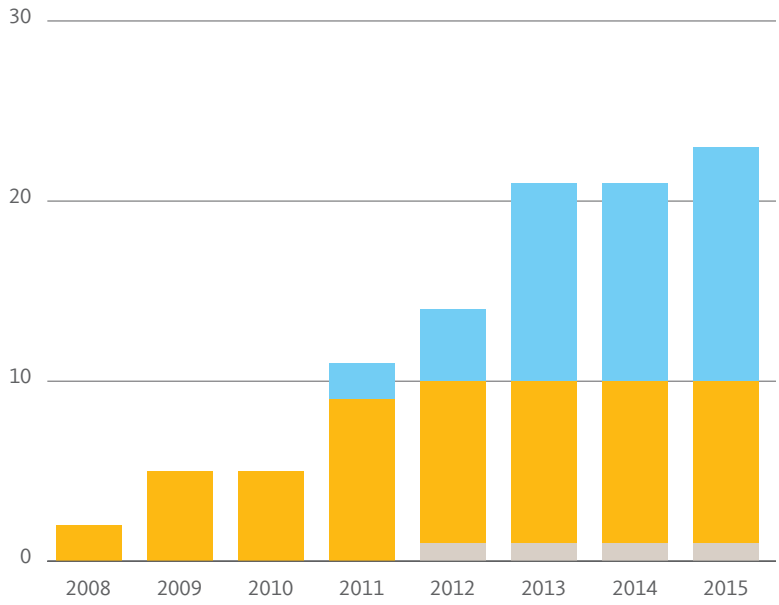
## LANDFILL WASTE (NOT INCLUDING C&D)

(Pounds per capita)



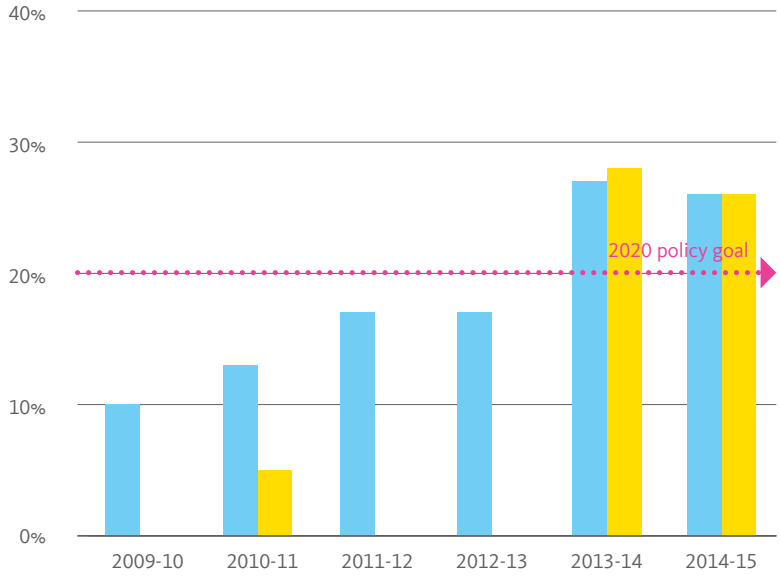

In FY 2014-15, Irvine sent 100 pounds of solid waste per capita to the landfill.

## TOTAL NUMBER OF LEED CERTIFICATIONS




In 2014-15, Irvine received two more LEED-Platinum certifications, contributing to its total of 23 LEED certifications.

## SUSTAINABLE FOOD PURCHASES




In FY 2014-15, the amount of food purchased by Irvine's residential dining services that met one or more sustainable food criteria went down slightly to 26%.

Irvine's residential dining services outperformed the 2020 Policy goal of 20% sustainable food purchases seven years early.

# UCLA

In 2014, through a combination of efficiency projects, renewables and Climate Reserve certified offsets, UCLA achieved the 2020 policy goal of reducing greenhouse gas emissions to below 1990 levels. The campus also achieved a milestone of 23 LEED certifications on campus, including a LEED Platinum renovation at the UCLA Fielding School of Public Health building. To facilitate further efficiency progress, UCLA joined the Sustainable Endowments Institute's Billion Dollar Green Challenge, creating the nation's largest revolving energy efficiency commitment in higher education.

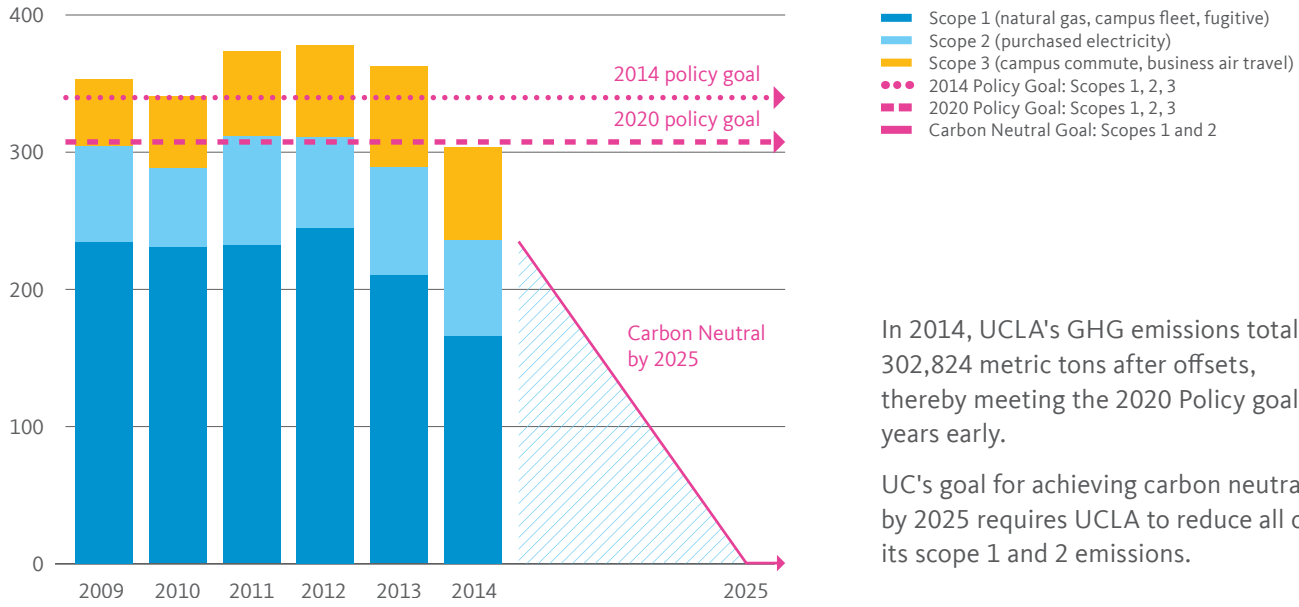
UCLA received the largest turf replacement rebate in the city of Los Angeles for the conversion of the eight-acre Intramural Field to artificial turf. Additional turf replacement projects included drought tolerant landscaping near Murphy Hall, a showcase project that was shared among local homeowners associations as an example. The combined turf replacement projects will save 11.4 million gallons of water annually.

The California Environmental Protection Agency awarded UCLA Transportation the state's top environmental honor for its track record of accomplishments in planning, promoting and providing sustainable transportation programs to the campus community. UCLA was the only university to receive the award in 2014. Continuing collaboration with the Healthy Campus Initiative, the university added new bike lanes and infrastructure to the campus to encourage active transportation, and created new programs under the Global Food Initiative.

UCLA was honored by SoCal Gas as its 2015 Solar Champion for using solar water heating in eight residence halls. Three UCLA programs were also recognized with California Higher Education Sustainability Conference Best Practice Awards: the Sustainable Living Communities program won in the student sustainability category, the Education for Sustainable Living Program won in the Academics category and the high purity water recycling program won honorable mention in the water category.

## GREENHOUSE GAS EMISSIONS

(Thousand metric tons CO2e)

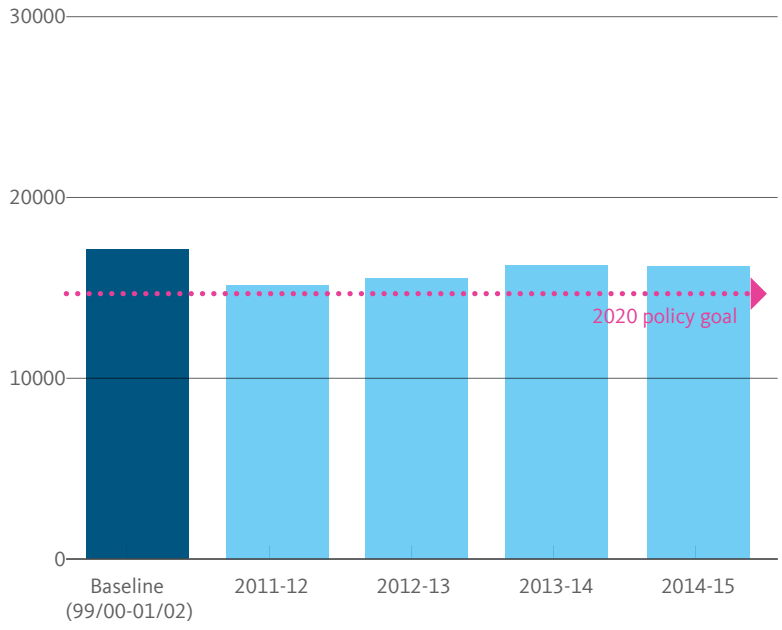



In 2014, UCLA's GHG emissions totaled 302,824 metric tons after offsets, thereby meeting the 2020 Policy goal six years early.

UC's goal for achieving carbon neutrality by 2025 requires UCLA to reduce all of its scope 1 and 2 emissions.

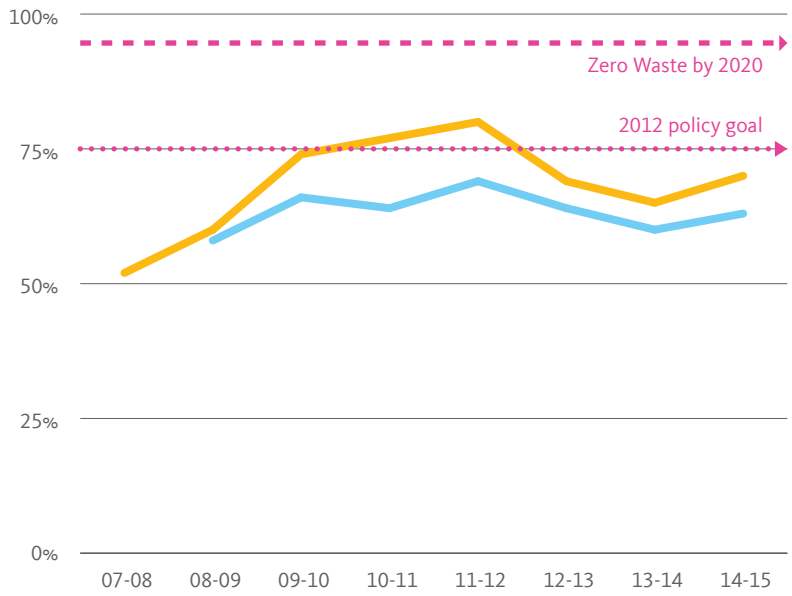
## POTABLE WATER CONSUMPTION

(Gallons per capita)




In FY 2014-15, UCLA campus and medical center consumed 16,168 gallons of potable water per capita. This is a 5% reduction from its FY 1999-00 to FY 2001-02 baseline. UCLA needs to reduce potable water another 15 percentage points to meet the 2020 Policy goal of reducing potable water consumption by 20% below the baseline.

## SOLID WASTE DIVERTED FROM LANDFILL



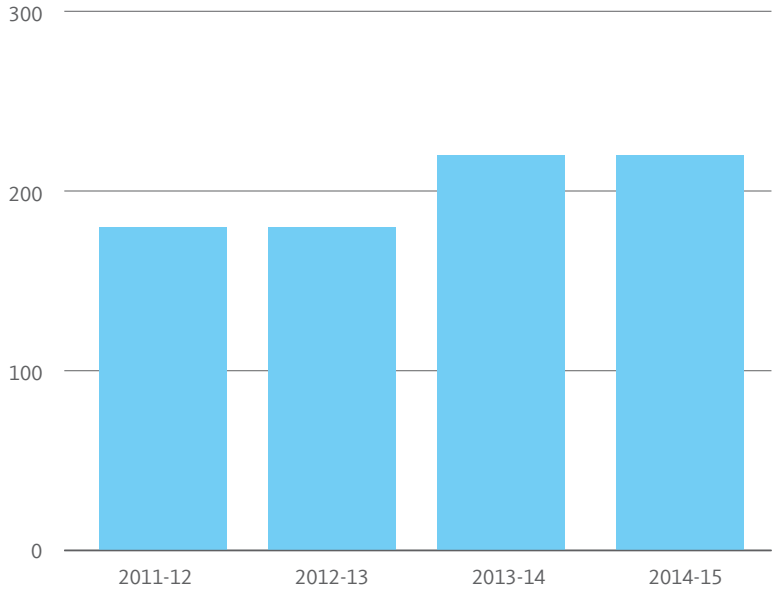

In FY 2014-15, UCLA diverted 70% of its waste from the landfill, an increase of 3 percentage points from FY 2013-14.

When waste from construction and demolition (C&D) is not included, the amount of waste diverted from the landfill was 63% in FY 2014-15.

UCLA was not able to maintain the 2012 Policy goal of 75% waste diversion.

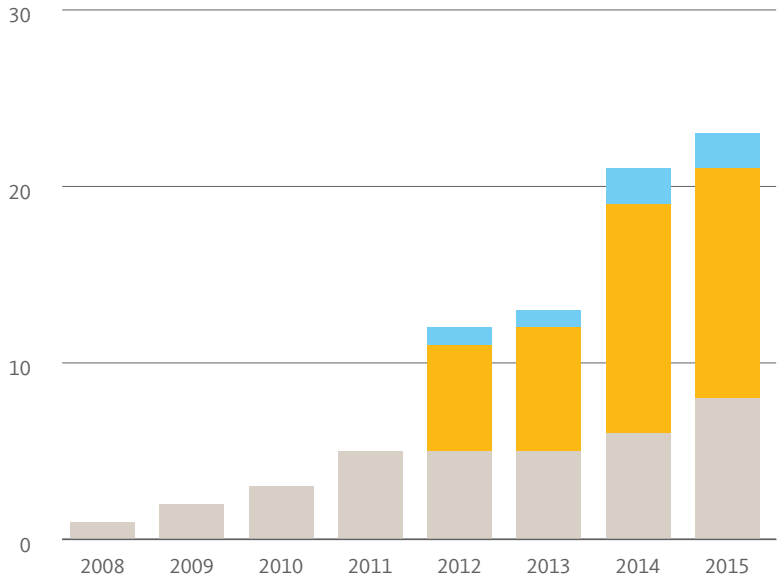
## LANDFILL WASTE (NOT INCLUDING C&D)

(Pounds per capita)



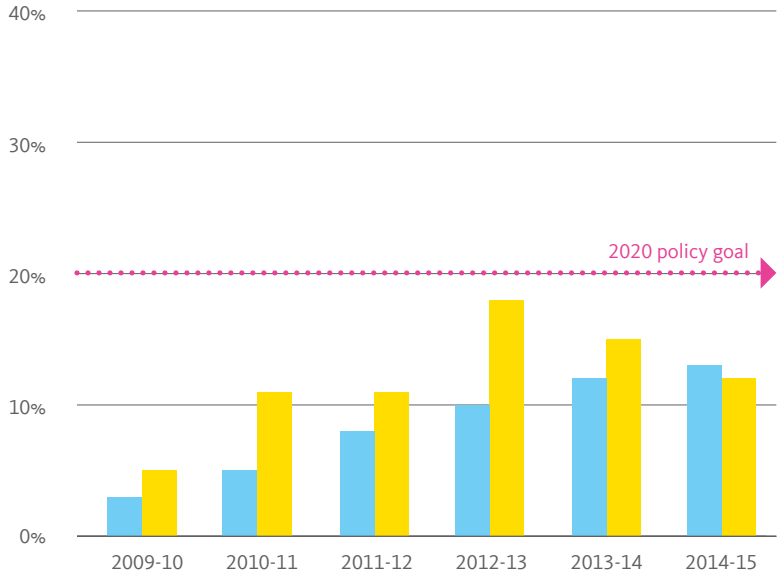

In FY 2014-15, UCLA sent 220 pounds of solid waste per capita to the landfill, same as the previous year.

## TOTAL NUMBER OF LEED CERTIFICATIONS




In 2014-15, LA received two more LEED-Silver certifications, contributing to its total of 24 LEED certifications.

## SUSTAINABLE FOOD PURCHASES




In FY 2014-15, the amount of food purchased by UCLA's residential dining services that met one or more sustainable food criteria increased slightly to 13%.

UCLA's residential dining services is over halfway towards the 2020 policy goal of 20% sustainable food purchases.

# MERCED

In 2015, the UC Merced Chancellor's Advisory Committee on Sustainability supported the establishment and revitalization of new and existing sustainability initiatives that encompass academics, food procurement, water usage reductions, transportation and student engagement.

Academics and experiential learning for students are critical components of sustainability at UC Merced. The new LEED Lab course offered by the Engineering Service Learning department enables students to actively engage in the certification of a campus building according to the criteria of the LEED-EBOM rating system.

UC Merced's sustainable food purchases in FY 2014-15 held constant from the previous year at 13 percent of total spend.

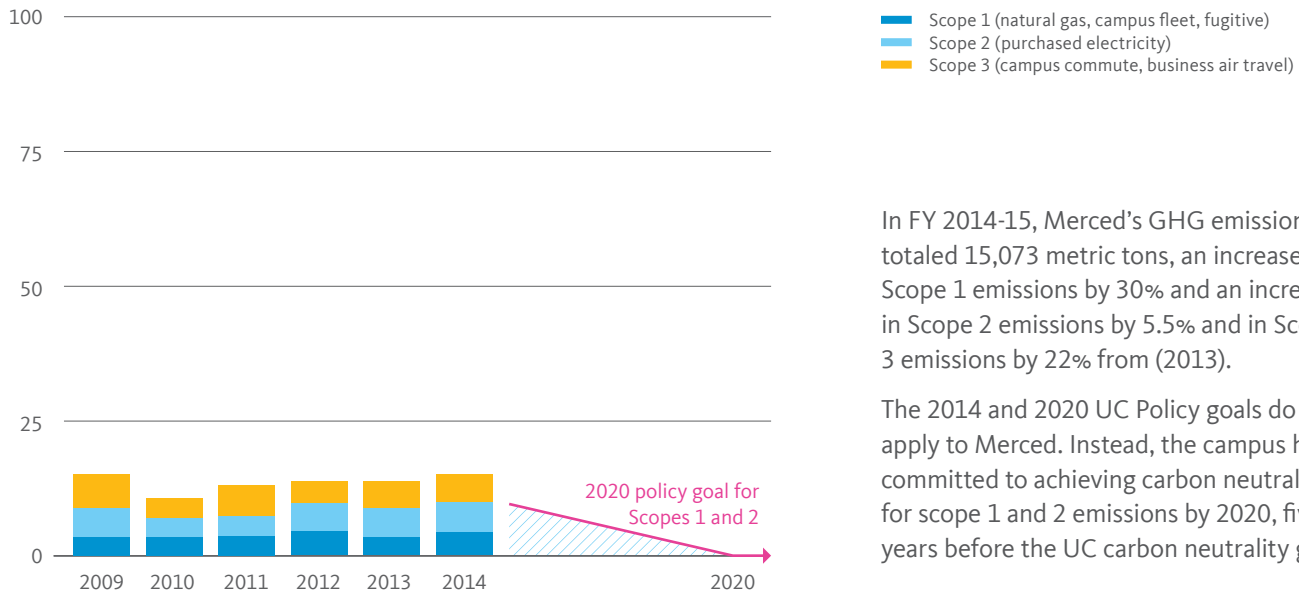
UC Merced successfully reduced its water consumption per weighted campus user by 53 percent from the FY 2007-08 to FY 2009-10 campus baseline. The campus has also enacted several actions to respond to the governor's drought mandate.

The UC Merced Transportation Department recently entered into an agreement with the car sharing company Zipcar to help reduce the number of single-occupancy vehicle users on campus.

Student engagement in sustainability ramped up in 2015 with events that encourage collaboration, such as Earth Day and the "Refill, Not Landfill" initiative, which distributed over 1,000 reusable water bottles to students, faculty and staff. Additionally, a student Ecorep program developed to promote sustainable living in campus housing is in the planning stages and an Eco Champion campaign began fall of 2015 to promote Sustainability Day and the Cool Campus Challenge.

## GREENHOUSE GAS EMISSIONS

(Thousand metric tons CO2e)

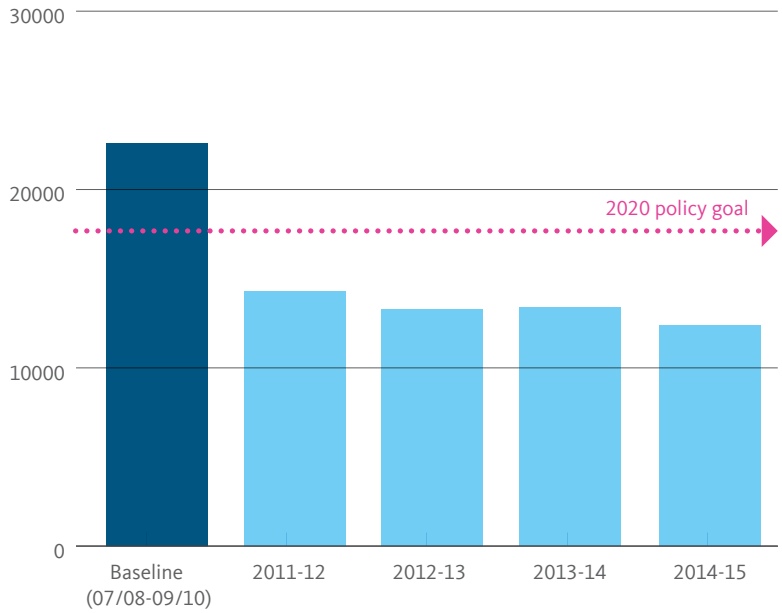



In FY 2014-15, Merced's GHG emissions totaled 15,073 metric tons, an increase in Scope 1 emissions by 30% and an increase in Scope 2 emissions by 5.5% and in Scope 3 emissions by 22% from (2013).

The 2014 and 2020 UC Policy goals do not apply to Merced. Instead, the campus has committed to achieving carbon neutrality for scope 1 and 2 emissions by 2020, five years before the UC carbon neutrality goal.

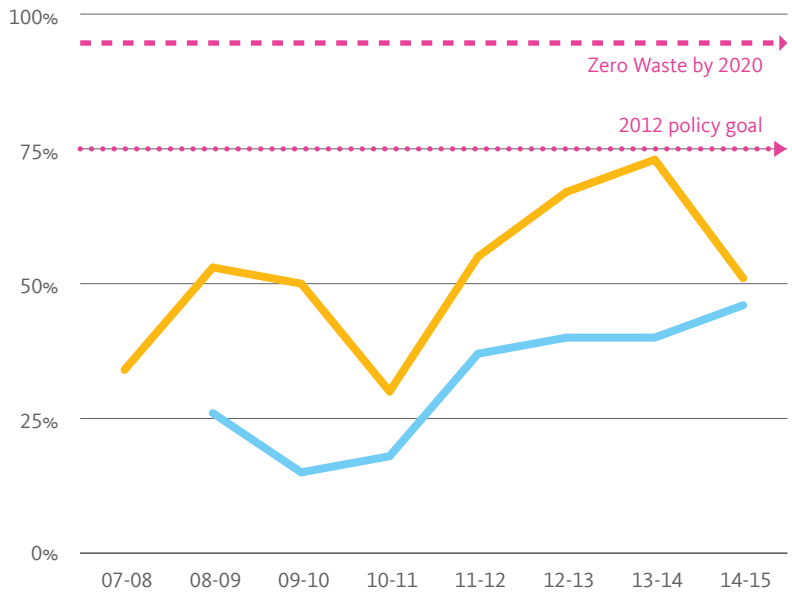
## POTABLE WATER CONSUMPTION

(Gallons per capita)




In FY 2014-15, Merced consumed 12,412 gallons of potable water per capita. This is a 53% reduction from its FY 2007-08 to FY 2009-10 baseline. The campus has outperformed the 2020 policy goal of reducing potable water consumption by 20% below the baseline.

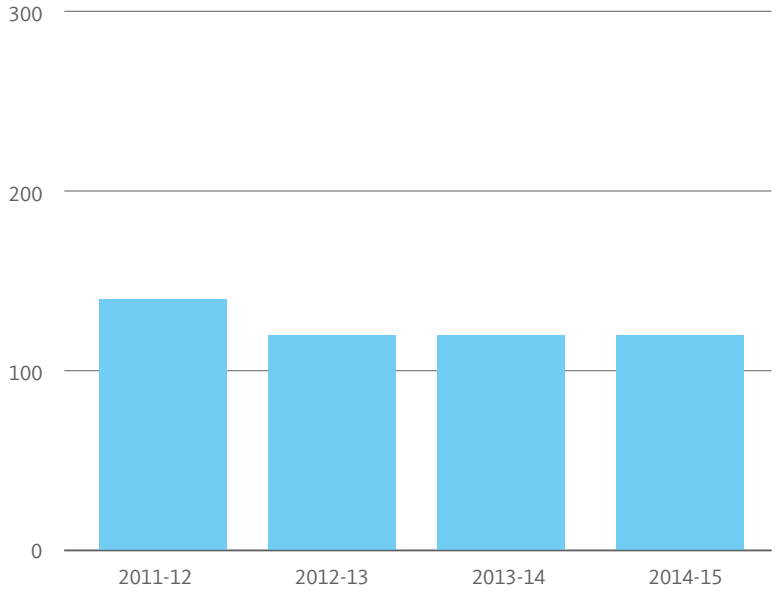
## SOLID WASTE DIVERTED FROM LANDFILL




In FY 2014-15, Merced diverted 51% of its waste from the landfill. When waste from construction and demolition (C&D) is not included, the amount of waste diverted from the landfill for FY 2014-15 is 46%. Merced is 44% away from meeting the 2020 zero waste policy goal.

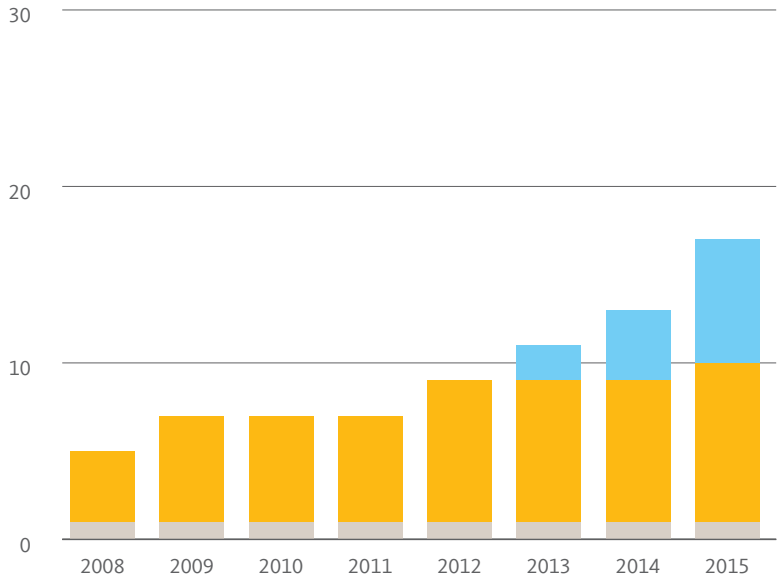
## LANDFILL WASTE (NOT INCLUDING C&D)

(Pounds per capita)



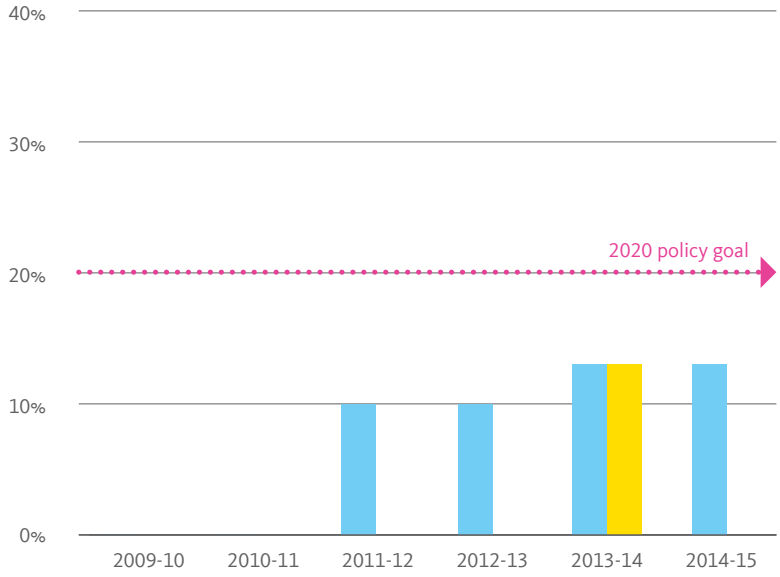

In FY 2014-15, Merced sent 120 pounds of solid waste per capita to the landfill, which is the same as the last three years.

## TOTAL NUMBER OF LEED CERTIFICATIONS




In 2014-15, Merced received three LEED-Platinum certifications and one Gold, contributing to its total of 17 LEED certifications. Merced is the only campus in the country where every building is LEED certified.

## SUSTAINABLE FOOD PURCHASES




In FY 2014-15, the amount of food purchased by Merced's residential dining services that met one or more sustainable food criteria reached 13%.

Merced's residential dining services is about three quarters of the way towards meeting the 2020 Policy goal of 20% sustainable food purchases.

# RIVERSIDE

UC Riverside's progress on operational sustainability goals includes the following highlights from 2015:

- The addition of hundreds of LED lamp replacements for indoor and outdoor lighting
- A switch to highly energy efficient ultra-low temperature freezers in laboratories
- Development of a robust recycling program for nitrile gloves, plastics and Styrofoam
- A partnership with UC Santa Cruz faculty to build a solar powered greenhouse

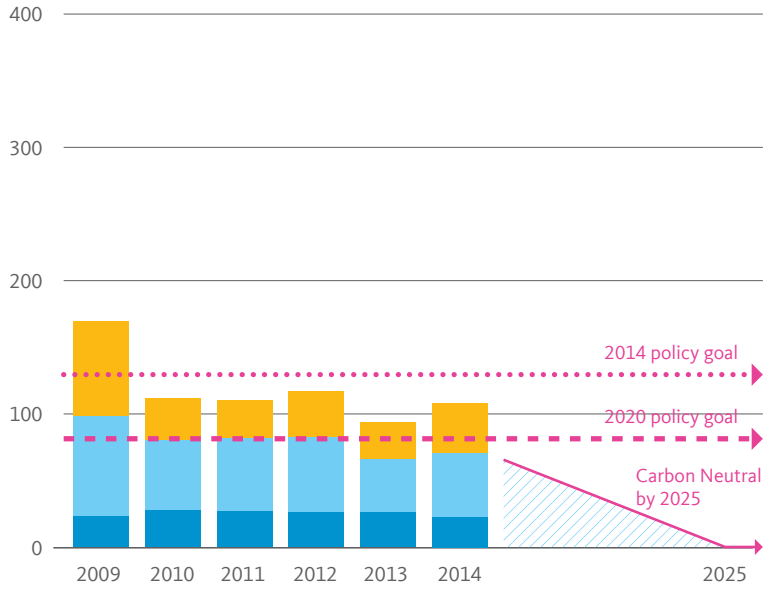
UC Riverside also launched two new academic sustainability programs this year: a degree program in Sustainability Studies through the Department of Gender and Sexuality Studies and a Master in Public Policy track in Environmental and Sustainability Policy as part of the newly established School of Public Policy.

The campus committed itself to deep water-use reduction goals in response to the drought. The new on-campus residential complex, Glen Mor 2, reduced water needed for landscaping by 50 percent, and the installation of new faucet aerators in Glen Mor 1 will save more than 1 million gallons annually. The new Environmental Health and Safety building features a water and energy efficient autoclave that will reduce water use by 90 percent and energy consumption by 85 percent when compared to standard autoclaves.

Other milestones include increasing sustainable food purchases by five percentage points to 22 percent, exceeding the 20 percent by 2020 UC policy goal five years ahead of schedule. The campus also continues to achieve 95 percent or greater waste diversion rates on all new construction projects.

## GREENHOUSE GAS EMISSIONS

(Thousand metric tons CO2e)




Scope 1 (natural gas, campus fleet, fugitive)
Scope 2 (purchased electricity)
Scope 3 (campus commute, business air travel)
2014 Policy Goal: Scopes 1, 2, 3
2020 Policy Goal: Scopes 1, 2, 3
Carbon Neutral Goal: Scopes 1 and 2

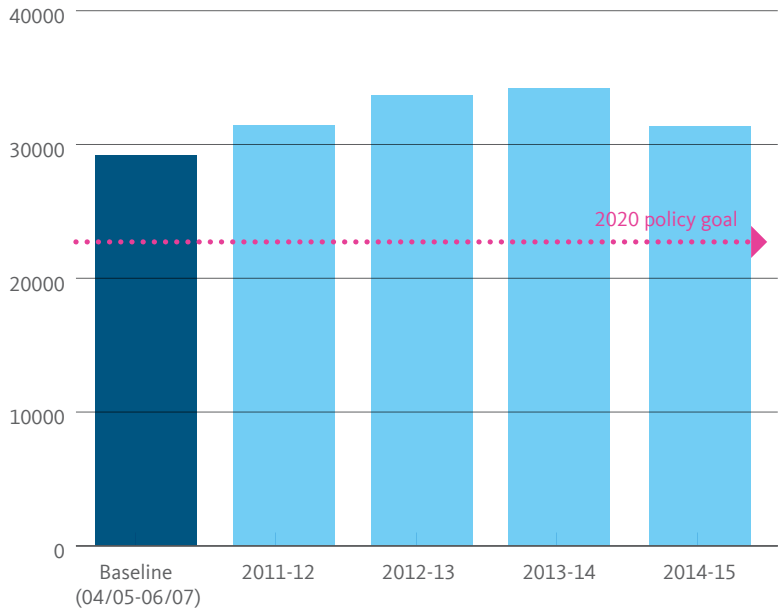
In 2014, Riverside's GHG emissions totaled 108,187 metric tons. Compared to 2013, Scope 1 emissions decreased by 13%, Scope 2 emissions increased by 18% and Scope 3 emissions increased by 38%.

Total emissions in 2014 were lower than 2000 levels; therefore, Riverside has met 2014 policy goal. The campus needs to reduce its total emissions by 26,187 metric tons to meet the 2020 policy goal.

UC's goal for achieving carbon neutrality by 2025 requires Riverside to reduce all of its scope 1 and 2 emissions.

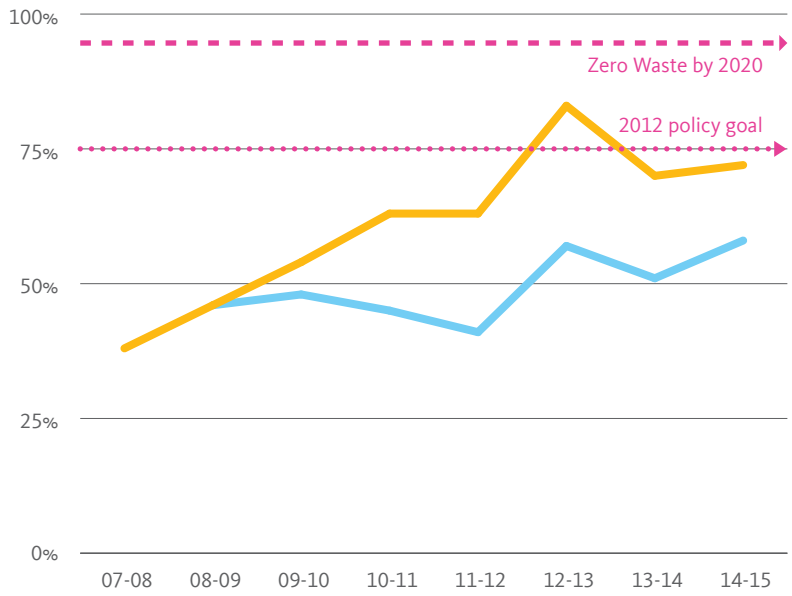
## POTABLE WATER CONSUMPTION

(Gallons per capita)




In FY 2014-15, Riverside consumed 31,382 gallons of potable water per capita. This is a 7% increase from its FY 2004-05 to FY 2006-07 baseline. The campus needs to reduce its water consumption by 27 percentage points to meet the 2020 Policy goal of reducing potable water consumption by 20% below the baseline.

## SOLID WASTE DIVERTED FROM LANDFILL



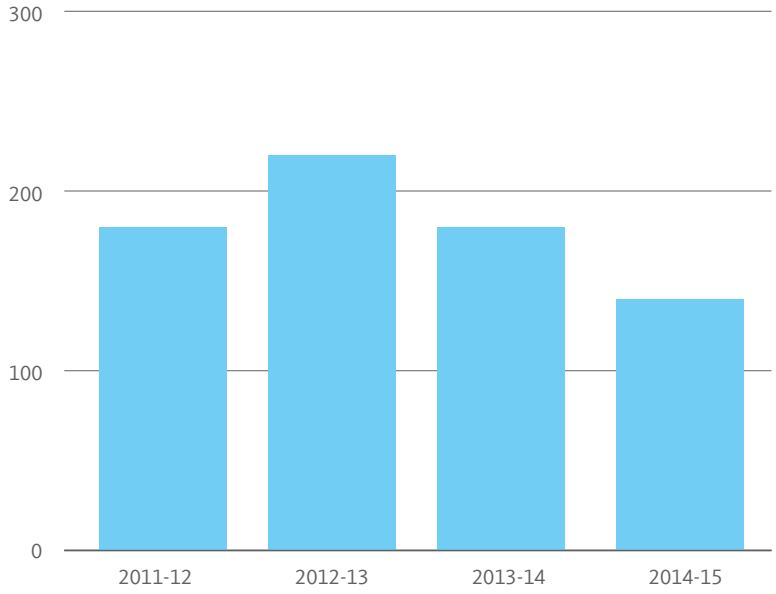

In FY 2014-15, Riverside diverted 72% of its waste from the landfill, an increase of 2 percentage points from FY 2013-14.

When waste from construction and demolition (C&D) is not included, the amount of waste diverted from the landfill was 58% in FY 2014-15.

Riverside is close to maintaining the 2012 Policy goal of 75% waste diversion.

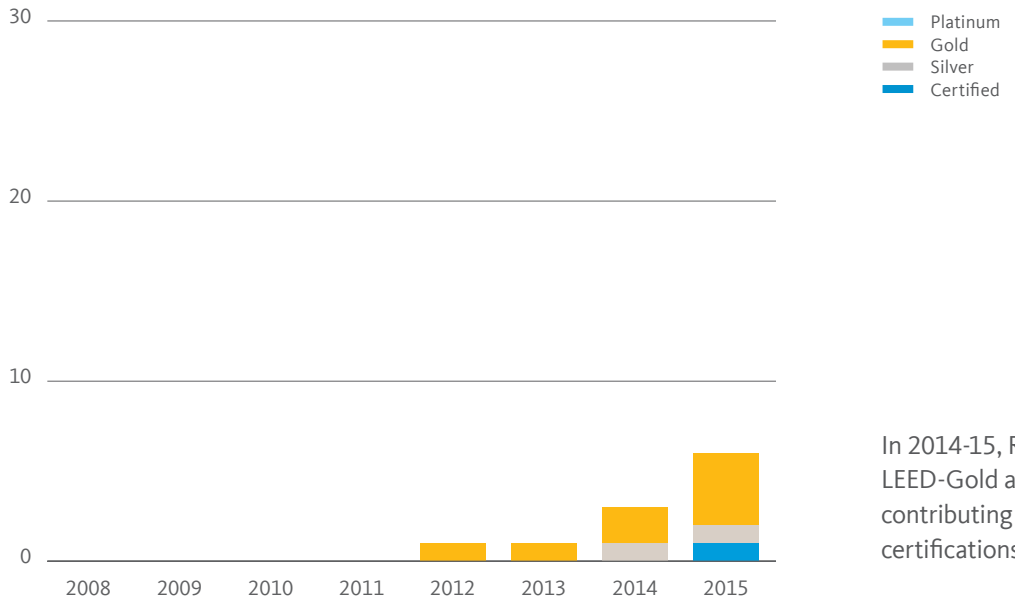
## LANDFILL WASTE (NOT INCLUDING C&D)

(Pounds per capita)



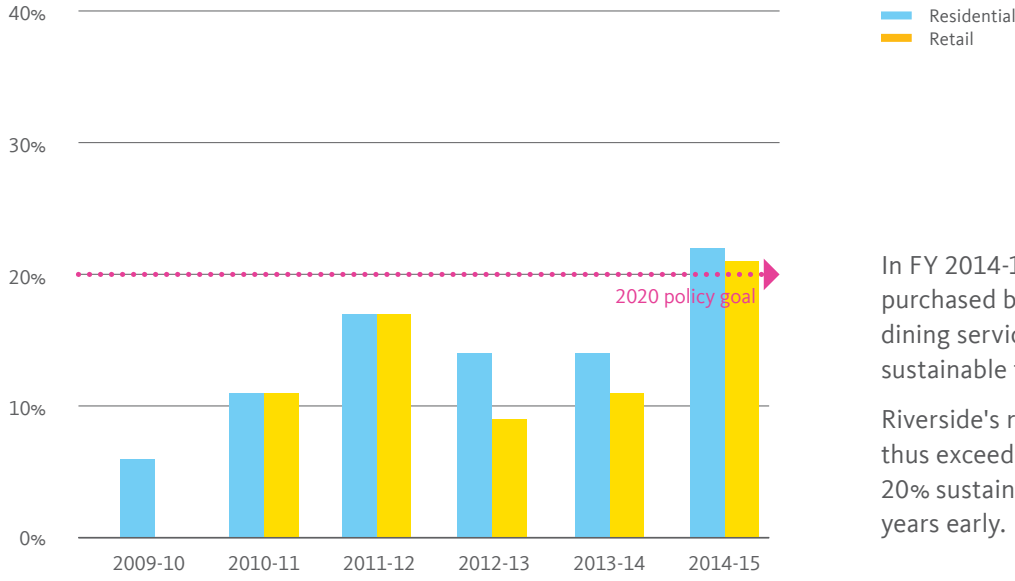

In FY 2014-15, Riverside sent 140 pounds of solid waste per capita to the landfill, 40 pounds less than the prior year.

## TOTAL NUMBER OF LEED CERTIFICATIONS




In 2014-15, Riverside received two LEED-Gold and one Silver certification, contributing to its total of 6 LEED certifications.

## SUSTAINABLE FOOD PURCHASES




In FY 2014-15, the amount of food purchased by Riverside's residential dining services that met one or more sustainable food criteria reached 22%.

Riverside's residential dining services thus exceeded the 2020 Policy goal of 20% sustainable food purchases five years early.

# SAN DIEGO

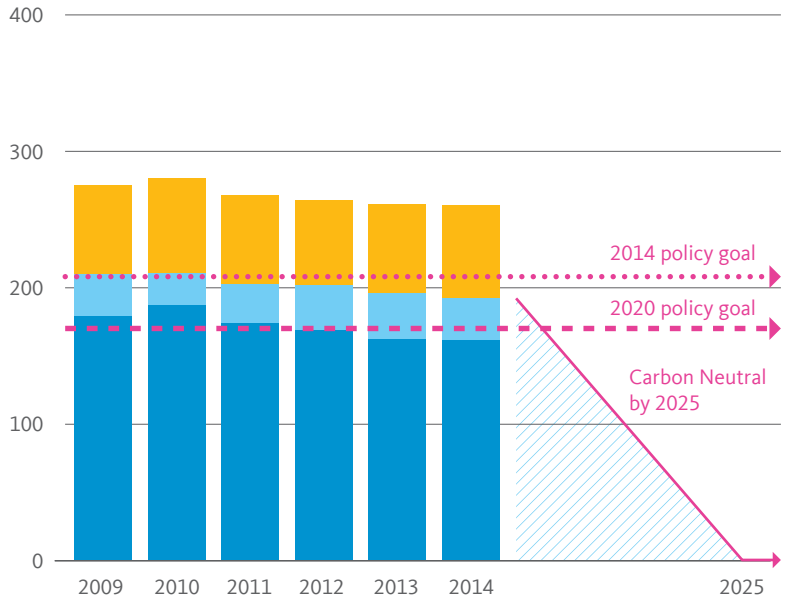
UC San Diego, which the journal *Nature* ranked first in the U.S. in earth and environmental research, continues to expand its sustainability leadership. In the fall of 2015, the campus hosted Governor Brown, President Napolitano and leaders from academia, industry and government for a "Summit on Pathways to Carbon and Climate Neutrality: California and the World." The invitation-only event examined how UC research is transforming the possibilities for carbon and climate mitigation. The summit focused on scalable solutions for achieving significant greenhouse gas reductions and featured the release of a climate solutions report, "Bending the Curve: Ten scalable solutions for carbon neutrality and climate stability," which was authored by 50 UC faculty and staff. http://uc-carbonneutralitysummit2015.ucsd.edu/.

Other highlights from 2015 include:

- Scripps Institution of Oceanography also received a $5 million gift to establish the new Center for Climate Change Impacts and Adaptation.
- Approximately 50 percent of the campus vehicle fleet utilizes alternative fuel, including 30 percent electric and 10 percent hybrid.
- The California Energy Commission provided funding for the campus to expand the electric vehicle-charging infrastructure on campus. The next generation charging stations will test a new form of data communication between electric vehicles, charging stations and the power grid. The pilot project brings together charging stations supplied by RWE — Germany's second largest utility — and smart electric cars from Daimler.
- In response to the drought, UC San Diego has nearly completed the extension of a recycled water line to serve the central plant cooling towers, which will reduce campus potable water usage by 25 percent and save approximately $500,000 annually in water and sewer costs. Design is underway to extend the line to the majority of campus irrigation areas as well, further reducing potable water use for irrigation by approximately 40 million gallons annually.
- The number of LEED certifications increased to 23 and the buildings are popular sites for tours designed to educate the campus community and public about green buildings.
- Dining Services increased sustainable food purchases to 21 percent in dining halls and catering services.

## GREENHOUSE GAS EMISSIONS

(Thousand metric tons CO2e)



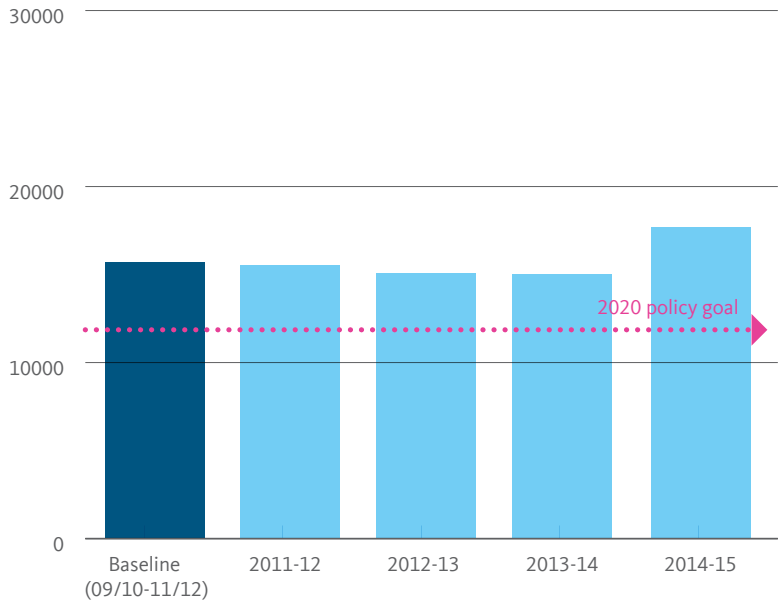

In 2014, San Diego's GHG emissions totaled 259,847 metric tons, a slight decrease from 2013.

San Diego did not meet the 2014 Policy goal and needs to reduce its total emissions by 89,847 to meet the 2020 policy goal.

UC's goal for achieving carbon neutrality by 2025 requires San Diego to reduce all of its scope 1 and 2 emissions.

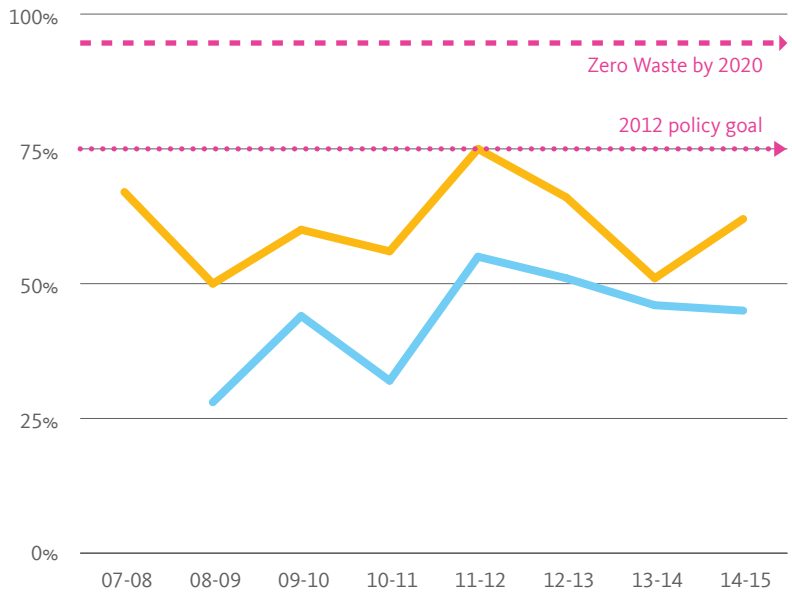
## POTABLE WATER CONSUMPTION

(Gallons per capita)




In FY 2014-15, San Diego consumed 17,568 gallons of potable water per capita. This is a 12% increase from its FY 2004-05 to FY 2006-07 baseline. The campus needs to reduce potable water another 32 percentage points to meet the 2020 Policy goal of reducing potable water consumption by 20% below the baseline.

## SOLID WASTE DIVERTED FROM LANDFILL



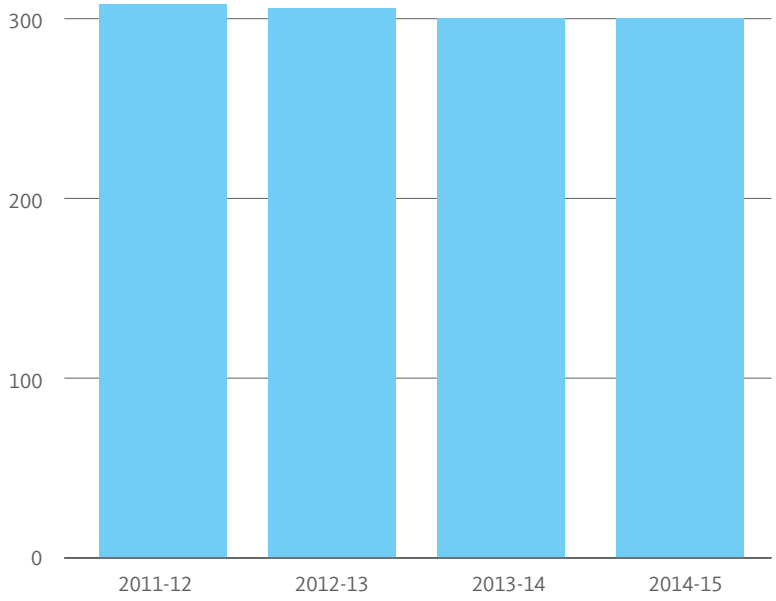

In FY 2014-15, San Diego diverted 62% of its waste from the landfill, an increase of 11 percentage points from FY 2013-14.

When waste from construction and demolition (C&D) is not included, the amount of waste diverted from the landfill was 45% in FY 2014-15.

San Diego was not able to maintain the 2012 Policy goal of 75% waste diversion.

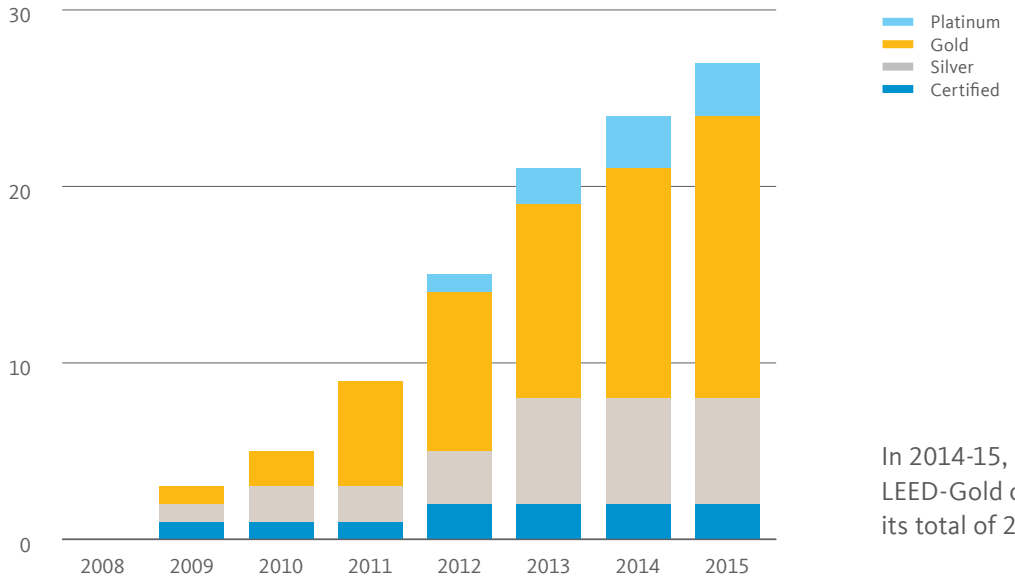
## LANDFILL WASTE (NOT INCLUDING C&D)

(Pounds per capita)



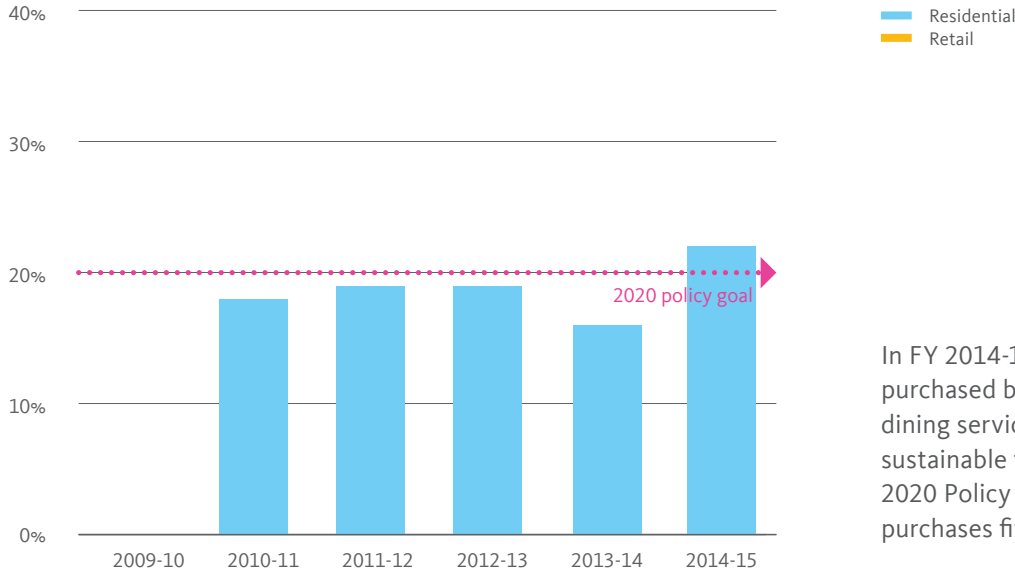

In FY 2014-1, San Diego sent 300 pounds of solid waste per capita to the landfill.

## TOTAL NUMBER OF LEED CERTIFICATIONS

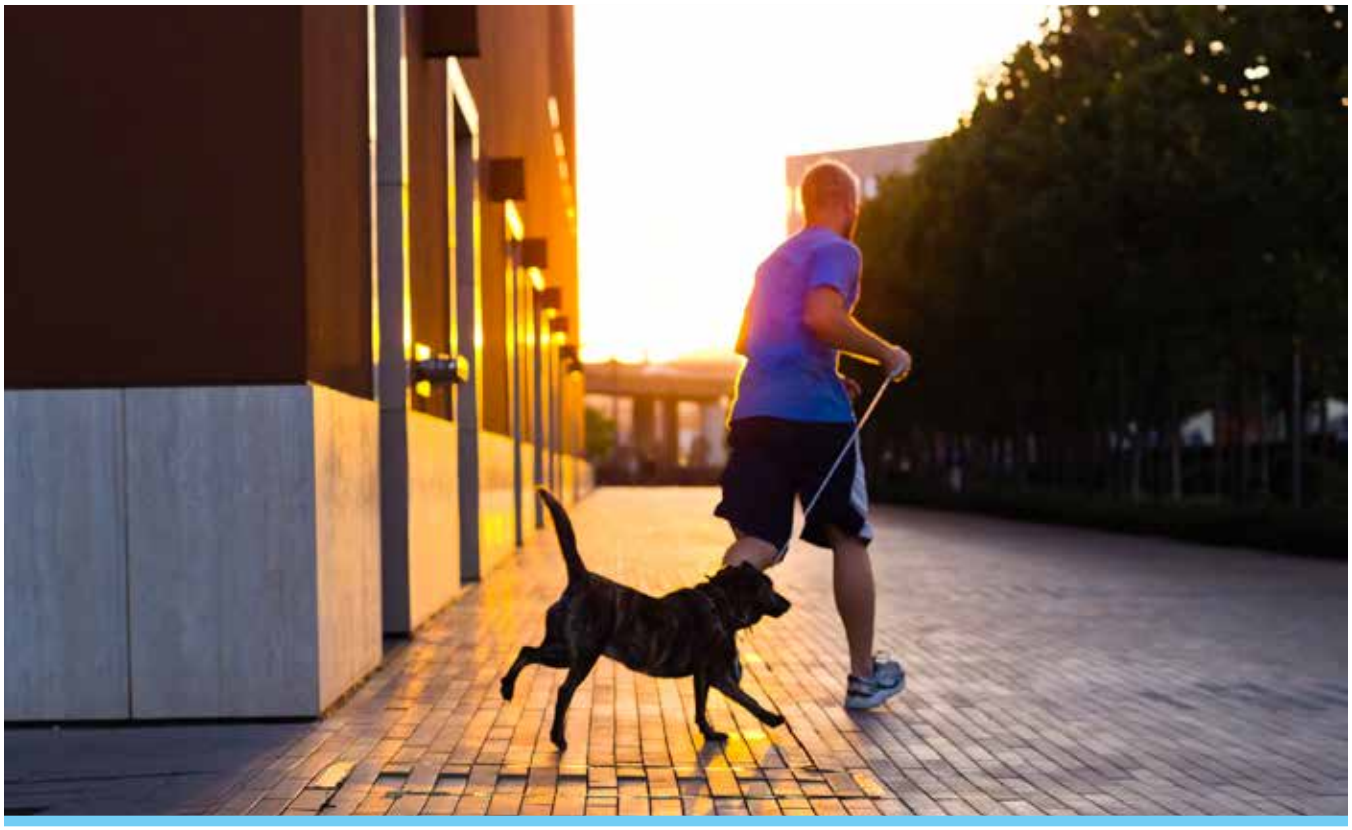



In 2014-15, San Diego received three LEED-Gold certifications, contributing to its total of 26 LEED certifications.

## SUSTAINABLE FOOD PURCHASES




In FY 2014-15, the amount of food purchased by San Diego's residential dining services that met one or more sustainable food criteria exceeded the 2020 Policy goal of 20% sustainable food purchases five years early.



# SAN FRANCISCO

UC San Francisco is committed to leadership in health and sustainability and showcased this leadership during FY 2014-15.

Through energy efficiency retrofits and efficient new construction, the campus has reduced energy use by 10 percent from a 2004 baseline, despite adding several energy intensive laboratory buildings. Through retrofit projects and energy-efficient new construction, energy use per square foot has decreased by 24 percent. The campus continues to implement its Water Action plan by working on projects identified through an extensive water audit. This focus on reducing potable water use resulted in a 7.8 percent reduction in water use compared to 2013 levels.

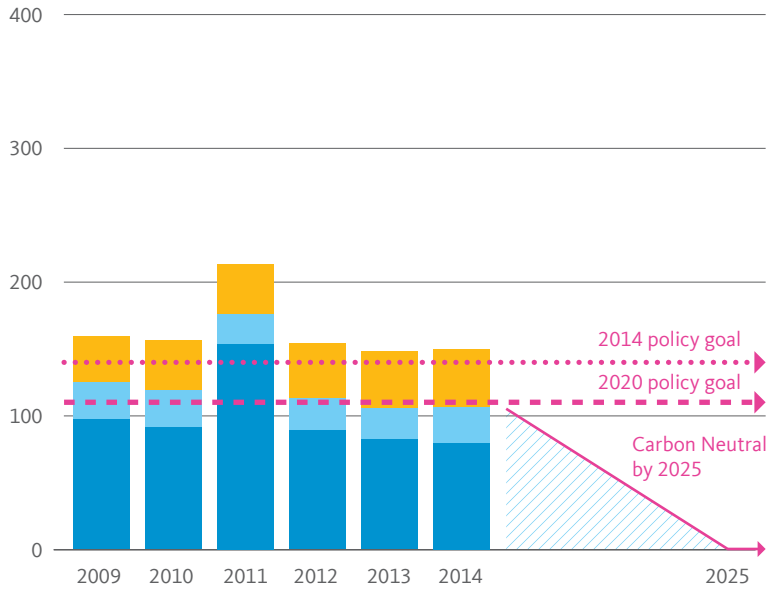
This last year the campus community actively engaged in sustainability issues through events and outreach. Chancellor Hawgood announced awards for faculty, staff, student, and team categories and 23 LivingGreen certifications at the 5th Annual Sustainability Awards ceremony. At the same event, the northern California Chapter of the U.S. Green Building Council presented a LEED-EBOM plaque to Chancellor Hawgood and Dean Vlahov for the School of Nursing Building. In December 2015, UCSF hosted the US Green Building Council's Building Health Forum welcoming over 275 of the world's preeminent experts and thought leaders pioneering the healthy buildings and healthy communities movement, reframing green building as a public health issue.

UC San Francisco hosted a "Preventing HealthCARE from Becoming HealthHARM" workshop as part of the 2015 California Higher Education Sustainability Conference. The workshop attracted 125 academics, nurses, healthcare and environmental health professionals, and others interested in supporting sustainability in healthcare.

The LivingGreen.ucsf.edu website received more than 121,000 unique visitors during the past two years and inspired doctors and healthcare officials from Europe and Asia to visit UCSF. Employee engagement activities included offering a 15 percent discount on residential solar photovoltaic installations and over $12,000 in discounts on Nissan Leaf electric vehicles.

## GREENHOUSE GAS EMISSIONS

(Thousand metric tons CO2e)




Scope 1 (natural gas, campus fleet, fugitive)
Scope 2 (purchased electricity)
Scope 3 (campus commute, business air travel)
2014 Policy Goal: Scopes 1, 2, 3
2020 Policy Goal: Scopes 1, 2, 3
Carbon Neutral Goal: Scopes 1 and 2

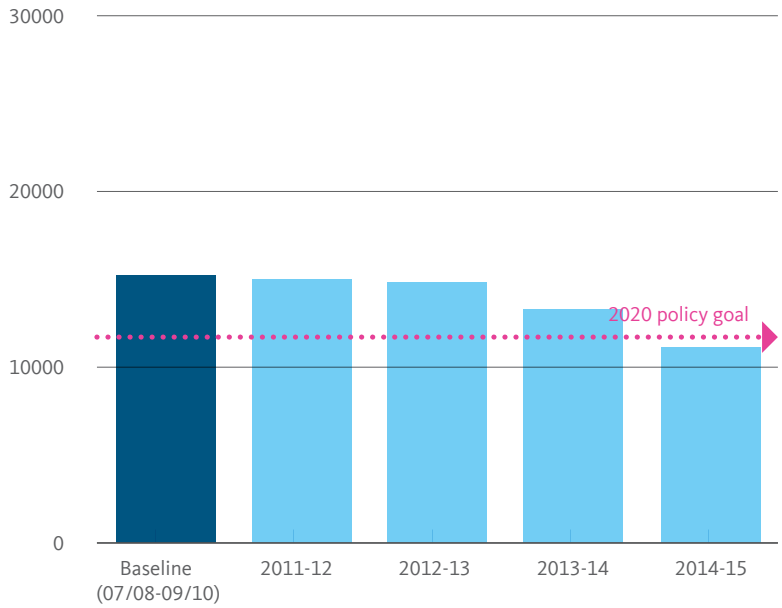
In 2014, San Francisco's GHG emissions increased slightly from 2013.

Total emissions in 2014 were slightly higher than 2000 levels; therefore, San Francisco did not meet the 2014 policy goal. The campus needs to reduce its total scope 1, 2 and 3 emissions by 37,417 metric tons to meet the 2020 policy goal.

UC's goal for achieving carbon neutrality by 2025 requires San Francisco to reduce all of its scope 1 and 2 emissions.

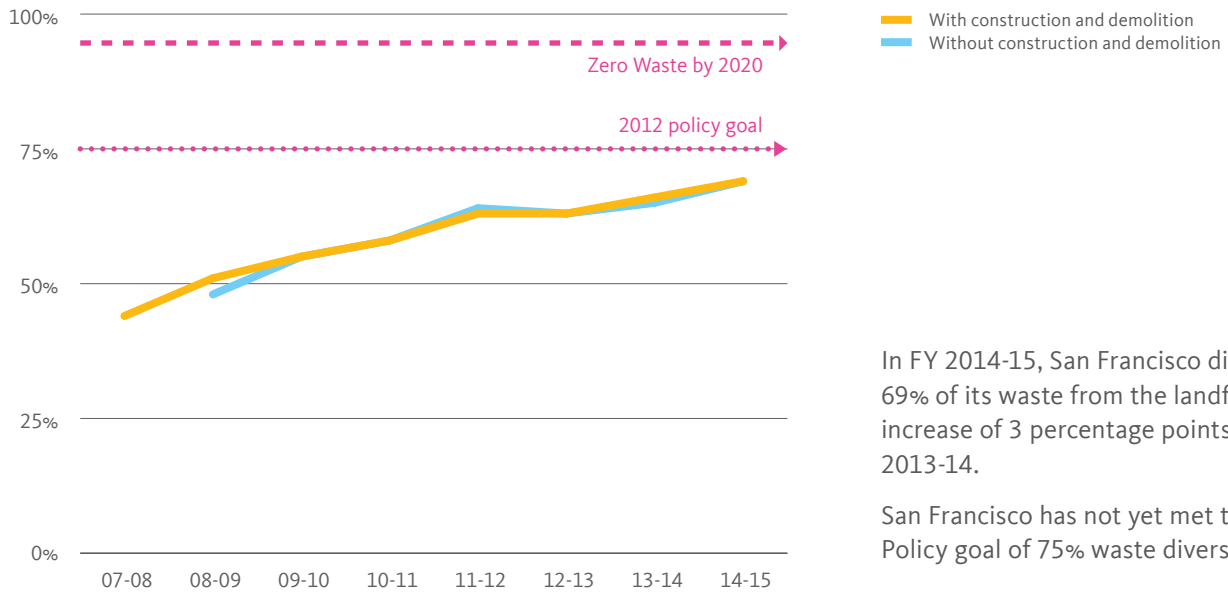
## POTABLE WATER CONSUMPTION

(Gallons per capita)




In FY 2014-15, San Francisco consumed 11,129 gallons of potable water per capita. This is a 27% reduction from its FY 2007-08 to FY 2009-10 baseline. The campus has therefore met the 2020 Policy goal of reducing potable water consumption by 20% below the baseline five years early.

## SOLID WASTE DIVERTED FROM LANDFILL

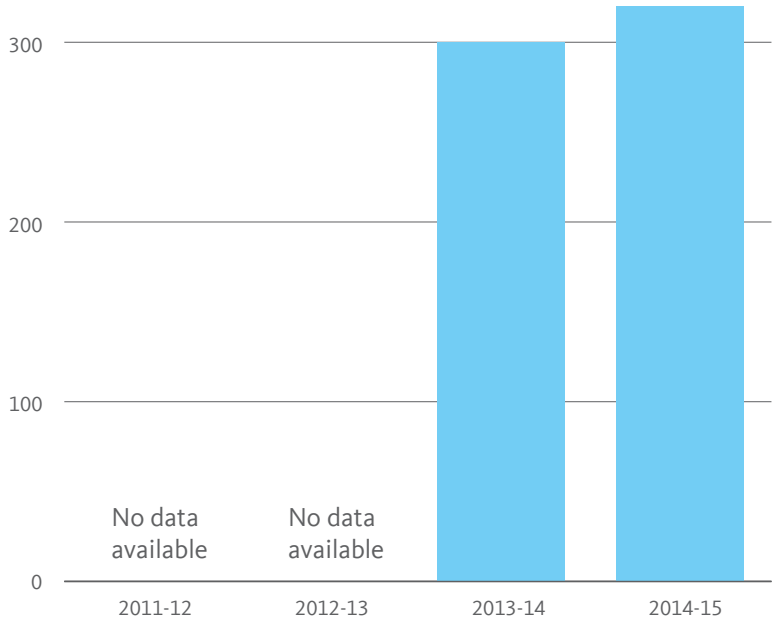



In FY 2014-15, San Francisco diverted 69% of its waste from the landfill, an increase of 3 percentage points from FY 2013-14.

San Francisco has not yet met the 2012 Policy goal of 75% waste diversion.

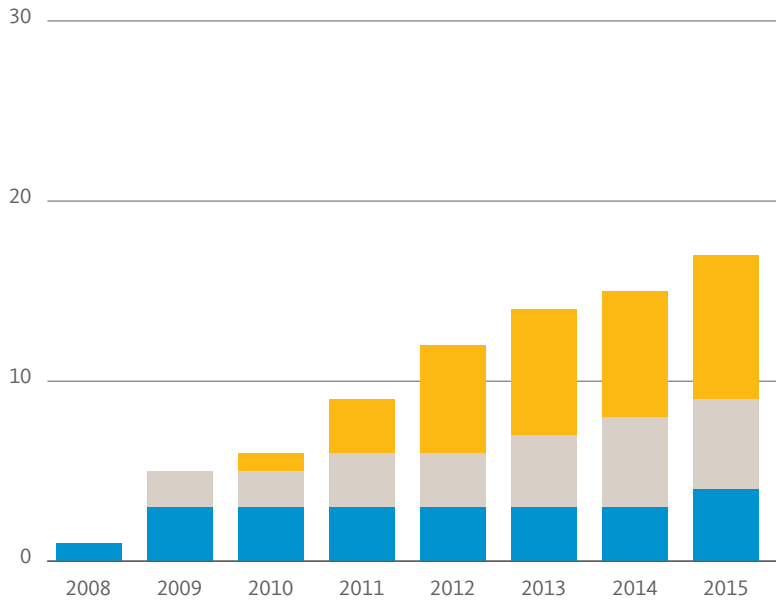
## LANDFILL WASTE (NOT INCLUDING C&D)

(Pounds per capita)



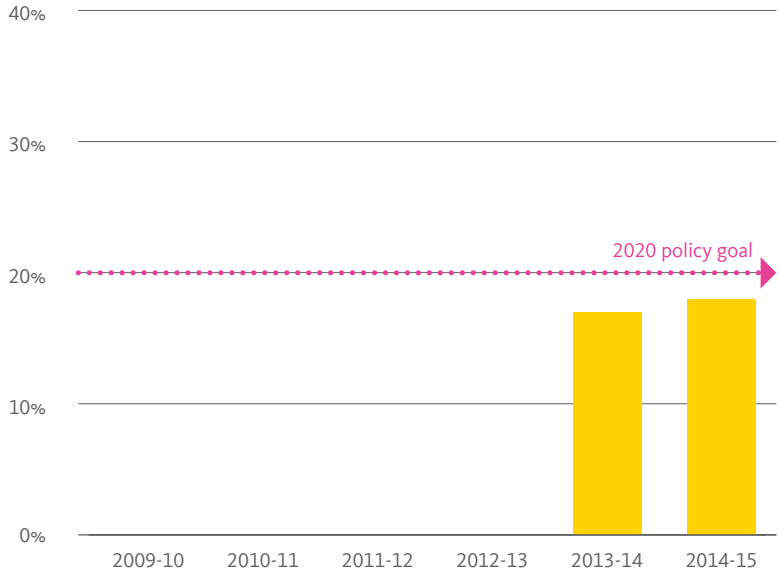

In FY 2014-15, San Francisco sent 320 pounds of solid waste per capita to the landfill, an increase of 20 pounds per capita over last year.

## TOTAL NUMBER OF LEED CERTIFICATIONS




In 2015, San Francisco received two new Gold certifications, contributing to its total of 17 LEED certifications.

## SUSTAINABLE FOOD PURCHASES




San Francisco does not have any residential dining halls. For sustainable food purchases at the UCSF Medical Center, please see the UCSF Medical Center profile on page 113.

# SANTA BARBARA

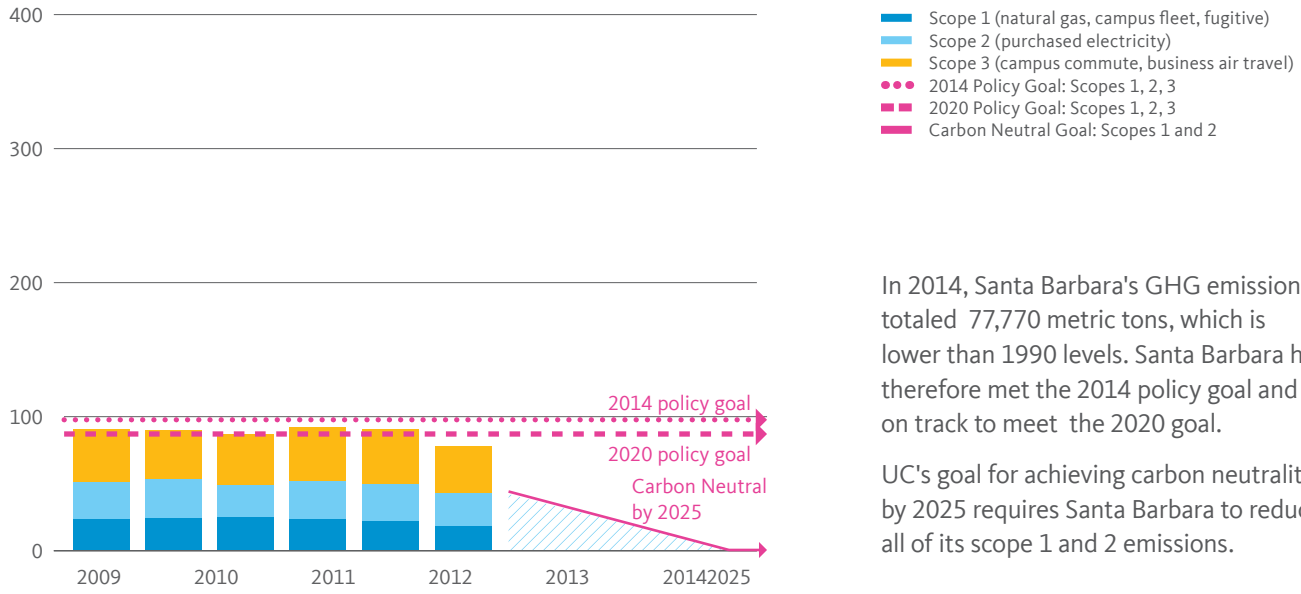
The UC Santa Barbara campus is committed to global leadership in sustainability through education, research and action, as is evidenced by this year's achievements. UCSB was awarded three Best Practice Awards at the California Higher Education Sustainability Conference in the categories of Waste Reduction, Monitoring-Based Commissioning and Sustainability Innovations. UC Santa Barbara was ranked No. 3 in Princeton Review's list of the Top 50 Green Colleges and No. 1 among public universities.

UC Santa Barbara has reduced potable water use 30 percent per capita since FY 2011-12, exceeding the UC Policy goal of 20 percent by 2020. In response to the drought and to show solidarity with the community of Goleta, the campus set a new goal of reducing total potable water use by an additional 12 percent by March 2016, resulting in projected savings of more than 19 million gallons annually.

The campus has also made tremendous strides to reduce energy use. Total natural gas use decreased by 16 percent in FY 2014-15 as compared to the prior year. Natural gas use per square foot has been reduced by over 54 percent in the past 10 years, significantly reducing the campus' carbon footprint. In addition, UC Santa Barbara expanded its portfolio of renewable energy by installing the largest student-funded solar photovoltaic array on campus. This new solar installation more than doubles UC Santa Barbara's onsite renewable energy capacity. The campus is also in negotiation with a vendor to develop roughly five megawatts of photovoltaics at six sites through a power purchase agreement. In addition to local energy production, the campus will soon also produce food on campus. A coalition of UC Santa Barbara Sustainability, Associated Students Food Bank and the Department of Public Worms launched an Edible Campus Program, the first phase of which involved the installation of potted citrus trees at a central location on campus. The fruit will be distributed via the Associated Students Food Bank.

## GREENHOUSE GAS EMISSIONS

(Thousand metric tons CO2e)

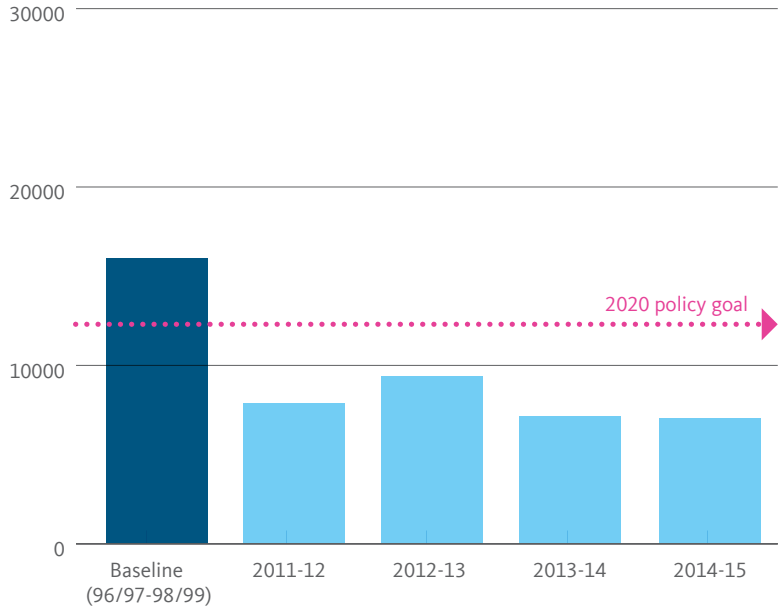



In 2014, Santa Barbara's GHG emissions totaled 77,770 metric tons, which is lower than 1990 levels. Santa Barbara has therefore met the 2014 policy goal and is on track to meet the 2020 goal.

UC's goal for achieving carbon neutrality by 2025 requires Santa Barbara to reduce all of its scope 1 and 2 emissions.

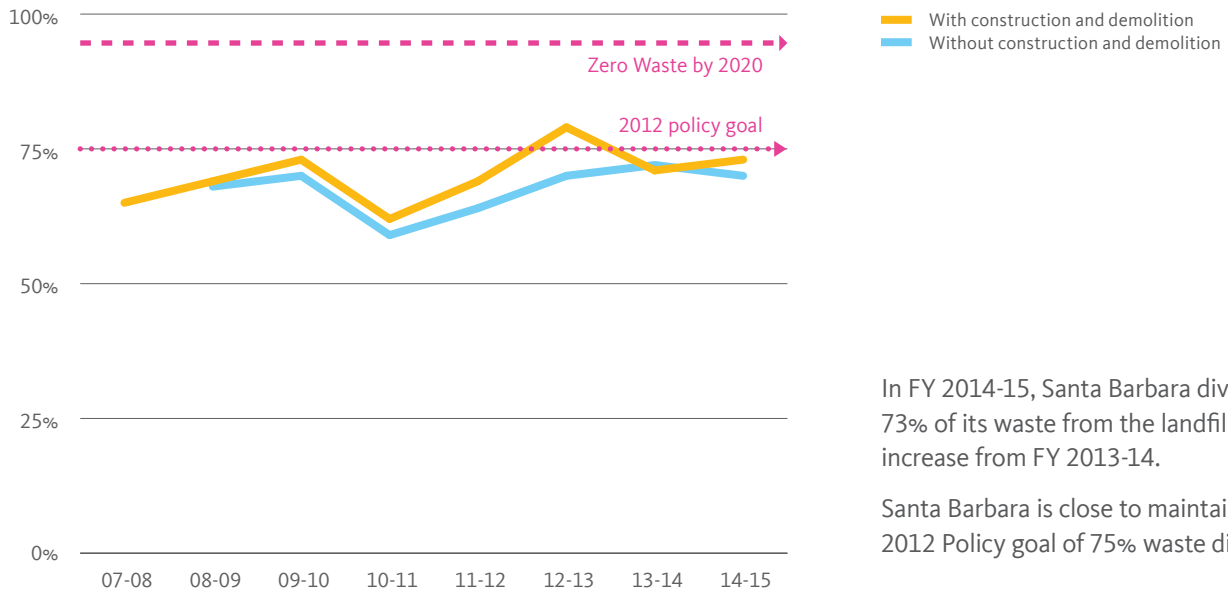
## POTABLE WATER CONSUMPTION

(Gallons per capita)




In FY 2014-15, Santa Barbara consumed 7,026 gallons of potable water per capita. This is a 56% reduction from its FY 1996-97 to FY 1998-99 baseline. The campus has outperformed the 2020 Policy goal of reducing potable water consumption by 20% below the baseline.

## SOLID WASTE DIVERTED FROM LANDFILL

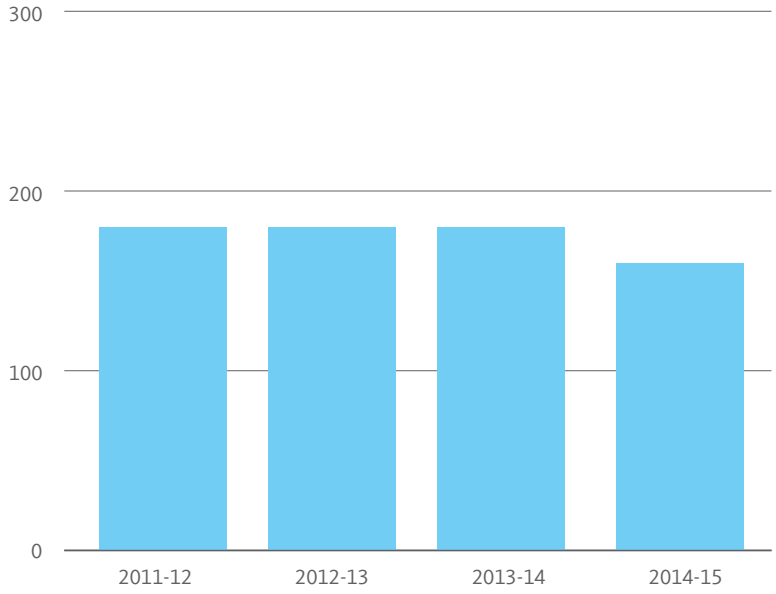



In FY 2014-15, Santa Barbara diverted 73% of its waste from the landfill, a slight increase from FY 2013-14.

Santa Barbara is close to maintaining the 2012 Policy goal of 75% waste diversion.

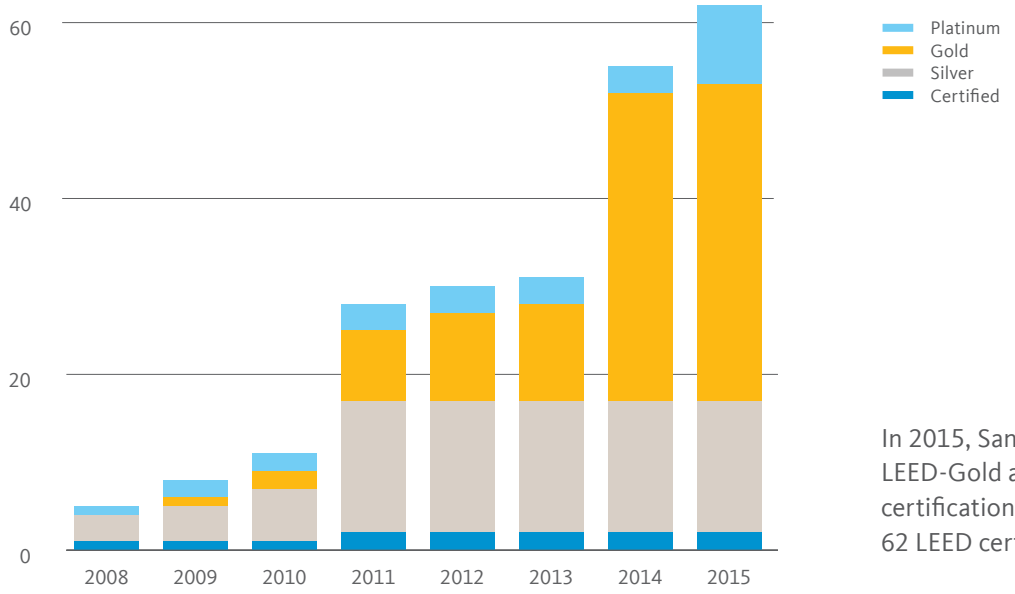
## LANDFILL WASTE (NOT INCLUDING C&D)

(Pounds per capita)



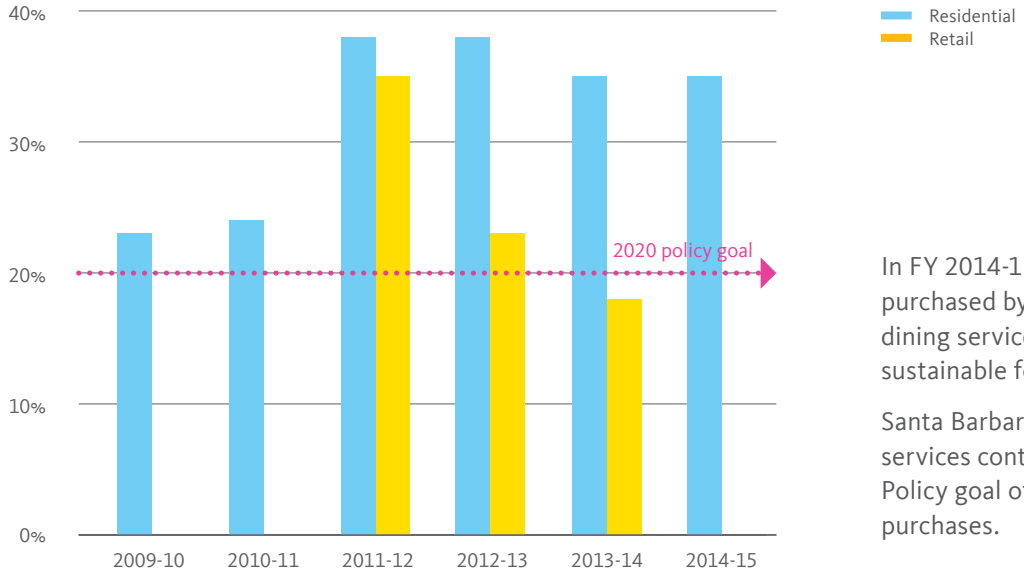

In FY 2014-15, Santa Barbara sent 160 pounds of solid waste per capita to the landfill, 20 pounds less than last year.

## TOTAL NUMBER OF LEED CERTIFICATIONS




In 2015, Santa Barbara received one LEED-Gold and 6 LEED-Platinum certifications, contributing to its total of 62 LEED certifications.

## SUSTAINABLE FOOD PURCHASES




In FY 2014-15, the amount of food purchased by Santa Barbara's residential dining services that met one or more sustainable food criteria stayed at 35%.

Santa Barbara's residential dining services continues to exceed the 2020 Policy goal of 20% sustainable food purchases.

# SANTA CRUZ

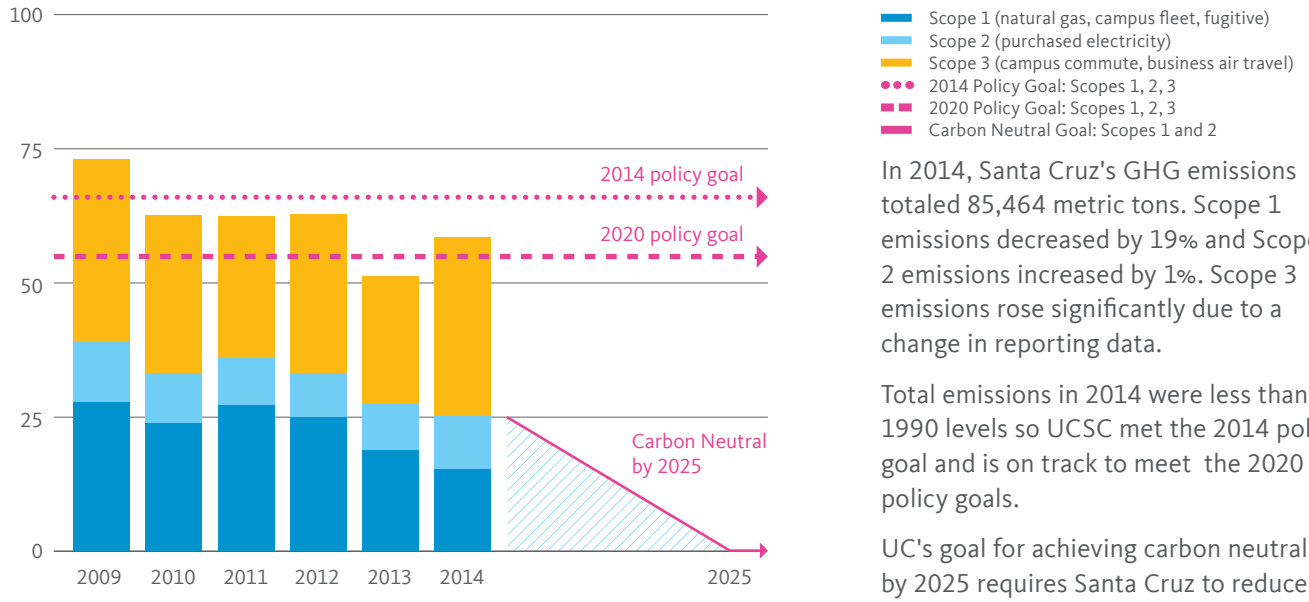
UC Santa Cruz made advancements in many key areas of sustainability during the 2014-15 academic year. During the height of California's drought, the campus committed over $350,000 to operational improvement projects and reduced potable water usage by over 25 percent. Student teams audited every restroom and kitchen fixture across campus, and educated campus users on how to monitor individual building water usage. Innovative water conservation projects included an academic study with the International Drought Experiment to evaluate ecosystem response to the drought, as well as the installation of a grant-funded rainwater harvesting system on campus that collects both rainwater and condensation from fog to flush toilets at the campus athletic facility.

In collaboration with a team of consultants, UC Santa Cruz launched a yearlong integrated Climate and Energy Study that includes developing a climate centric techno-economic analysis tool. The tool, which will be shared with other campuses, will analyze various scenarios for development, project implementation, technology application, and policy updates to help identify the best suite of strategies for achieving carbon neutrality by 2025 and for mitigating regulatory compliance costs.

In addition to significant operational projects, the campus also made headway in advancing sustainability through the curriculum. In fall 2015, the campus launched a new sustainability minor and a new academic concentration in sustainable food and agriculture.

## GREENHOUSE GAS EMISSIONS

(Thousand metric tons CO2e)



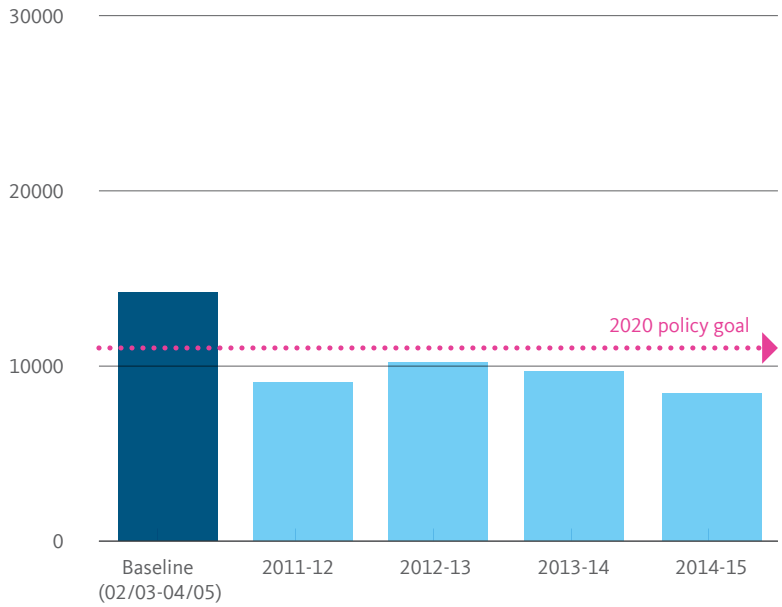

In 2014, Santa Cruz's GHG emissions totaled 85,464 metric tons. Scope 1 emissions decreased by 19% and Scope 2 emissions increased by 1%. Scope 3 emissions rose significantly due to a change in reporting data.

Total emissions in 2014 were less than 1990 levels so UCSC met the 2014 policy goal and is on track to meet the 2020 policy goals.

UC's goal for achieving carbon neutrality by 2025 requires Santa Cruz to reduce all of its scope 1 and 2 emissions.

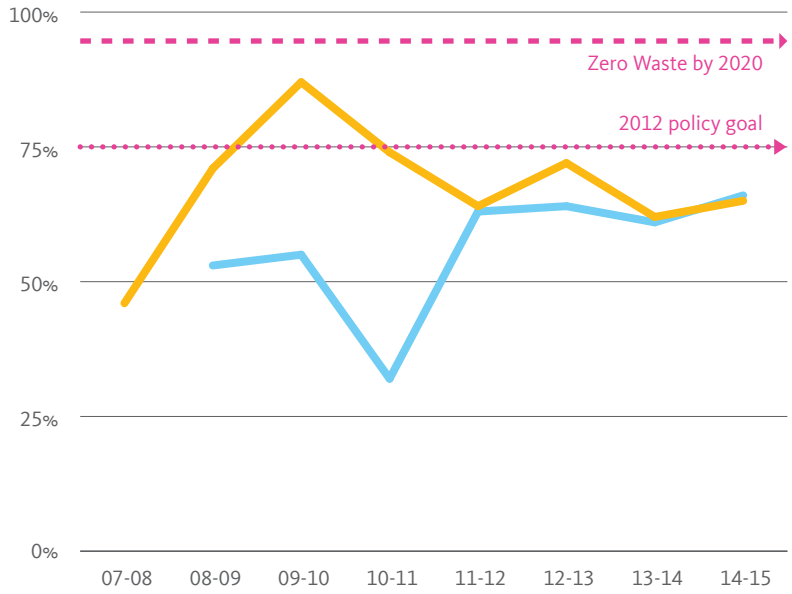
## POTABLE WATER CONSUMPTION

(Gallons per capita)




In FY 2014-15, Santa Cruz consumed 8,479 gallons of potable water per capita. This is a 40% reduction from its FY 2002-03 to FY 2004-05 baseline. The campus has outperformed the 2020 Policy goal of reducing potable water consumption by 20% below the baseline.

## SOLID WASTE DIVERTED FROM LANDFILL



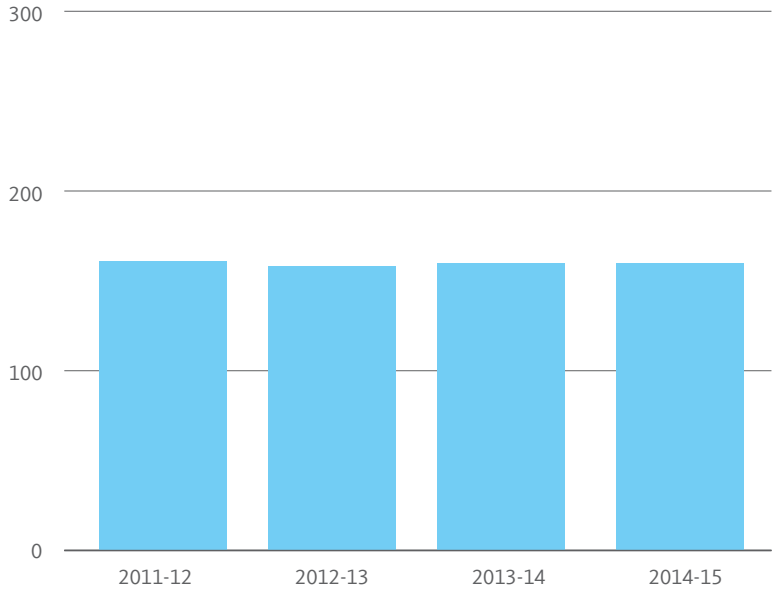

In FY 2014-15, Santa Cruz increased efficiencies in collection systems and increased its diversion rate by 5% from FY 2013-14.

Construction and demolition (C&D) waste did not affect the diversion rate in FY 2013-14 because there were few C&D projects.

Santa Cruz was not able to maintain the 2012 policy goal of 75% waste diversion.

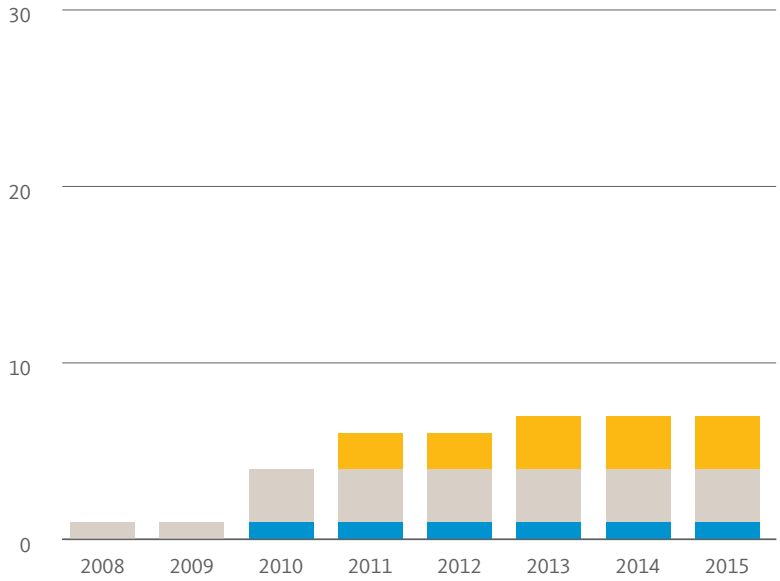
## LANDFILL WASTE (NOT INCLUDING C&D)

(Pounds per capita)



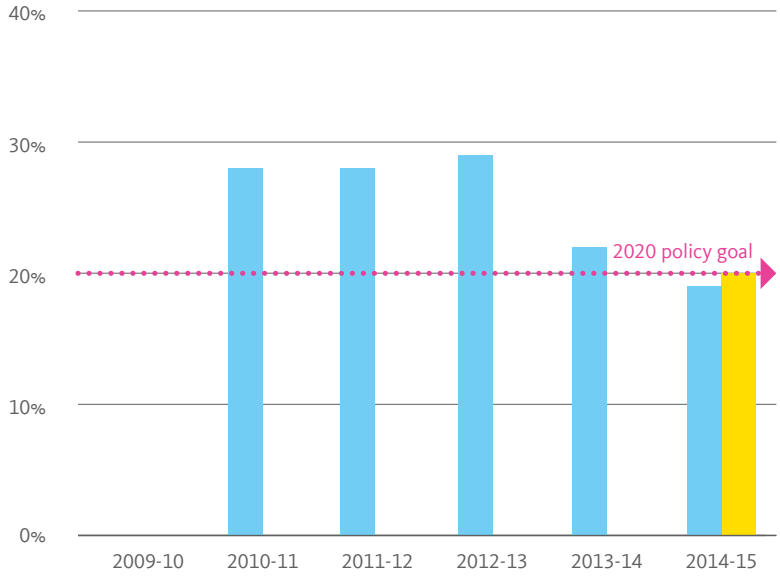

In FY 2014-15, Santa Cruz sent 160 pounds of solid waste per capita to the landfill.

## TOTAL NUMBER OF LEED CERTIFICATIONS




Santa Cruz has 7 LEED certifications. The campus received no new certifications in 2015.

## SUSTAINABLE FOOD PURCHASES




In FY 2014-15, the amount of food purchased by Santa Cruz's residential dining services that met one or more sustainable food criteria dropped slightly below 20%.

Santa Cruz's residential dining services is still on track to exceed the 2020 Policy goal of 20% sustainable food purchases.

# THE MEDICAL CENTERS

# DAVIS MEDICAL CENTER

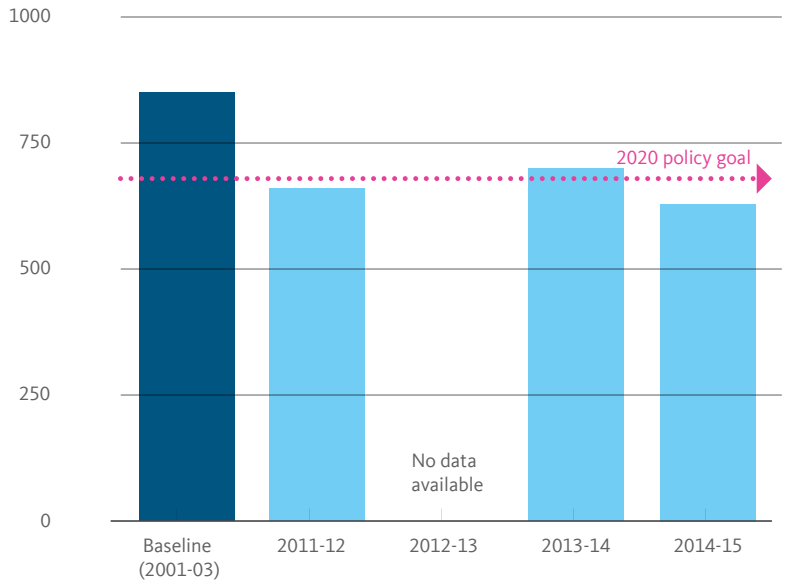
UC Davis Medical Center marked 2015 with several new sustainability initiatives. First, UCDMC completed a feasibility study to assess the potential for significantly increasing solar power on the medical center campus. Initial results suggest the potential for three to five megawatts on site and up to five megawatts off site. Such renewable generation is key to UCDMC's support of the 2025 carbon neutrality goal. Energy efficiency retrofits are also underway, including several projects developed in collaboration with UC Davis' California Lighting Technology Center. The lighting projects include LED lighting retrofits in parking lots and clinical spaces.

A feasibility study for reclaiming cooling tower blowdown water for irrigation is just one way UCDMC is looking to reduce potable water use. Lawns in many areas are being replaced with low-water xeriscaping, and new building projects are combining xeriscaping, graywater reuse, and ultra-efficient fixtures to minimize potable water use. These initiatives are being used to nudge two new building projects toward LEED Platinum, and support associated LEED efforts with tenant improvement projects.

The Sacramento Metro Chamber and the Sacramento Regional Transit District selected UCDMC's Parking and Transportation Services as the Business of the Year. Parking and Transportation Services participates in a number of programs that support public transit in the Sacramento region.

## POTABLE WATER CONSUMPTION

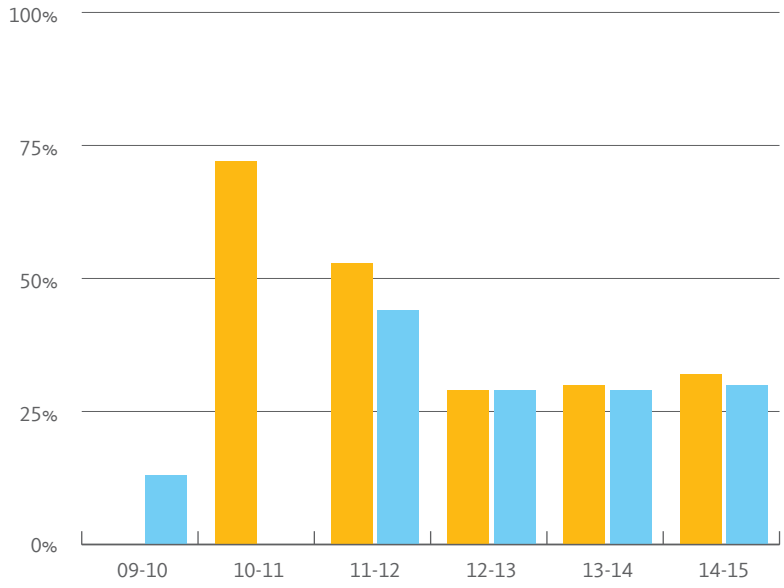
(Gallons per capita)




In FY 2014-15, the UCD Health System consumed 110 million gallons of potable water, a decrease from the 190 million gallons consumed in FY 2013-14.

Population data (in adjusted patient days) was not available for FY 2013-14. Therefore, UCD Health System's water consumption for that year can not be shown in relation to the 2020 policy goal.

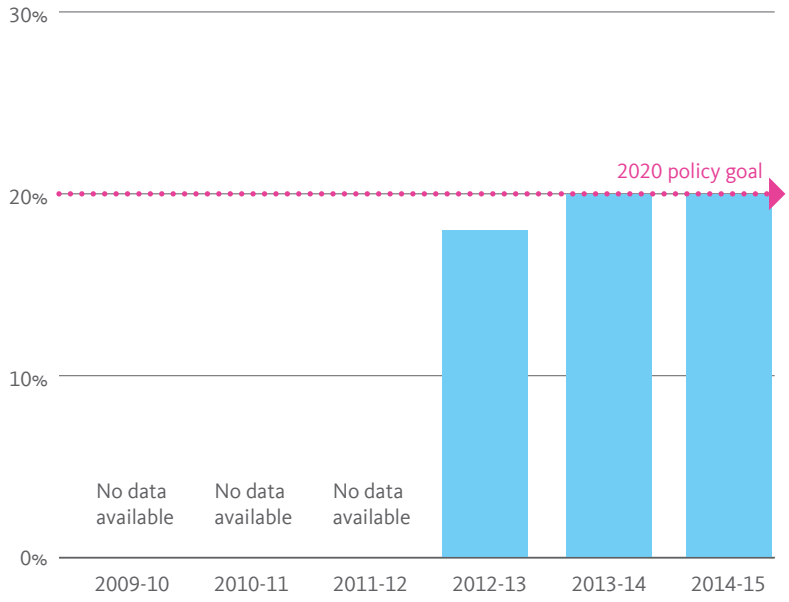
## SOLID WASTE DIVERTED FROM LANDFILL




In FY 2014-15, UCD Health System diverted 32% of its waste from the landfill, an increase of two percentage point from FY 2013-14.

When waste from construction and demolition is not included, the amount of waste diverted from the landfill was 30% in FY 2014-15.

## SUSTAINABLE FOOD PURCHASES




In FY 2014-15, 19.6% of the food purchased at the UCD Health System met one or more sustainable food criteria, an slight decrease from FY 2013-14.

The UCD Health System is close to meeting the 2020 Policy goal of 20% sustainable food purchases.

# IRVINE MEDICAL CENTER

UC Irvine Health System expanded upon its sustainability programs in 2015, particularly in waste diversion, clean energy and water conservation. Much of this progress is due to the resurgence of the hospital's sustainability committee, which reviews internal programs and makes recommendations based upon progress toward the hospital's sustainability goals.

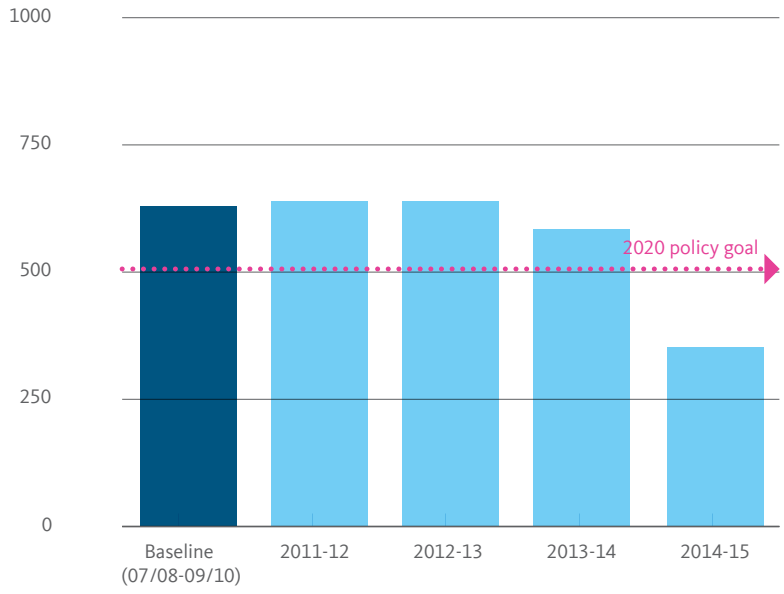
To reduce its waste footprint, the hospital is using more reusable and recyclable products in surgical and anesthesia services. For example, the hospital transitioned its sharp waste disposal system to a reusable container device that drastically reduces the amount of sharp container waste produced.

UC Irvine Health System is working to reduce its carbon footprint as well through the addition of a new 1.4 megawatt fuel cell that converts natural gas to electricity. The fuel cell also generates 200 tons of chilled water to supply the chillers for cooling needs. The system is much less carbon intensive and produces a fraction of the air pollutants associated with a conventional combustion system.

In terms of water conservation, total efforts increased significantly this past year in response to the drought. UC Irvine Health System successfully reduced overall water consumption by 13 percent last year through reduced irrigation, infrastructure and operational improvements, and behavior change.

## POTABLE WATER CONSUMPTION

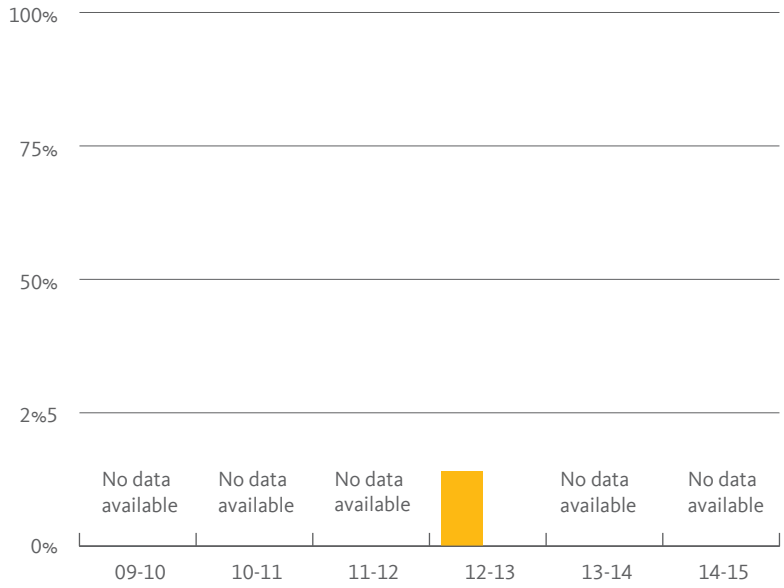
(Gallons per capita) ↘




In FY 2014-15, the UCI Medical Center consumed 353 gallons of potable water per capita. This is a 44% reduction from its FY 2007-08 to FY 2009-10 baseline.

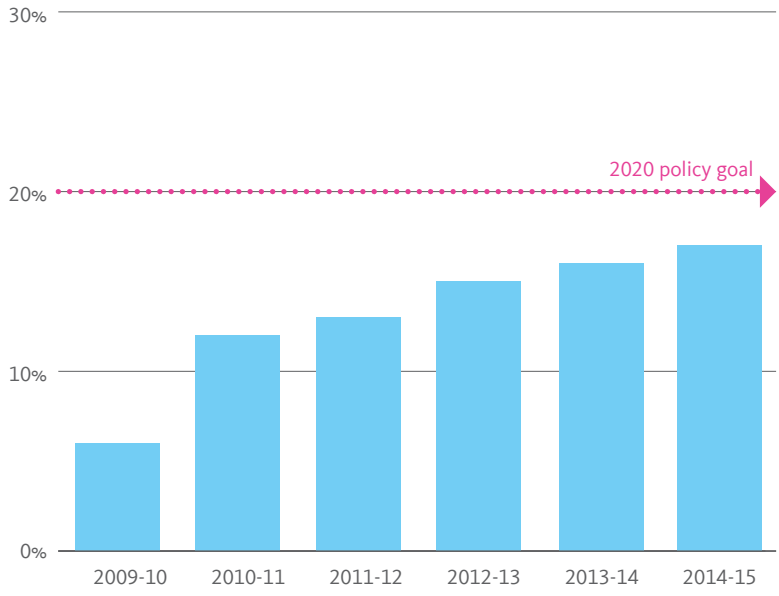
The medical center has exceeded the 2020 Policy goal of reducing potable water consumption by 20% below the baseline.

## SOLID WASTE DIVERTED FROM LANDFILL




No data was available for UCI Medical Center's solid waste diversions on 2014-15.

## SUSTAINABLE FOOD PURCHASES




In FY 2014-15, 16.8% of the food purchased at the UCI Medical Center met one or more sustainable food criteria, a slight increase from FY 2013-14.

The UCI Medical Center is 4 percentage points away from meeting the 2020 Policy goal of 20% sustainable food purchases.

# UCLA MEDICAL CENTER

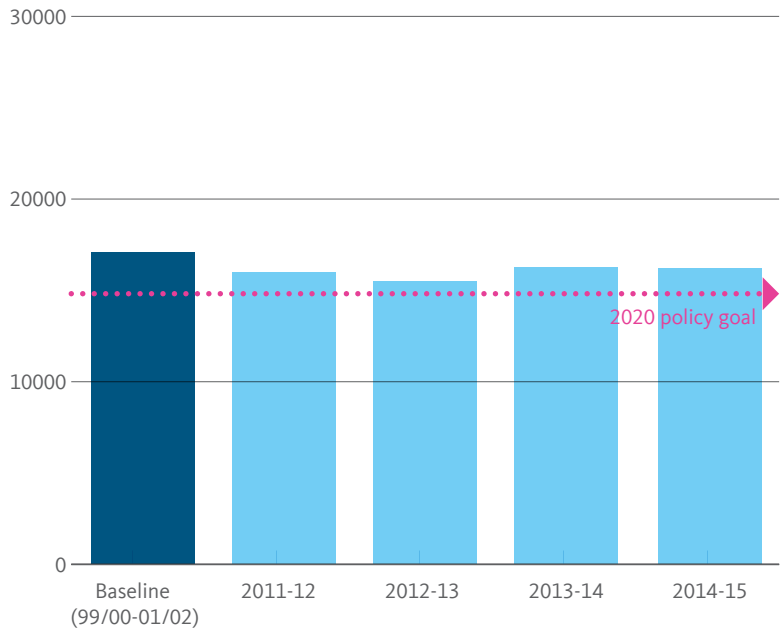
UCLA Health secured funding through the UC Carbon Neutrality Initiative to partner with the Environmental Defense Fund (EDF) to host an EDF-trained graduate student fellow. The fellow spent 10 weeks beginning in June 2015 determining lighting efficiency opportunities at Ronald Reagan UCLA Medical Center. The fellow's work focused on creating a lighting inventory and testing projects for LED upgrades, occupancy/daylight use, and hybrid projects such as LED replacement with bi-level occupancy in stairwells. These projects have the potential to cut lighting energy consumption by 50 percent and total electricity use by 20 percent.

The cafeteria at the UCLA Medical Center, Santa Monica is now a certified Green Business through the city of Santa Monica. Sustainable food purchases continue to stay above the 2020 Policy goal of 20 percent of total food purchases. Contributing to the sustainable food numbers, UCLA Medical Center now only purchases beef and poultry that were raised without the routine use of non-therapeutic antibiotics. Ronald Reagan UCLA Medical Center received the Circles of Excellence food award, one of Practice Greenhealth's newest honors. Both the Ronald Reagan and the Santa Monica medical centers received Practice Greenhealth's Partner for Change award for the fifth year in a row.

UCLA Health has partnered with Waste Management, Inc. to handle municipal solid waste and recycling for both hospitals. Waste diversion has reached 41 percent, a 14 percent increase from FY 2013-14. Waste Management's data reporting has allowed UCLA Health to track its waste more accurately. The single-use washable isolation gowns project was completed in June 2015, diverting a total of 270 tons of waste and saving the organization over $1 million. The single-use device reprocessing program has saved an estimated $854,600 and diverted 32,000 pounds of waste.

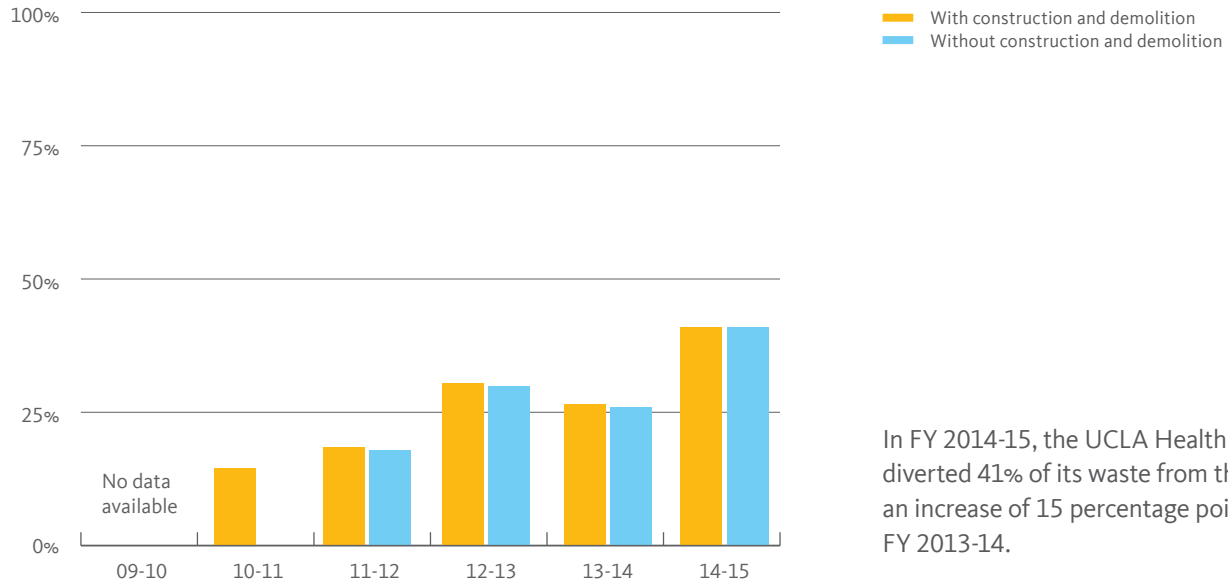
## POTABLE WATER CONSUMPTION

(Gallons per capita) ↘



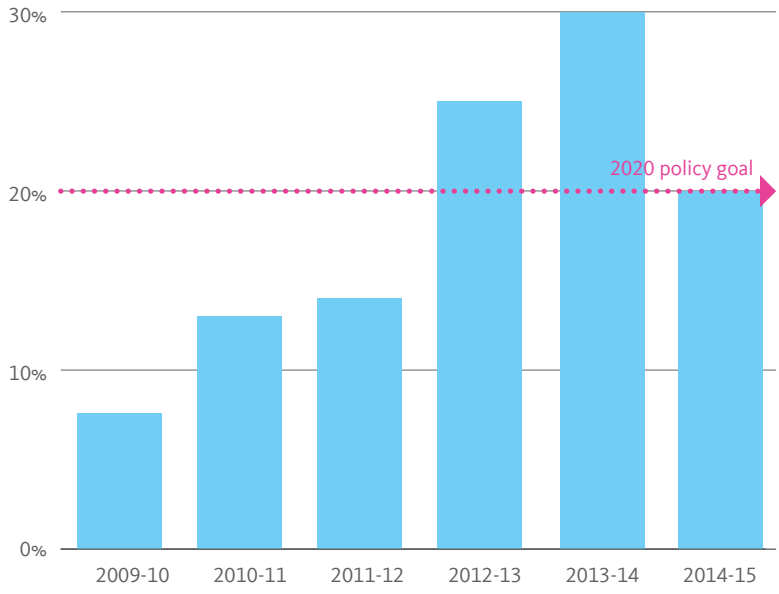

In FY 2014-15, UCLA campus and medical center combined consumed 16,168 gallons of potable water per capita. This is a 5% reduction from its FY 1999-00 to FY 2001-02 baseline. UCLA needs to reduce potable water another 15 percentage points to meet the 2020 Policy goal of reducing potable water consumption by 20% below the baseline.

## SOLID WASTE DIVERTED FROM LANDFILL




In FY 2014-15, the UCLA Health System diverted 41% of its waste from the landfill, an increase of 15 percentage points from FY 2013-14.

## SUSTAINABLE FOOD PURCHASES




In FY 2014-15, 20% of the food purchased at the UCLA Health System met one or more sustainable food criteria, an decrease of 10 percentage points from FY 2013-14.

The UCLA Health System has outperformed the 2020 Policy goal of 20% sustainable food purchases seven years early.

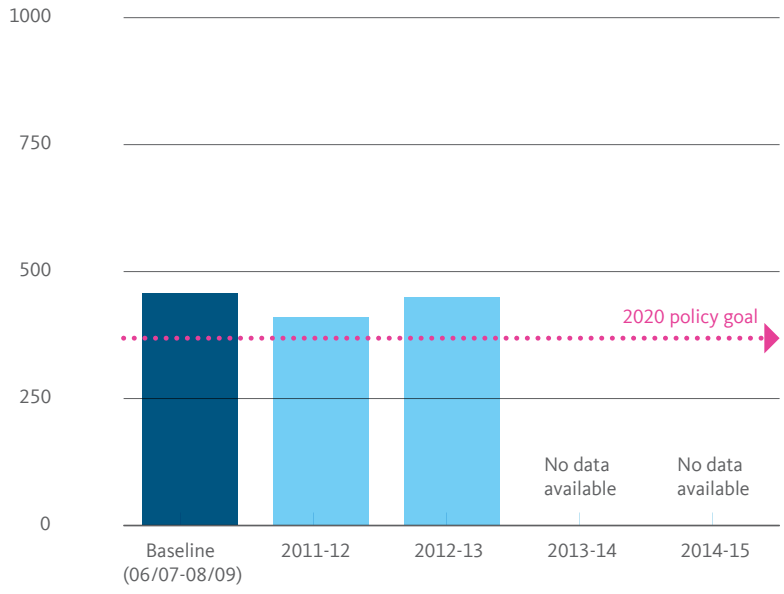
# SAN DIEGO MEDICAL CENTER

UC San Diego Medical Center (UCSDMC) made great strides in energy and water efficiency in FY 2014-15. The new Medical Center Central Utility Plant (MCCUP) utilizes low-emission, high-pressure steam boilers to provide more efficient comfort heating and domestic hot water for the entire medical campus. The new chilled water system takes advantage of a highly efficient pumping design and cooling towers that are designed to operate on reclaimed water. MCCUP will be operating with 85 percent reclaimed water by spring 2016, saving over 4 million gallons of potable water per year. UCSDMC saw further water savings through landscape and fixture replacement projects. For example, UCSD La Jolla Medical Center replaced all existing high-flow faucets and showerheads with new low-flow water control devices specifically designed for healthcare facilities. In addition to saving water, the new fixtures will improve user experience, prevent infections, and reduce maintenance.

Sustainability is a primary consideration as UCSDMC continues to expand its buildings and services. When completed in 2016, the new 500,000 square foot Jacobs Medical Center Tower project will exceed ASHRAE 90.1 Energy Efficiency Standards by over 22 percent.

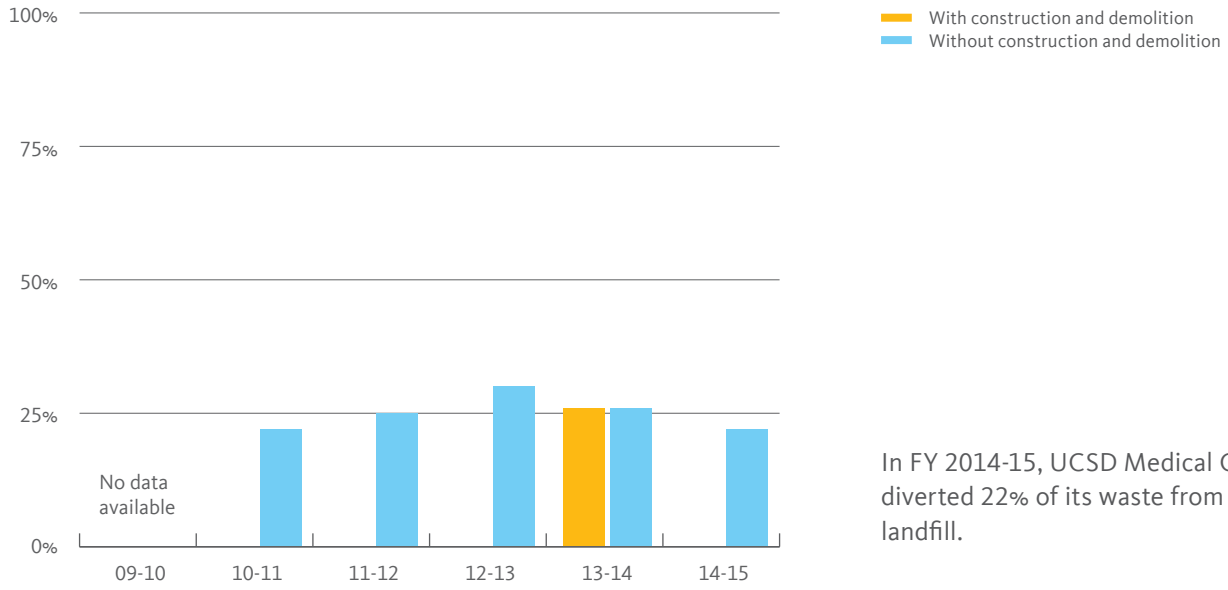
## POTABLE WATER CONSUMPTION

(Gallons per capita)



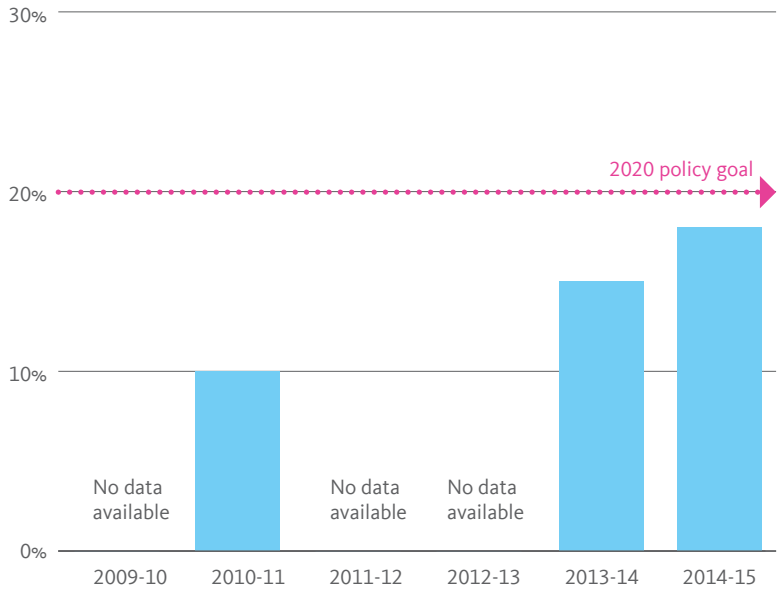

No data was available for UCSDMC's water use in FY 2014-15.

## SOLID WASTE DIVERTED FROM LANDFILL




In FY 2014-15, UCSD Medical Center diverted 22% of its waste from the landfill.

## SUSTAINABLE FOOD PURCHASES




In FY 2014-15, 18% of the food purchased at the UCSD Health System met one or more sustainable food criteria, an increase of 3 percentage points from FY 2013-14.

The UCSD Health System is 2 percentage points away from meeting the 2020 Policy goal of 20% sustainable food purchases.

# SAN FRANCISCO MEDICAL CENTER

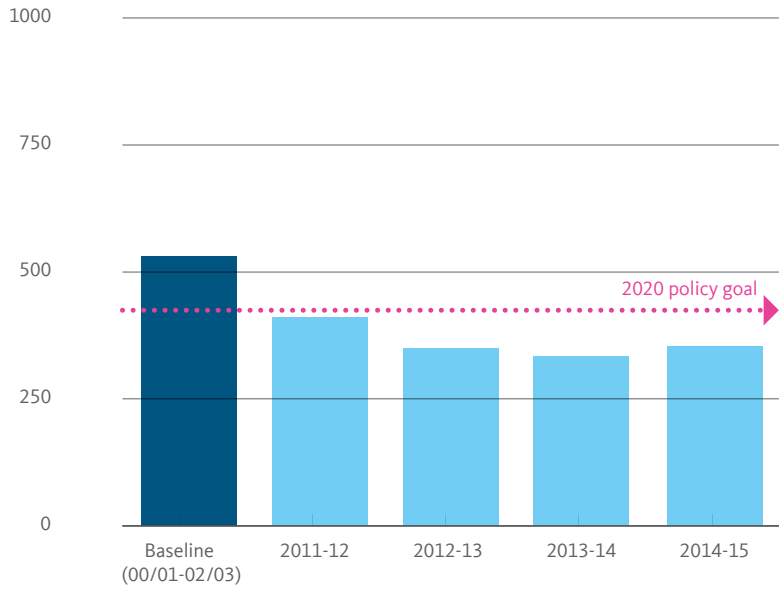
UC San Francisco Medical Center is committed to leadership in health and sustainability. Highlights form this last year include progress in waste diversion, energy efficiency, green buildings, and engagement. In the past four years, UCSF Medical Center has saved close to $12 million by reprocessing surgical and medical devices throughout the medical center. The campus anticipates continued savings by adding new products to the approved reprocessing list each year. Six major retrofit and upgrade projects in the past three years have saved close to $1.49 million per year, including the Clinical Laboratory Chiller replacement project, which alone will save 286,000 kWh and $43,000 per year.

In 2015, UCSF opened the Benioff Children's Hospital, the Betty Irene Moore Women's Hospital and Bakar Cancer Hospital and the Ron Conway Gateway Medical Building. All three buildings on the new Mission Bay campus received LEED Gold certifications. Featured elements include roof top gardens and terraces, natural daylighting, energy efficient ventilation systems, healthy materials, robots for moving medications, sustainable food and linens, water recovery and reuse, and whimsical art installations. The new buildings are 50 percent more energy efficient than a conventional hospital.

The Medical Center received recognition from Practice Greenhealth for achieving the Top 25 Environmental Excellence Award. UCSF stood out among over 1600 hospitals that applied for this award. UCSF earned the award through demonstrated performance in sustainability leadership, energy savings, water conservation, waste reduction, employee engagement, and green chemicals. Six UCSFMC staff attended the annual Clean Med Conference to accept the award. On campus, the fifth annual UCSF Sustainability Awards ceremony included Chancellor Hawgood presenting five LivingGreen clinic/unit certifications to Medical Center departments.

## POTABLE WATER CONSUMPTION

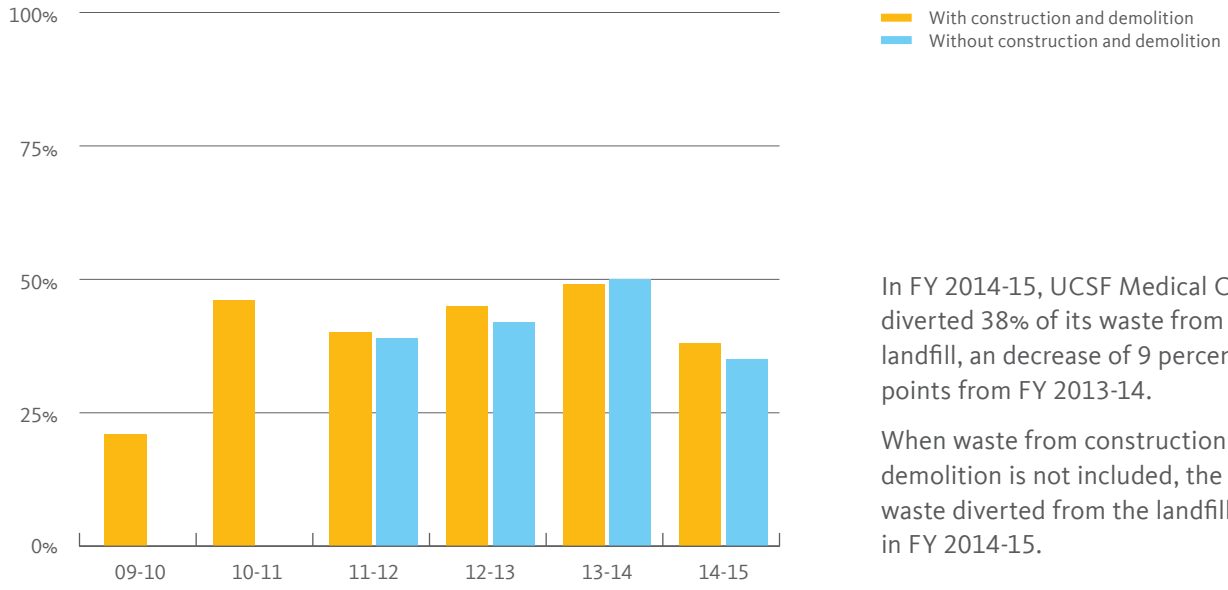
(Gallons per capita) ↘




In FY 2014-15, the UCSF Medical Center consumed 353 gallons of potable water per capita. This is a 33% reduction from its FY 2000-01 to FY 2002-03 baseline.

UCSF Medical Center has outperformed the 2020 Policy goal of reducing potable water consumption by 20% below the baseline.

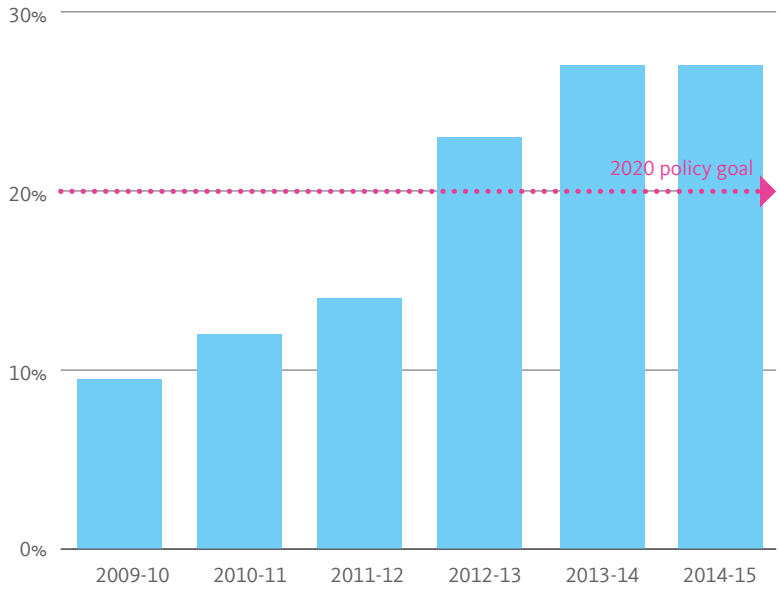
## SOLID WASTE DIVERTED FROM LANDFILL




In FY 2014-15, UCSF Medical Center diverted 38% of its waste from the landfill, an decrease of 9 percentage points from FY 2013-14.

When waste from construction and demolition is not included, the amount of waste diverted from the landfill was 35% in FY 2014-15.

## SUSTAINABLE FOOD PURCHASES




In FY 2014-15, 27% of the food purchased at the UCSF Medical Center met one or more sustainable food criteria, which was the same in FY 2013-14.

The UCSF Medical Center has outperformed the 2020 Policy goal of 20% sustainable food purchases seven years early.

# LAWRENCE BERKELEY NATIONAL LABORATORY

The Lawrence Berkeley National Laboratory (Berkeley Lab), which is operated for the Department of Energy by the University of California, has a broad sustainability strategy with key initiatives in new construction, energy management and retrofits, renewable energy, water, electric vehicle readiness, employee engagement and material sustainability (including waste diversion).

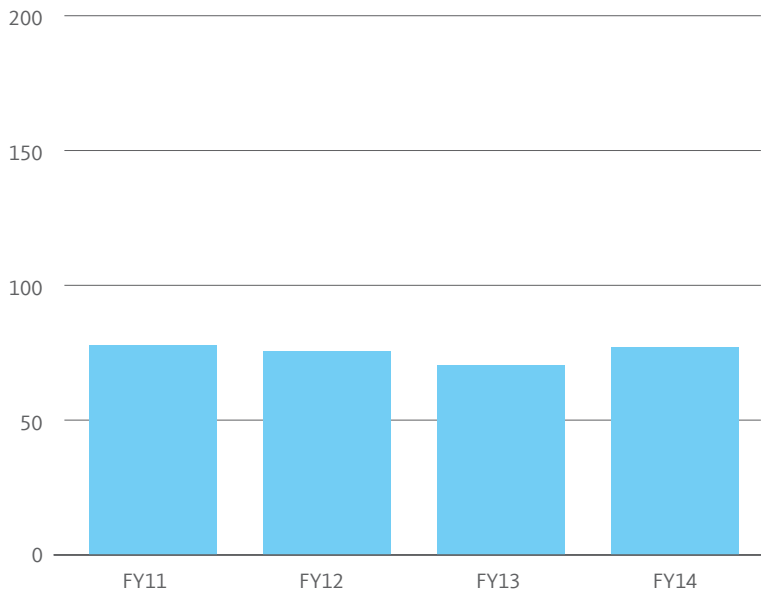
Berkeley Lab is subject to a series of sustainability goals defined by U.S. presidential executive order and provides full, public reporting against those goals. These goals were updated in March 2015.

The federal goals and the goals outlined by the UC Sustainable Practices Policy are similar in scope, but differ in many details. Berkeley Lab provides partial sustainability reporting to UC with data that is generally comparable to other campuses, but may be developed using different reporting protocols. Berkeley Lab is working with UC to streamline and expand sustainability reporting in the future.

Key sustainability accomplishments for the laboratory in the last year include significant expansions in energy management, commissioning, and retrofit activities; deployment of aggressive whole building energy performance targets in a new laboratory building design; installation of a three megawatt solar array in Livermore in partnership with Lawrence Livermore National Laboratory and the Western Area Power Administration; continued progress implementing water conservation projects; development of a green labs program; expansion of work related to plug loads; and completion of a site-wide deployment of a new waste diversion program (that includes composting).

## GREENHOUSE GAS EMISSIONS

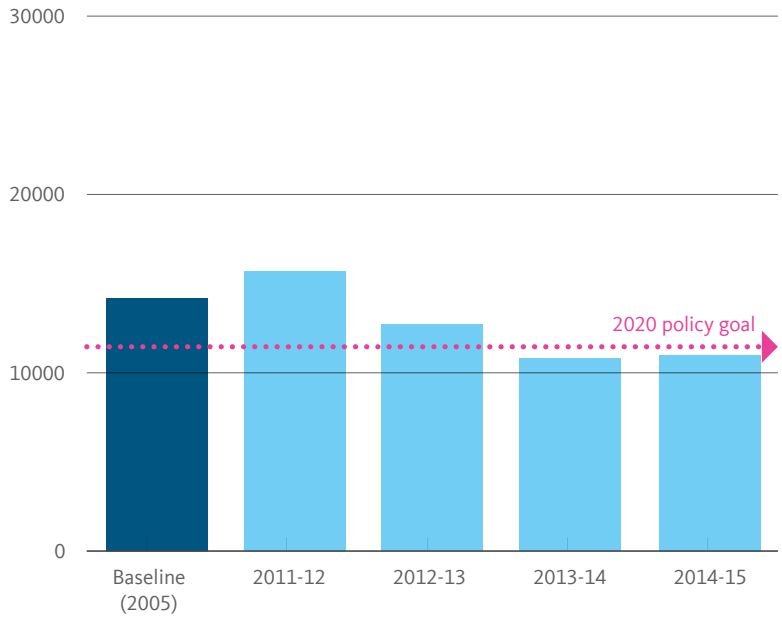
(Thousand metric tons CO2e)




In DOE FY 2014, Berkeley Lab greenhouse gas emissions totaled 76,905 metric tons, a 10% increase from the previous year.

## POTABLE WATER CONSUMPTION

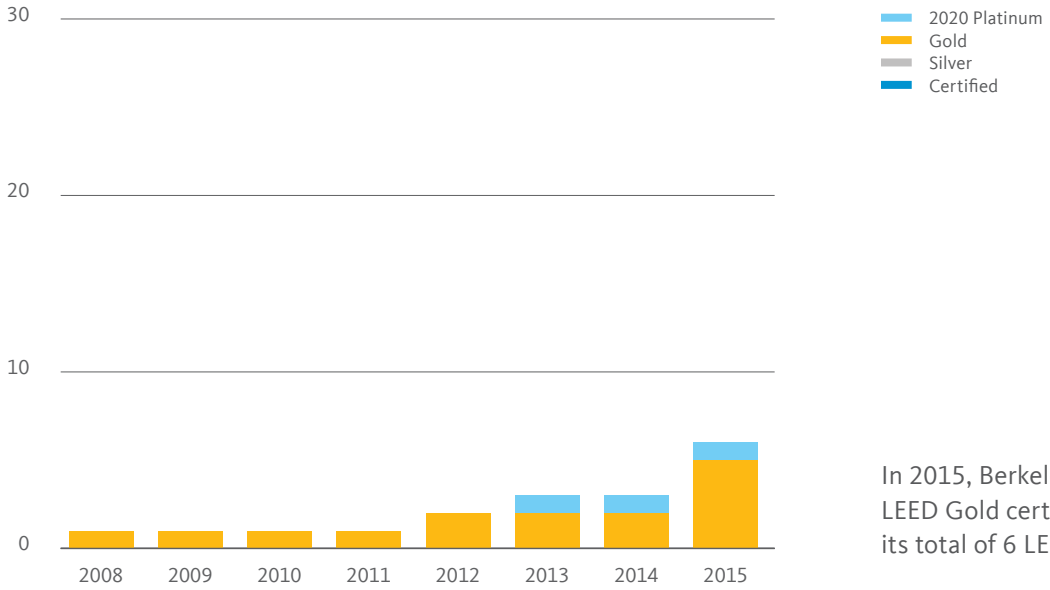
(Gallons per capita)




In FY 2014-15, Berkeley Lab consumed 10,965 gallons of potable water per capita, an 24% decrease from UC Policy baseline.

Berkeley Lab is also on track to meet the federal water reduction requirement of 36% below a 2005 baseline based on gallons per GSF.

## TOTAL NUMBER OF LEED CERTIFICATIONS




In 2015, Berkeley Lab received three LEED Gold certifications, contributing to its total of 6 LEED certifications.