



SAN FRANCISCO  
STATE UNIVERSITY



# San Francisco State University Climate Action Plan

May 2010



**SAN FRANCISCO  
STATE UNIVERSITY**

OFFICE OF THE PRESIDENT

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As President of San Francisco State University, I am pleased to submit our Climate Action Plan. Our goal is straightforward and of vital significance to our larger campus community: to reduce our greenhouse gas emissions and to build on our tradition of sustainable practice. True to the University's long-standing history of environmental activism, this Climate Action Plan moves us many steps forward toward our goal of institutionalizing sustainability throughout the campus.

Although the global community faces a daunting challenge in its efforts to combat climate change, San Francisco State University is taking strong steps to meet that challenge, as witness our signing of the Presidents' Climate Commitment in 2007.

The University Sustainability Committee has set forth notable carbon reduction goals which will reduce greenhouse gas emissions 25 percent by 2020 and 40 percent by 2030 -- going beyond the goals the State of California has set for itself in recent legislation. In every aspect of our CAP, we are aiming high, starting with a vision statement that declares we will become by 2020, "a worldwide exemplar of sustainability among urban, public educational institutions."

This plan and this pledge are a tribute to the hard work that has enabled the University to keep emissions stable over the past 20 years, despite significant building and population growth. With our record of success, and with our long-standing dedication to social equity, we are poised to maintain and even strengthen our climate action commitment over and beyond the next 20 years.

I am confident that through the dedication and combined efforts of our students, faculty, and staff, San Francisco State University will achieve all elements of this thoughtful, comprehensive and ambitious plan.



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Robert A. Corrigan  
President



**SAN FRANCISCO  
STATE UNIVERSITY**

OFFICE OF THE EXECUTIVE VICE PRESIDENT AND CFO  
ADMINISTRATION & FINANCE

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Date: May 12, 2010  
To: Robert A. Corrigan  
President  
From: Sue V. Rosser  
University Provost  
Leroy M. Morishita  
Executive Vice President & CFO  
Re: Climate Action Plan

As co-chairs of the University Sustainability Committee, we are honored to present to you San Francisco State University's Climate Action Plan. Our plan outlines our steps to reach the ambitious goal of accomplishing the greenhouse gas emission reductions set forth by the Intergovernmental Panel on Climate Change. In April, SF State's Sustainability Committee unanimously voted to adopt these stringent goals, reducing emissions below 1990 levels: 25% by 2020 and 40% by 2030. These reduction levels will surpass the State of California's goals under Assembly Bill 32 and position San Francisco State University in a leadership role.

Since signing the American College and University Presidents' Climate Commitment in 2007, our University has formed a University Sustainability Committee and a University Transportation Committee. In addition, we completed a Greenhouse Gas Emission Inventory in May of 2008. This Climate Action Plan is the next element of our commitment and will act as our guide to lessening the environmental impact of the University. Our CAP contains the current and projected initiatives that will enable us to reduce emissions related to energy and water use, commuting and air travel, our built environment, University fleet, procurement and solid waste.

San Francisco State University is reducing greenhouse gas emissions through a campus wide concerted effort. Over the next year, we will partner with the California Public Utilities Commission on a fuel cell pilot program, continue to implement energy saving programs through the UC/CSU/IOU Energy Efficiency Partnership, collaborate with San Francisco Environment on formalizing a composting program, work with the University Transportation Committee on increasing alternative transportation options, and continue to institutionalize sustainability through the University Sustainability Committee.

Sustainability is a high priority to the University and will continue to be integrated into the University's academics, planning, policies, student activities and community engagement.



The University Sustainability Committee  
approved the following  
Mission and Vision Statements  
on May 29, 2009

### **SUSTAINABILITY MISSION STATEMENT**

We aim to educate students, faculty and staff to embrace the values and principles of sustainability in their daily lives by integrating them into the University's planning and policies, academics, operations, student activities and community engagement.

### **VISION STATEMENT**

By 2020 San Francisco State University will be a worldwide exemplar of sustainability among urban, public educational institutions.

## ACKNOWLEDGEMENTS

The following individuals greatly contributed to the Climate Action Plan

### **University Sustainability Committee**

Co-Chairs:

Leroy M. Morishita, Executive Vice President/CFO, Administration and Finance

Sue V. Rosser, University Provost, Academic Affairs

Members:

Sarah Bauer, Program Coordinator, Leadership, Engagement, Action and Development

Wendy Bloom, Campus Planner, Capital Planning, Design & Construction

Andy Bolig, Assistant Professor, Chemistry

Jim Bolinger, Acting Director, Facilities & Residential Life, University Housing

Carlos Davidson, Associate Professor and Director, Environmental Studies Program

Emily Naud, Sustainability Initiatives Coordinator, Cesar Chavez Student Center

Franklin Griffen, Student, Associated Students, Inc.

Robert E. Hutson, Associate Vice President, Facilities and Service Enterprises

Marilyn S. Lanier, Senior Associate Vice President, Physical Planning and Development

Peter Melhus, Assistant Professor, Management, College of Business

Stephen Smith, Director, Procurement

Caitlin F. Steele, Sustainability Programs Manager, Physical Planning and Development

Constance B. Ulasewicz, Associate Professor, Consumer Family Studies/Dietetics

### **Other Contributors**

Phil Evans, Director of Grounds, Integrated Waste Management and Fleet Services, Facilities & Service Enterprises

Dan Gill, Program Coordinator, Capital Planning Design & Construction

Maria Christina Katsoulis, Administrative Assistant, Physical Planning & Development

Victor Lai, Energy Manager, Facilities & Service Enterprises

Randall Orr, Sustainability Assistant Coordinator, Facilities & Service Enterprises

Jason M. Porth, Deputy Chief of Staff, Office of the President

Allison Schentrup, Sustainability Assistant Coordinator, Physical Planning & Development

Edward Vicedo, Senior Director of Dining Services, Chartwells

Davin Wentworth-Thrasher, Garden Specialist, Facilities & Service Enterprises

Nelson/ Nygaard Consulting Associates

A special thank you to Molly Thomas, WRNS Studio

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## EXECUTIVE SUMMARY

San Francisco State University's Climate Action Plan (CAP) guides ambitious greenhouse gas (GHG) emission reductions for the next 20 years. With this plan, the University commits to reducing emissions below 1990 levels: 25% by 2020 and 40% by 2030. The University will adhere to the strictest GHG reduction recommendations currently in place to reverse the negative social, environmental and economic impacts of climate change, as prescribed by the Intergovernmental Panel on Climate Change (IPCC).

San Francisco State University (SF State) is in a unique position. Most of the 680 universities that have signed the Presidents' Climate Commitment are engaged in rigorous efforts to stabilize current emissions. However, the University's current emissions already fall 5% below 1990 levels. This achievement is the result of an integrated planning framework centered on the University's commitment to the environment, the City and County of San Francisco, and a sustainable future. With this Climate Action Plan, the University positions itself to become a worldwide exemplar of sustainability among urban, public institutions of higher education.

The SF State campus encompasses 141.6 acres in the southwest corner of San Francisco. Within walking distance of retail and regional open space and connected to the City's myriad resources by public transportation, the campus offers a dynamic environment. The University is part of the 23 campus California State University System and was founded in 1899. It is made up of 30,469 Full Time Equivalent students and over 4,000 faculty and staff. The University offers Bachelor's degrees in 115 areas of specialization and Master's degrees in 97 areas of specialization.

### Presidents' Climate Commitment

President Robert A. Corrigan signed the American College and University Presidents' Climate Commitment (ACUPCC) in May, 2007 making SF State a Charter Signatory.<sup>1</sup> The ACUPCC mandates six key actions, all of which SF State has accomplished:

- Develop a **Climate Action Plan**
- Establish a **Sustainability Committee** to oversee the development and implementation of a program to comply with the ACUPCC
- Take two or more **Tangible Actions**
- Conduct a **Greenhouse Gas Emissions Inventory** every other year
- Integrate sustainability into the curriculum / **Education**
- Make publicly available inventories, plans and progress reports as a resource to others / **Outreach**

The University is committed to upholding, implementing and updating these key components of the ACUPCC as detailed on the following pages.

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<sup>1</sup> [www.presidentsclimatecommitment.org](http://www.presidentsclimatecommitment.org)

## The Climate Action Plan

Signing the Presidents' Climate Commitment formalized SF State's long standing history of public service by committing to a more sustainable future. This Climate Action Plan, with its holistic approach to sustainability planning — from academics to green buildings — underscores the values articulated in the University Strategic Plan:

*San Francisco State University remains committed to access; to pairing that access with excellence, to seeking and supporting diversity in all forms, to educating students for lives of principled, compassionate and active citizenship, and to modeling on campus the world in which we would like to live.<sup>2</sup>*

With its broad and inclusive reach across campus functions, the CAP addresses not only the University's impact on the environment but its ability to create an informed campus community and culture, one that will cultivate the next generation of sustainably-minded leaders. It outlines the nine major planning areas for ambitious greenhouse gas emission reductions:

- **Transportation**
- **Energy Efficiency**
- **Renewable / Clean Energy**
- **Green Building**
- **Academics**
- **Waste & Compost**
- **Water**
- **Procurement**
- **Food Service**

While this CAP sets goals for 2020 and 2030, its focus is on the next ten years. Given the uncertainty of technological advances and the unpredictability of the regulatory environment with regards to GHG emissions, the University will focus current efforts on the 2020 goal. The University will update the CAP every two years along with the GHG inventory and will incorporate initiatives that serve the 2030 goal as appropriate.

## The Sustainability Committee

Since signing the commitment, the president has formed the University Sustainability Committee that is co-chaired by the University Provost, Sue V. Rosser, and the Executive Vice President, Leroy M. Morishita. The Committee is tasked with making a Sustainable SF State by evaluating current programs and incorporating sustainability into academics, research, operations and campus initiatives. The Committee will continue to meet monthly to ensure the implementation of the Climate Action Plan.

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<sup>2</sup> <http://www.sfsu.edu/strategicplan/index.html>

## **University Sustainability Committee**

### Co-Chairs:

Leroy M. Morishita, Executive Vice President/CFO, Administration and Finance

Sue V. Rosser, University Provost, Academic Affairs

### Members:

Sarah Bauer, Program Coordinator, Leadership, Engagement, Action and Development

Wendy Bloom, Campus Planner, Capital Planning, Design & Construction

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Peter Melhus, Assistant Professor, Management, College of Business

Stephen Smith, Director, Procurement

Caitlin F. Steele, Sustainability Programs Manager, Physical Planning and Development

Constance B. Ulasewicz, Associate Professor, Consumer Family Studies/Dietetics

The University has also established the University Transportation Committee which is co-chaired by Jason M. Porth, Deputy Chief of Staff, and Wendy Bloom, Campus Planner. This committee implements the initiatives set forth in the Transportation Demand Management Plan and in the Memorandum of Understanding between the University and the City and County of San Francisco. Energy and Academic Subcommittees have also been established as a result of the Presidents' Climate Commitment and they are adapting current programs to include more sustainability initiatives.

For the past two years, the Sustainability Committee members met monthly to set parameters and to establish the greenhouse gas reduction goals that shaped this Climate Action Plan. Many people contributed to this CAP, including members of the Sustainability Committee, the Transportation Committee, the Academic and Energy Sub-Committees as well as numerous faculty and staff from a variety of departments. This collaborative process provided the platform for an integrative, comprehensive Climate Action Plan inclusive of the broad range of expertise that will be needed to accomplish the University's ambitious goals. The Climate Action Plan was drafted by Caitlin F. Steele, the Campus Sustainability Programs Manager.

## **Greenhouse Gas Emissions Inventory**

SF State is proud to submit this Climate Action Plan as it builds on the significant work undertaken to complete the University's first Greenhouse Gas Emissions Inventory, completed in May, 2008 and updated in January, 2010. Carlos Davidson, Associate Professor and Director of the Environmental Studies Program and Caitlin F. Steele, Campus Sustainability Programs Manager, co-authored the inventory, completing a significant early requirement of the Presidents' Climate Commitment.<sup>3</sup>

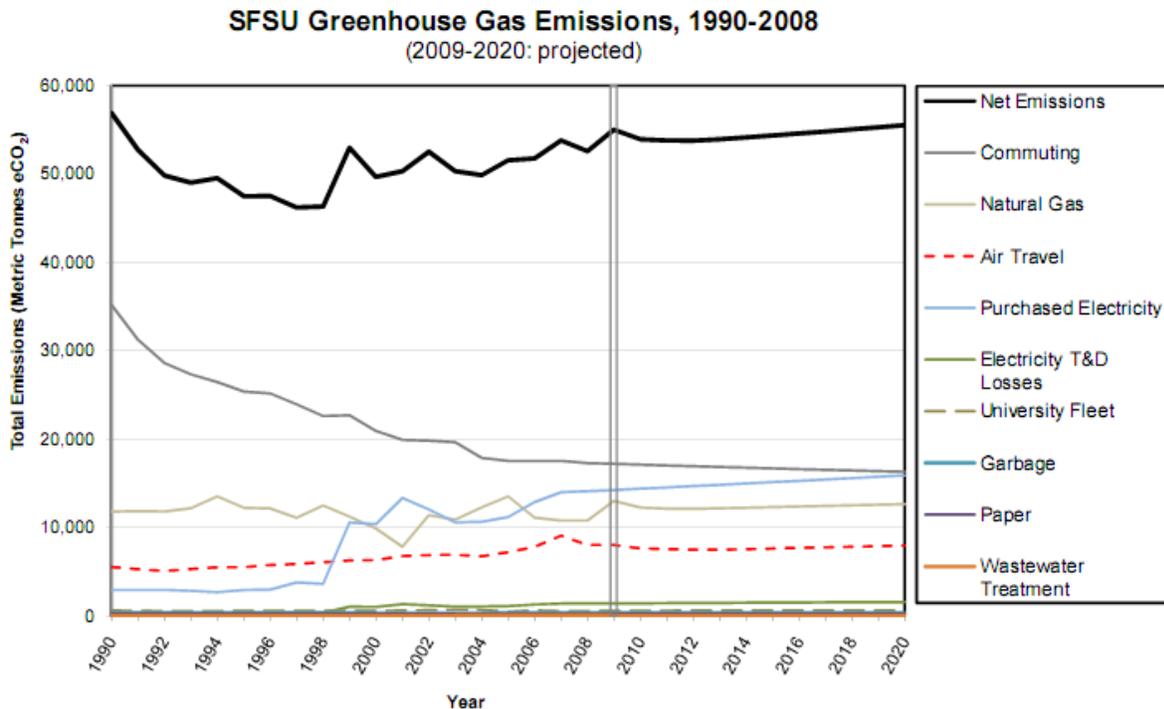
All greenhouse gas emissions under the three scopes required by the WBCSD/WRI (World Business Council on Sustainable Development/World Resources Institute) were inventoried for the University from 1990-2006. These emission categories include Energy Use, Transportation, Fleet, Air Travel, Solid Waste, and Composting.

Subsequent to completing the 2008 Greenhouse Gas Emissions Inventory, the University incorporated data from transportation surveys completed in 1979 and 1992, which had not been previously available. Combining the new data from these earlier surveys with the 2005 and the 2008 transportation surveys revealed that the University's transportation related emissions were 53% below 1990 levels. Given this

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<sup>3</sup> [www.sfsu.edu/~sustain/climate](http://www.sfsu.edu/~sustain/climate)

stark change in emission levels and trends, the University was required to complete a second inventory. Below is the current University Greenhouse Gas Emissions Inventory reflecting levels from 1990 through 2008, with projections through 2020. The 2020 projections are based on a “business as usual” model.



## Tangible Actions

The ACUPCC requires that the University take at least two tangible actions to reduce climate emissions within two months of signing onto the Commitment. At the time of the signing, however, the University was already engaged in various programs, initiatives, projects and plans that have contributed to stabilized emissions for the past 20 years, despite growth in student population and building inventory. These activities include:

- In 2007, the University completed a campus master plan focused on developing a more sustainable campus connected to its surrounding neighborhoods, consistent with the University’s aspiration to become a model public urban university
- Significant improvements accommodating pedestrians and bicyclists were implemented through increased bike parking, a valet Bike Barn and the addition of new bike paths connecting the campus to the City and County of San Francisco’s bicycle routes
- An increased parking fee combined with a decrease in on-campus parking spaces incentivized people to use alternative transportation
- To accommodate the significant number of the University’s regional commuters, a free shuttle with frequent service was added in 1989, greatly increasing Bay Area Rapid Transit (BART) ridership
- The University’s capital planning and integrated campus design has changed over the past twenty years to cultivate a more local, livable community. Housing availability for students, faculty and staff has more than doubled since 1990, helping to shift the University from a commuter campus to a more residential one

- The University has established committees for Sustainability (2008) and Transportation (2010) as well as Sub-Committees for Energy and Academics to institutionalize sustainability on campus
- The growing residential community has been supported by a rise in local neighborhood retail and other amenities, advancing a more walkable, green university community
- The University hired an Energy Manager in 1989 and a Sustainability Programs Manager in 2008

## Planning and Regulatory Context

The following planning efforts, executive orders and regulations have enhanced the University's sustainable practices and this Climate Action Plan.

### Executive Order 987

The Climate Action Plan, like the 2007-2020 Campus Master Plan, expands upon Executive Order (EO) 987 issued by the CSU Chancellor's Office in 2006. EO 987 is the Chancellor Office's policy statement on energy conservation, sustainable building practices, and physical plant management for the California State University system.<sup>4</sup> This EO set the structure of institutionalizing sustainability across the CSU system. It delegates the University Presidents to implement the following mandates set forth by the Board of Trustees:

- build only LEED Silver or higher & outperform Title 24 by 15% for new construction
- procure a minimum of 20% renewable energy by 2010
- designate a Energy/Utilities Manager
- set a five year goal of reducing energy consumption by 15% by 2010

### The Campus Master Plan

The Climate Action Plan builds on the 2007-2020 Campus Master Plan, which provides the framework for the future physical development of the campus. The master plan, approved by the CSU Board of Trustees in 2007, gives form to the University's strategic vision and underlying core values of equity and social justice and community engagement. A steering committee representing all segments of the campus community provided ongoing guidance during the planning process; six working groups provided focused input; and a series of open houses engaged the broader campus community and SF State's neighbors.

The aim of the master plan is to make sustainability an integral and visible part of the day-to-day life of the campus. The plan offers a number of interrelated strategies that strengthen connections to the surrounding city, expand the residential community, increase public and alternative transportation access, create "college main streets" with walkable neighborhood retail, and promote green building and site design and natural stormwater management.<sup>5</sup>

### Transportation Demand Management Plan

In fall 2009, the University adopted a Transportation Demand Management (TDM) plan that builds on existing University programs and recommendations of the Master Plan. The primary goal of the TDM plan is to ensure that adequate measures are undertaken and maintained to minimize the transportation impacts of increased student enrollment and the number of faculty and staff as set forth in the Campus Master Plan Environmental Impact Report (EIR). More specifically, the plan outlines a program that will minimize the daily AM and PM peak period

<sup>4</sup> <http://www.calstate.edu/EO/EO-987.html>

<sup>5</sup> <http://www.sfsu/masterplan.org/>

vehicle trips to the campus. In tandem with reducing transportation impacts, the TDM plan provides a program to reduce commute-related GHG emissions.

### **Campus Water Resources Management Plan**

To help steward a greater respect, reverence, and conservation-oriented relationship with water, the University initiated a Water Resources Management Plan entitled “Respecting Water” in 2009. This plan is based on a holistic vision of integrating water use, reuse, and groundwater infiltration on campus. The objective is to demonstrate to the campus community best practices for domestic, institutional, and regional water conservation. The plan includes improved facility processes, hands-on learning through volunteer projects, an annual water conservation conference, the establishment of an institutional water working group to share and report on best practices, and an informational website and outreach program.

## **Education**

The Climate Action Plan supports the University’s commitment to cultivating active and principled citizens. While incorporating sustainability into the curriculum may not directly lower emissions, it will engender an informed and active campus culture around issues of sustainability. This goal will be supported by the Academic Sub-Committee that was formed to advance the inclusion of sustainability within the curriculum. SF State offers a variety of courses which include sustainable themes.

## **Outreach**

The University is committed to sharing this Climate Action Plan and lessons learned with its campus community, other institutions and the broader society. In addition to making its GHG Inventory and CAP publicly available on the ACUPCC website as well as the Sustainable SF State website, the University shares its experience of implementing the different components of the ACUPCC at various national conferences, including the California Higher Education Sustainability Conference, the Society for College and University Planning, and the Association for the Advancement of Sustainability in Higher Education. All of these presentations have been made available to the public on the organizations’ respective web sites.

## TRANSPORTATION

**Goal: Reduce commute-related emissions an additional 5% by 2020; add alternative fuel and fuel efficient vehicles to the fleet**

### A. Commuting

#### Background

Between 1990 and 2008, San Francisco State University reduced carbon emissions related to student, faculty, and staff commuting by 53%—from 35,147 metric tons of CO<sub>2</sub> in 1990 to 16,388 metric tons in 2008. This dramatic reduction in commute-related emissions has lowered overall GHG emissions for the campus by 9% from 1990 levels.

The University is well served by public transportation, including the Muni bus lines 17, 18, 28/28L, 29, 88, the M line streetcar, and the Daly City BART station, which is a short bus or shuttle ride from the campus. Bicycle access has improved significantly with the addition of the Bike Barn, bike racks, and the recent construction of the first segment of a north-south bike path connecting the University Park housing to the core campus.

Travel behavior and mode choice for the campus community is documented in a series of transportation surveys conducted by the campus in 1979, 1992, 2005, and 2008.<sup>6</sup> Between 1990 and 2008, auto commuting by students—who constitute the majority of the campus population—dropped dramatically from 73% to 39%, while at the same time, commuting by transit and bike/walk increased. The decrease in auto commuting is attributable to a number of factors:

- **Increase in student population living on or near campus.** The on-campus residential population increased from 1,536 (5%) in 1990 to 3,151 (14%) in 2009, with the construction of the Towers and Village housing in the core of campus and the acquisition of the 959 apartments that make up University Park North and South (UPN and UPS) immediately surrounding the campus. The population in the area immediately adjacent to campus also has increased. In 1990, about 4% of students lived in the 94132 zip code. In the 2008 survey, that share had increased to 15%. An increase in the share of the student population living in the city of San Francisco more broadly (from 52% in 1990 to 62% in 2006) may have also promoted non-auto modes of access.
- **Increase in full-time students.** Full-time students increased from 17,502 (57%) in 1990 to 23,660 (77%) in 2008. Students and workers with regular, full time schedules are generally more likely to ride transit than workers with irregular part-time schedules.
- **Enhanced transit service to BART.** The campus-run BART shuttle began in 1989. However, it operated with just two vehicles on a much longer loop than today's route. Today, it operates on 10-12 minute headways. As a result of this expanded and improved service, nearly 17% of students responding to the 2008 survey reported using the shuttle to travel either to or from campus. Similarly, Muni routes 28 and 28L provide free service from the BART station to campus, further reducing headways and improving access from BART. These services dramatically increase the

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<sup>6</sup> Nelson\Nygaard Consulting Associates has provided ongoing transportation planning to the campus from the master plan onward. The Climate Action Plan draws on the following work produced by Nelson\Nygaard: 2008 Transportation Survey Results, August 2008; Transportation Demand Management Plan, Fall 2009; and Technical Memo: Assessing Transportation Findings for Use in SF State Climate Action Plan, December 2009.

attractiveness of taking BART, which increases transit mode share for students making long trips from the East Bay and the Peninsula.

- **Limited student semester permits and increase in cost of daily permits.** In 2006, student semester permits were limited to on-campus residents only, and the cost of daily permits was increased from \$2 a day to \$1 an hour or \$5 for the day. The increase in the cost of parking has served as a disincentive to drive alone.
- **Decrease in on-campus parking spaces.** From 1990 to 2009, the number of parking spaces on campus decreased from 3,836 to 2,916 consistent with the University's "transit-first" approach.

## Initiatives

### 1. Campus Master Plan

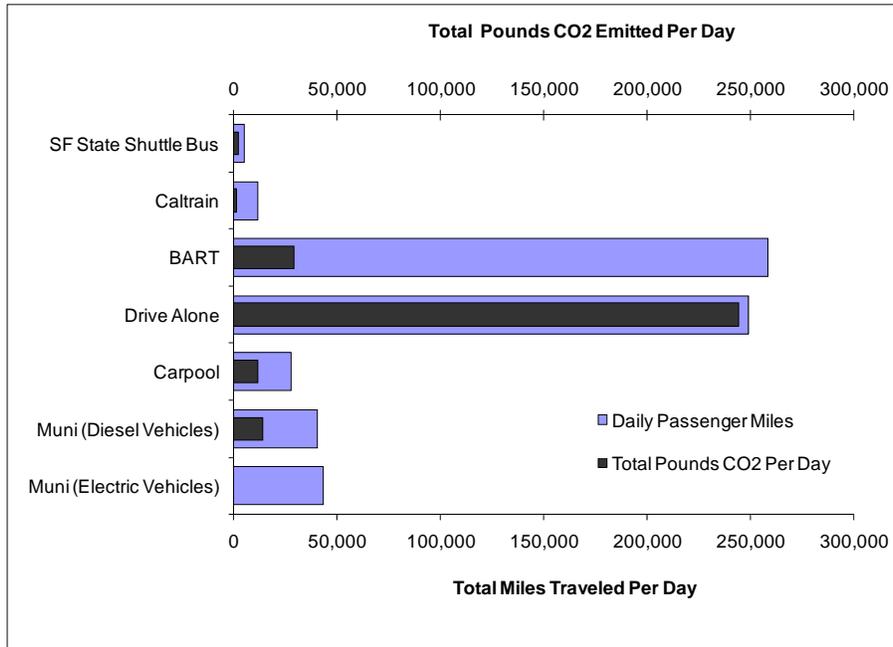
The 2007-2020 Campus Master Plan builds on the University's success in moving to alternative modes of transportation. The plan calls for an increase in the campus enrollment cap from 20,000 to 25,000 full-time equivalent student (FTES) without adding parking. Instead, the plan accommodates growth by offering a number of strategies to encourage transit, walking, and biking, including a proposed increase in the supply of affordable close-in housing for students, faculty, and staff and walkable neighborhood retail.

Consistent with the campus master plan's emphasis on alternative modes of transportation, the Campus Master Plan Environmental Impact Report (EIR) uses transportation demand management (TDM) as the mitigation to reduce transportation impacts associated with growth. Similarly, TDM and transit, bike, and pedestrian improvements are the cornerstone of the memorandum of understanding (MOU) signed by San Francisco State University and the City and County of San Francisco to address the off-campus impacts—primarily transportation related—of master plan growth.

The master plan EIR and the MOU both call for the University to conduct regular surveys to monitor transportation impacts. In April 2008, a comprehensive transportation survey/cordon count was conducted to establish the baseline number of peak-hour auto trips for the campus community. The survey also provided valuable information on mode split and carbon emissions. The survey documents the mode of arrival on campus as well as the mode used for each segment of an individual's commute—for example, a commute might consist of car, BART, and shuttle. Key findings include:

- 74% of University affiliates arrive on campus using alternative modes of transportation, with only 26% arriving on campus by driving alone
- 36% of University affiliates use Muni for some part of their commute and 21% use BART
- Almost half of faculty/staff drive alone compared with a quarter of undergraduates
- Persons driving alone are the largest contributors of CO<sub>2</sub> commute travel emissions
- BART commuters travel about 10,000 more miles per day than car drivers, but only emit 28,838 pounds of CO<sub>2</sub> in a day, compared with 244,095 pounds of CO<sub>2</sub> emitted per day by car drivers, as illustrated in the following figure:

## Total Miles Travelled and CO<sub>2</sub> Emissions per Day



Note: Muni electric vehicles do not produce any CO<sub>2</sub> emissions given that they use 100% hydropower. BART trains, on the other hand, use electricity produced through a combination of hydropower, nuclear, renewable and a mix of fossil sources, resulting in indirect emissions of .11 pounds per passenger mile.

### 2. Transportation Demand Management Plan

In fall 2009, The University adopted a Transportation Demand Management (TDM) plan that builds on existing University programs and recommendations of the Master Plan. In January 2010, the University Transportation Committee was established to implement the TDM plan.

The primary goal of the TDM plan is to ensure that adequate measures are undertaken and maintained to minimize the transportation impacts of the increase in enrolled students and number of employees as set forth in the campus master plan EIR. More specifically, the plan outlines a program that will minimize the daily AM and PM peak period vehicle trips to the campus. In tandem with reducing transportation impacts, the TDM plan provides a program to reduce commute-related GHG emissions.

The plan includes two key elements: a TDM implementation plan and a monitoring plan. The TDM implementation plan provides a timeline, within which a number of programs and policies will be implemented to improve access to alternative transportation, address the anticipated transportation impacts of the increase in enrolled students and employees planned for the long term, and reduce GHG emissions related to commuting. The Monitoring Plan will be utilized by the University to ensure that the TDM plan continues to address these issues over time and will be adjusted as needed to best meet evolving transportation needs.

The University will utilize a wide variety of TDM measures to reduce trip generation by students, staff, faculty and other University affiliates. The proposed measures expand and strengthen the existing programs offered by the University and introduce new programs that are not currently offered. While these measures can stand alone, they make a more significant impact when used together to create a package of options for those travelling to and from the campus. The University will work to implement the following measures with available funding and make every effort to identify external funding to address anticipated need. The following is a breakdown of TDM programs and projects by time:

<b>TDM Measures and Programs</b>	
<b>Years One and Two</b>	
	<p><b>TDM Programs</b></p> <ol style="list-style-type: none"> <li>1. Establish Transportation Committee</li> <li>2. Improve participation rate in existing Ride Match program</li> <li>3. Update marketing information, website and print materials</li> <li>4. Promote and expand participation in the commuter check program</li> <li>5. Promote and expand campus use of Zipcar program</li> <li>6. Seek grant funding to implement a Guaranteed Ride Home program</li> </ol> <p><b>Transit</b></p> <ol style="list-style-type: none"> <li>7. Evaluate feasibility and funding options for a Universal Transit Pass Program for students</li> <li>8. Offer transit pass purchase options on campus, including City-operated and maintained vending machines</li> </ol> <p><b>Shuttle</b></p> <ol style="list-style-type: none"> <li>9. Work with BART, Muni, and SamTrans to relocate San Francisco State University shuttle stop at Daly City BART station</li> <li>10. Seek funding to replace existing van conversion vehicles with low floor transit buses</li> <li>11. Improve shuttle information on website, shuttle stops, and in print materials</li> </ol> <p><b>Bicycle</b></p> <ol style="list-style-type: none"> <li>12. Evaluate Bike Barn hours and expand as needed</li> <li>13. Install bike racks</li> <li>14. Complete phase 1 of the north-south bike path (<i>completed as of 2010</i>)</li> <li>15. Study Phase 2 of the north-south bike path</li> </ol> <p><b>Pedestrian</b></p> <ol style="list-style-type: none"> <li>16. Study feasibility of adding accessible pedestrian path connections at either end of the phase 1 north-south bike path</li> </ol> <p><b>Parking</b></p> <ol style="list-style-type: none"> <li>17. Explore feasibility of implementing gradual hourly and daily parking rate increases</li> </ol>
<b>Years Three through Five</b>	
	<p><b>Transit</b></p> <ol style="list-style-type: none"> <li>1. Install NextBus arrival signage at two campus locations</li> <li>2. Work to improve transit stop amenities</li> <li>3. Seek student support for implementation of a Universal Pass Program</li> </ol> <p><b>Shuttle</b></p> <ol style="list-style-type: none"> <li>4. Seek to replace shuttle vehicles</li> <li>5. Expand shuttle service to meet demand</li> <li>6. Seek to install GPS for real-time tracking and NextBus arrivals</li> <li>7. Install NextBus arrival signs at campus locations</li> </ol>

<b>TDM Measures and Programs</b>	
	<p><b>Bicycle</b></p> <ol style="list-style-type: none"> <li>8. Complete north-south bike path</li> <li>9. Plan for an east-west bike path</li> <li>10. Install bike racks as needed</li> <li>11. Study the feasibility of relocating the Bike Barn</li> </ol> <p><b>Pedestrian</b></p> <ol style="list-style-type: none"> <li>12. If feasible, construct accessible pedestrian path connections at either end of phase 1 north-south bike path</li> </ol> <p><b>Parking</b></p> <ol style="list-style-type: none"> <li>13. Seek to implement gradual rate increases</li> </ol>
<b>Six or More Years</b>	
	<p><b>Bicycle</b></p> <ol style="list-style-type: none"> <li>1. Offer a full service Bike Barn, if feasible</li> <li>2. Complete east-west bike path</li> <li>3. Install bike racks as needed</li> <li>4. Plan for pedestrian/bicycle bridge across the valley</li> </ol> <p><b>Parking</b></p> <ol style="list-style-type: none"> <li>5. Construct new parking structures, as feasible</li> <li>6. Increase the price of parking, as feasible</li> </ol>

The monitoring plan requires regular periodic evaluation to determine how the TDM program is achieving the goal of reducing the number of drive-alone trips to the campus, minimizing new peak-hour trips, and reducing GHG emissions.

The following measures will be undertaken to ensure compliance with the monitoring plan:

- Cordon Surveys – Every three years but no later than the addition of each 1,000 students in enrollment by headcount, the University will conduct a statistically significant cordon survey of campus commuters during the PM peak hour. This survey will abide by the guidelines set forth in the MOU between the University and City and County of San Francisco. It will be structured similarly to the 2008 survey and gather information on travel behavior in order to calculate emissions.
- If the cordon surveys show that the PM peak period auto trips to and from campus are greater than 5 percent above the baseline, the cordon surveys will be conducted annually until such trips fall below the five percent above the baseline for two years in a row.
- Shuttle Capacity – The University will monitor peak hour utilization of campus shuttle buses.
- The University will monitor peak period transit use on the M Line.

## B. University Fleet

### Background

Currently, the University fleet is made up of 196 trucks, tractors, forklifts, mowers, sweepers, scooters, cars, passenger vans and shuttles. While this seems like a large number, 114 of these vehicles are smaller off-road scooters used only on campus. The fleet is made up of 25% electric and 10% alternative fuel vehicles. Annually, the fleet consumes 60,000 gallons of gasoline and 4,000 gallons of diesel.

The campus runs five shuttles that operate Monday - Thursday 7am-10pm and Friday from 7am-7pm between the closest BART station and campus. The shuttles ride at full capacity throughout the day and transport 38 people at a time. Increased shuttle service over the past ten years has greatly increased BART ridership, which has had a positive impact on lowering emissions related to transportation.

### Initiatives

SF State is assessing several possible sources of funding to increase the number of alternative fuel vehicles, to improve its shuttle service, and to reduce related emissions. Over 85% of the University's fleet and all of the shuttles run on unleaded gasoline. The University has identified state and regional funding sources, which may support the University's efforts to upgrade to alternative fuel vehicles with greater rider capacity.

#### 1. Research

- a. The Transportation Committee will research public and private grant opportunities
- b. The Transportation Committee will research leasing a shuttle service program that will allow for greater ridership capacity and the use of alternative fuel

#### 2. Invest in Alternative Fuel Vehicles

As the electric vehicle market grows, SF State will work with electric vehicle vendors to expand on its current electric fleet. The University will also explore adding vehicles that run on biodiesel or compressed natural gas

#### 3. Implement a Fuel Saving Policy

The Fleet Department will look into implementing a no idle policy and a mileage reduction policy for Facilities & Service Enterprises Staff

#### 4. Education and Training

Facilities will add a Sustainability Awareness/Resource Conservation meeting to the monthly safety training program

## C. Air Travel

### Background

In 2008, SF State faculty and staff flew over 9 million miles on University financed trips. Due to the increase in flights and to the decrease in air fare, the University's air travel has doubled since 1990. While air travel is a necessary step for University employees to attend conferences and collaborate with other schools, alternative options are being researched. Faculty and Staff can take advantage of advancements in technology that make webinars and teleconferencing more commonplace.

## **Initiatives**

### **1. Encourage webinars and teleconferencing**

The University will work to promote the use of webinar and teleconferencing technology.

### **2. Personal carbon offset purchasing on air/car travel**

The University will research the feasibility and interest to have staff and faculty opt-in to a carbon offset program. While this program cannot be supported by State money, faculty and staff can add this small fee to their travel claim forms.

## ENERGY EFFICIENCY

### **Goal: Stabilize energy use while increasing student population and building square footage**

#### **Background**

Since the implementation of CSU Executive Order 538 in 1989, which established energy conservation and utilities management policies and goals for CSU campuses, the University has been committed to reducing energy consumption and improving operational efficiencies through an aggressive portfolio of energy conservation programs and operational strategies.

The University's current energy conservation programs and initiatives are in alignment with Executive Order 987, issued in 2006. This Executive Order established the goal of reducing total campus energy consumption (BTU/Sq. Ft.) by 15% by the end of FY 09/10 from FY03/04 consumption levels.<sup>7</sup> Current records indicate the campus is on track to meet this goal. At the end of FY08/09 overall utility consumption had been reduced by 13%. Current projection is the campus will achieve its goal of a 15% reduction in energy consumption from the FY 03/04 baseline by the end of FY 09/10.

In pursuit of the goal of a 15% overall reduction in utility consumption, SF State has received external funding of \$1,593,554 in Utility incentives for energy projects during the past six years. Collectively, these projects have reduced annual electrical and gas consumption by 4,903,538 kWh and 241,243 therms with a commensurate reduction of 3,323 metric tons of CO<sub>2</sub> gas emissions, and \$595,958 in avoided utility costs.

#### **Initiatives**

In addition to reducing overall consumption by 15%, the University is continuing to pursue the following energy efficiency/conservation initiatives and opportunities to continue to reduce or offset increasing energy consumption due to increasing enrollment, increased space utilization and load growth.

#### **Lighting Conversion**

A Lighting Conversion project is currently underway in seven buildings to install occupancy sensors and re-lamping from 30 watt to 25 watt fluorescent tubes. This project is projected to reduce electrical consumption by 874,467 kWh annually with a commensurate reduction of 319 metric tons of CO<sub>2</sub> gas emissions and \$96,191 in avoided utility costs.

#### **Monitoring Based Commissioning (MBCx) Program**

SF State currently has three buildings under a monitoring based commissioning program. This program is designed to continually monitor both utility consumption and building performance parameters to assure the buildings adequately support academic programs and operate at maximum efficiency. It is the goal of the University to extend this program to all major campus facilities.

#### **Utility Metering and Management**

Electrical and thermal metering has been installed on all major campus buildings to enable monitoring of energy consumption patterns in order to optimize building operation while minimizing energy consumption. The utility metering provides essential data to support building Monitoring Based Commissioning and efficient operation of the Central Plant.

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<sup>7</sup> <http://www.calstate.edu/EO/EO-987.html>

**Lighting Efficiencies**

A study will be undertaken to evaluate the viability and economics of converting exterior lighting to high efficiency LED lighting. Other studies will be performed to identify and evaluate the feasibility and economics of daylight harvesting for classrooms and office areas.

**Modernizing Building Management Systems and Renovation of Primary HVAC Systems**

By the end of FY10/11 all major campus buildings will have undergone a renovation of the primary building HVAC systems and replacement of obsolete Building Management Systems with modern, Direct Digital Control systems. This will enable buildings to operate much more efficiently and, by utilizing the newly installed Building Management Systems, optimize the scheduling of campus facilities by individual space use.

**Optimizing Central Plant Efficiencies**

Currently, the University is developing a project to evaluate the Central Plant controls and operating strategies. The objective of this project will be to optimize the operating efficiency of the campus Central Plant with a goal of reducing the annual natural gas consumption by 5%.

## RENEWABLE / CLEAN ENERGY

### Goal: Increase renewable energy procurement to a minimum of 33% by 2020

#### Background

SF State has identified a number of renewable and clean energy options in order to reduce emissions related to energy usage. While it is important to invest in renewable and clean energy projects, they are often costly options that take a large investment from the University. At this point, SF State will focus on energy efficiency projects in order to incur significant cost savings over the long run. The avoided costs from energy efficiency projects have been invested back into more costly renewable projects that tend to have longer paybacks.

#### Initiatives

##### 1. Fuel Cell Complex with Pacific Gas & Electric

In collaboration with Pacific Gas and Electric (PG&E), SF State proposes to enter into a 10 year, Fuel Cell Lease Agreement, which will allow PG&E to install, operate and maintain a 1.6MW fuel cell complex on campus. The proposed fuel cell facility will consist of a 1.4MW molten carbonate fuel cell and two (2) 100KW solid oxide fuel cells. Annually, this project is projected to save approximately 230,000 therms with a commensurate reduction of 1,217 metric tons of CO<sub>2</sub> gas emissions, and an annual cost avoidance of \$223,560.

The fuel cell will generate power directly to PG&E's power grid for the purpose of demonstrating and advancing fuel cell technologies for distributive generation. The waste heat from the fuel cell will be utilized by the campus to serve the campus's year-round thermal load. The waste process water from the fuel cell will be used for irrigating adjacent athletic fields.

This proposed, collaborative project includes a comprehensive educational outreach component that demonstrates the use of fuel cells for distributive power generation. Locating the fuel cell complex on the campus will offer a multitude of instructional, collaborative and research opportunities for faculty and students to study and experience the actual application of Fuel Cell Technology. By making the fuel cell complex available both virtually and physically, the project will also serve as a valuable resource for the Bay Area's educational, technological and scientific communities.

Overall the proposed Fuel Cell Collaborative promises to be a successful, mutually beneficial, public-private partnership. It will supply sustainable, clean, green, highly efficient power and heat generation while serving as an effective educational and research resource.

##### 2. Shell Energy Utility Contract and Matching California State Renewable Portfolio Standards

Since the signing of State Bill 107 in 2006, the state of California set strict Renewable Portfolio Standards for all energy providers, including Direct Access Agreement Energy Service Providers. According to the California Statute Section 25740 from State Bill 107 "It is the intent of the Legislature in establishing this program, to increase the amount of electricity generated from eligible renewable energy resources per year, so that it equals at least 20 percent of total retail sales of electricity in California per year by December 31, 2010."<sup>8</sup> This bill is supported by The California Public Utilities Commission (CPUC) and the California Energy Commission (Energy Commission) since it supports the California Air Resources Board's (ARB) Assembly Bill (AB) 32 Scoping Plan.

Through a Direct Access Agreement between the Chancellor's Office and Shell Energy, SF State has signed a three year utility contract. Shell Energy has guaranteed the California State University (CSU)

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<sup>8</sup> <http://www.cpuc.ca.gov/PUC/energy/Renewables/>

System that it will do its best to meet the CA State requirements. Shell Energy is not only responsible for delivering 20% renewable energy by the end of 2010 but the Renewable Portfolio Standards also mandate 33% by 2030. If Shell Energy does not meet these requirements, it is subject to a \$.05/kWh fine up to \$25 million dollars by the CPUC. The renewable requirements are written into Exhibit Z of the CSU contract with Shell Energy:

1.6 Renewable Energy. Contractor shall secure for University the regulatory minimum renewable energy content during the Delivery Period under the terms and conditions set forth herein. University shall advise Contractor of University’s minimum renewable energy content and any changes to that minimum requirement. Contractor shall be responsible for the costs associated with meeting the regulatory minimum renewable content to serve the Accounts in instances where University has executed an Exhibit T. Contractor shall charge the University a market based amount for meeting the regulatory minimum renewable content in instances where University has executed an Exhibit Z. The renewable energy must come from a technology that meets the definition of an “eligible renewable energy resource” in the California RPS and University shall retain any right to the credit for or the use of the incremental renewable energy component specified in Exhibit T and/or Exhibit Z. The renewable energy resource must be connected to the WECC transmission system. REC’s may be used to meet any portion of the renewable content required of this Agreement as long as they meet the above criteria and are “CEC” certified.

**3. Photovoltaic Solar Array**

SF State will endeavor to generate 12% of campus electrical consumption from solar energy. Solar panels would be installed on all available campus roofs and solar canopies on the top deck of the Parking structure. This project would be accomplished under the State of California, Department of General Services, Phase III, state-wide, solar contract offering. The project is projected to start in FY 11/12 and to generate approximately 4 million kWh annually with a commensurate reduction of 1462 metric tons of CO2 gas emissions, and \$120,000 in avoided utility costs.

**4. Renewable Energy Credits**

The University is committed to finding local and sustainable solutions to reducing its greenhouse gas emissions. The University will only purchase Renewable Energy Credits (RECs) once all other options have been exhausted. RECs would allow the University to green its fuel mix while keeping the cost to a minimum. Since RECs can be purchased from anywhere in the country they are less expensive than what is available to California Utilities. RECs have also significantly decreased in price over the past few years. All RECs are third party certified and support the renewable energy market in the United States.

SF State has received pricing options from Bonneville Energy Foundation (BEF). BEF RECs are Green-e® Energy Certified. The University is committed to prioritizing on-campus and local emission reducing projects and will revisit the idea of purchasing RECs closer to the 2020 deadline. Below is an example if the University decided to offset its electrical use, which averages 31 million kWh a year.

Yearly price to offset emissions related to purchased electricity (kWh):

REC Pricing for SF State Electricity Usage	
<b>Duration of Agreement:</b>	One Year
<b>Total Amount of RECs to be Purchased:</b>	31,000 Total
<b>Total Renewable Energy Equivalent:</b>	31 million kWh
<b>Unit price per REC:</b>	\$3.25
<b>Total Amount to be paid to BEF:</b>	\$100,750

## GREEN BUILDING

### **Goal: Build to LEED Gold standards or higher and 15% above Title 24 Energy Efficiency Standards**

#### **Background**

As recognized by the Environmental Protection Agency (EPA), the American Institute of Architects (AIA) and California State University (CSU), buildings account for nearly 40% of the primary energy consumed in the US. For SF State, emissions from the heating and electricity use of buildings accounts for 47% of all emissions. This amount includes emissions due to the use of natural gas in the central plant and boilers and to the purchase of electricity. The AIA goes on to note that green buildings help reduce the nation's excessive thirst for fossil fuels, protect the environment, provide natural light to occupants, improve indoor air quality, and create superior work and learning environments. Green learning environments present a direct benefit to students and faculty, while also providing an important benefit to society at large. They promote healthy, high-achieving students who will become future advocates for green living, as this generation learns the importance of building for a sustainable future.

#### **Initiatives**

CSU Executive Order 987, the campus master plan and California Title 24 require that SF State incorporate energy efficiency and sustainability in all capital and renovation projects within budgetary constraints as follows:

##### **1. New buildings designed and built to be at least 15% more efficient than CA Title 24 Energy Code requirements**

Acknowledging the importance of energy efficiency, both from an environmental responsibility and an operating expense standpoint, the December 2009 update to CSU Executive Order 987 requires that as a minimum, new capital projects exceed the energy standards of the California Building Code, Title 24, by 15% and major renovations by 7.5% for buildings not connected to a central chiller plant.

##### **2. New buildings, except laboratories, designed and built to LEED Gold**

The US Green Building Council's (USGBC) LEED rating system for sustainable design is an accepted benchmark for energy efficiency. San Francisco State University's goal is to have capital projects, with the exception of laboratories, meet the LEED point requirements for LEED Gold.

##### **3. New laboratories designed and built to LEED Certified**

Laboratories present a challenge to energy efficiency primarily because of the volume of air required to be exhausted through fume hoods. However, new fume hood technology utilizing variable speed fans and digital controls make complying with LEED Certified an achievable goal in our science buildings.

##### **4. Major Capital renovation projects designed and built to LEED Commercial Interior Certified**

The USGBC provides a rating system that addresses interior design that will serve as a benchmark for interior renovation projects exceeding \$400,000. The University goal is to have such projects designed to the LEED Certified standard for commercial interiors.

##### **5. Emphasize passive design approaches over active systems to achieve energy efficiency**

In order to minimize construction and long-term maintenance costs, SF State will look first to passive energy efficiency strategies that utilize building material assemblies and construction techniques to obtain a sustainable building. Building orientation, site design and landscaping, day-lighting, thermal breaks and barriers are all approaches that do not necessarily require operating equipment to deliver increased efficiency.

## **6. Develop design guidelines that emphasize sustainability**

The Capital Planning Design & Construction Department is developing guidelines for design teams specifically geared to the University's location, size, maintenance procedures, and existing infrastructure. These guidelines will include specific recommendations for the design and specification of energy-efficient materials and assemblies. They will include the following:

- a. Cool roof membranes
- b. Thermal break and reduced infiltration glazing systems
- c. Radiant barrier insulation materials
- d. Building materials with recycled content and recycling potential
- e. Locally sourced materials
- f. Lighting and thermal comfort controls
- g. Operable windows for fresh air
- h. Daylight orientation and plan configuration
- i. Natural stormwater management
- j. Permeable paving
- k. Drought-tolerant landscape

## **7. Develop enhanced commissioning standards as part of consultant contracts to ensure buildings are operating efficiently when they are turned over to the University**

The LEED rating system provides points for enhanced commissioning assuring that following the completion of construction, the heating, ventilating and lighting control systems are operating to design specification requirements and will do so over an extended period of time. The University construction guidelines will require that enhanced commissioning will be included in major capital construction projects.

## ACADEMICS

### **Goal: Add sustainability literacy to the General Education Requirements and continue to involve students in the steps of the Presidents' Climate Commitment**

#### **Background**

While these efforts may not have a direct effect on lowering emissions there are longer term benefits to creating a more environmentally conscious student body. The Academic Sub-Committee is charged with working with faculty and students to increase awareness of and stimulate discussion on ideas to improve the future environmental sustainability of the campus community. The Subcommittee's focus is on curriculum and student club activities.

The committee members have supported and participated in national climate change awareness raising and action initiatives like "Focus the Nation" and the "National Teach-In on Global Warming." During *2009 Sustainable SF State Week*, members coordinated and participated in panel discussions, clothing drives and a variety of promotional activities to raise the awareness and the involvement of more students and faculty in sustainability-related campus initiatives.

#### **Initiatives**

##### **1. Inventory Sustainability Classes**

SF State has a diverse selection of courses and programs available that fall within an umbrella of environmental sustainability. The Academic Sub-Committee will inventory these courses and programs so that the campus community better understands these existing (and future) in-class activities. This inventory will be posted to the Sustainable SF State website.

##### **2. Student Involvement in the Presidents' Climate Commitment Process**

Students will continue to be included in completing greenhouse gas inventories and campus environmental audits as student or class projects. These and related activities that are developed in academic classes and student clubs will be posted on the website.

##### **3. Sustainability Speaker Series**

Faculty will invite experts on climate change and sustainability to the campus on an annual basis to be part of a speaker series that will be developed into short films and will be posted on the sustainability website to be accessible to all. Faculty will heighten awareness on campus and in the community regarding:

- a. the need for action on climate change and on other issues related to environmental sustainability
- b. past and ongoing campus sustainability and climate initiatives
- c. the sustainability and climate challenges yet to be addressed and their possible solutions

##### **4. Sustainability Graduation Requirement**

Developing a sustainability graduation requirement is another goal of the Academic Committee. Each student earning a baccalaureate degree would be required to complete at least one course that would examine some aspect of environmental sustainability. The perspective would be from social sciences, natural sciences, arts, humanities, business, etc.

The Academic Sub-Committee is pursuing these goals in order to foster increased understanding of these issues and possible solutions so that the graduating students will be able to lead efforts to address the global climate change crisis and to help move society to a more sustainable future.

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<sup>9</sup> [www.sfsu.edu/~sustain](http://www.sfsu.edu/~sustain)

## WASTE & COMPOST

**Goal: Zero waste by 2020; increase all processes that promote environmental integrity through increased community engagement while decreasing resource use by 10%**

### Background

The University will work toward the goal of effectively producing zero waste by 2020. SF State has been in a leadership role in the waste management field. Over the past five years, the University has surpassed the levels set forth in State Bill 75 which mandates a 50% diversion of waste from the landfill. In 2008, the University reported a diversion rate of 76% in its annual report to the California Integrated Waste Management Board.

Due to an expanding composting program that is supported by the City and County of San Francisco and Recology Waste Haulers, SF State has doubled its composting program over the past four years. In 2006, the ECO Student Environmental Group spearheaded a composting program. Since then, composting has been added to the Cesar Chavez Student Center, Residential Housing, the Vista Room Restaurant, the Dining Center and all kitchens on campus.

Adding new waste streams has led to the implementation of a holistically orientated education of university students, staff and faculty. At the Student Center a Sustainable Initiatives Program launched in 2009. The program involves policy making, signage, workshops, documentary screenings, volunteer and internship programs, waste diversion training, and a Sustainable Community Member of the Month Award.

### Initiatives

In view of the goal to reach zero waste by 2020, the University will focus on further waste reduction policies, programs, events and education. Through consistent auditing and analyzing of the waste stream, the University will be able to track increased recycling rates. Waste audits also give information about which items are not recyclable or compostable and need to be removed, banned or replaced from the campus.

#### 1. Minimize Waste

- a. Optimize waste sorting for campus users to reduce contamination
- b. Implement a compostable foodware policy that bans all products that go to the landfill
- c. Implement low greenwaste plantings
- d. Increase Construction and Demolition Waste through better building material selection
- e. Evaluate effect of waste container location, signage, and physical configuration on disposal sorting and waste tonnage

#### 2. Increase Engagement and Education

- a. Showcase integrated waste management at campus-wide events
- b. Hold annual workshops for local waste managers on opportunities for collective standards
- c. Monthly environmental documentary screenings with expert panelists and open forums
- d. Paper reduction/deforestation education campaigns
- e. E-Waste kiosks and waste diversion videos at recycle/trash/compost stations

## WATER

**Goal: Increase all processes that promote environmental integrity through increased community engagement while decreasing resource use by 10%**

### Background

The consumption of water, whether for industrial or domestic purposes, increases greenhouse gas emissions as a result of non-renewable energy use for treatment, conveyance, and applicative uses. These significant impacts are often overlooked and are the impetus for actualizing water conservation throughout campus facilities and grounds in order to help mitigate the effects of climate change.

In a National Resources Defense Council (NRDC) report entitled “Energy Down the Drain: The Hidden Costs of California’s Water Supply,” the NRDC points to the fact that water utilities use large amounts of energy to treat and deliver water, while consumers use more energy to heat, cool, and use water on site. According to the NRDC, the California State Water Project is the single largest consumer of energy in California.<sup>10</sup> The 2005 Integrated Energy Policy Report by the California Energy Commission states that more than 19% of electricity, 32% of non-power plant natural gas, and 100 million gallons of diesel fuel are used to treat, deliver, and heat water in California each year.<sup>11</sup>

The NRDC’s report outlines two key points of consideration for SF State’s emissions:

- a. Water conservation lowers energy use and energy bills
- b. Water recycling is a highly energy efficient water source

The report makes the following recommendations for decision makers:

- a. Coordinate energy and water use policy
- b. Water management plans should include associated energy use and costs
- c. Require water monitoring and measurement
- d. Implement measures to ensure conservation savings

These findings build upon numerous other scientific and policy oriented publications that demonstrate the importance and effectiveness of water conservation as it applies to energy use, climate change, and urban planning. With that context in mind, SF State seeks to reduce emissions and mitigate the effects of climate change in accordance with California’s Global Warming Solutions Act of 2006 (AB 32) through the implementation of its Campus Water Resources Management Plan.

### Initiatives

#### 1. San Francisco State University Campus Water Resources Management Plan

To help steward a greater respect, reverence, and conservation-oriented relationship with water, the University initiated a Water Resources Management Plan entitled ‘Respecting Water’ in 2009. This plan is based on a holistic vision of integrating water use, reuse, and groundwater infiltration on campus. The objective is to demonstrate to the campus community, best practices for domestic, institutional, and regional water conservation. The plan includes improving facility processes, hands-on learning through volunteer projects, holding an annual water conservation conference, the establishment of a institutional water consumers working group to share and report on best practices, and an informational website and outreach program.

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<sup>10</sup> NRDC – “Energy Down the Drain” <http://www.nrdc.org/water/conservation/edrain/contents.asp>

<sup>11</sup> CEC – “2005 Integrated Energy Policy Report” [http://www.energy.ca.gov/2005\\_energy/policy/](http://www.energy.ca.gov/2005_energy/policy/)

Current Projects of 'Respecting Water' include:

- a. 12,000 gallon capacity rain water harvesting system utilizing solar power for irrigation
- b. Rain gardens that divert 35,000 gallons of stormwater from storm drains into the ground
- c. Irrigation analysis for selected landscaped grounds areas reduced water use by 50% of base
- d. Over 30,000 sq feet of landscape planted with native, drought tolerant plants that reduce the need for water as well as other GHG emitted inputs (e.g. pesticides, fertilizers, herbicides)
- e. Waterless Urinal Pilot Program, 1.6 GPF toilet conversion and sink aerator installation
- f. Reduced campus domestic hot water temperature to 100 F to promote conservation of energy and water

## **2. Initiatives for the next 10 years**

### **A. Outdoor Use**

- a. Implement best practices for routine water conservation in all sprinkler irrigation campus wide
- b. Convert 10% of lawn square footage to native, drought tolerant species each year
- c. Increase groundwater infiltration with more rain gardens, swales, and bioinfiltration basins
- d. Increase by 10% rainwater collection by incorporating rainwater and recycled water main line segments into campus utility trench installations, utilize rainwater for equipment cleaning operations
- e. Research: zero irrigation options for landscape plantings, pollution control measures for runoff, the feasibility of large scale fog catchers and condensate collectors, ground water hydrology on campus for optimizing recharge, options to connect with nearby City recycled tertiary water supplies, means of reducing runoff coefficients of campus landscape, roofs, and paving, and means of using water power to generate electricity and contribute to net emissions reductions.

### **B. Indoor Use**

- a. Install low-flow water appliances and metering devices
- b. Insulate water heating and cooling pipes throughout campus
- c. Additional leak detection and correction for heating and industrial water systems
- d. Research: conservation and reuse options for all industrial and laboratory water discharge, code requirements and implementation options for grey water use throughout campus facilities, use of rainwater pump stations to operate restroom toilet banks and greenhouse irrigation, potential connection points for industrial or restroom uses to tertiary water supplies, and greenhouse gas impact of conversion to on-demand water heaters

### **C. Education & Awareness**

- a. Water conservation awareness signage throughout campus on end use devices
- b. Integrate student/faculty academic research on campus water resource conservation projects
- c. Implement public web access to GIS modeling for tracking campus water resource management
- d. Collaborate with graduate student research on SF State resource conservation issues
- e. Establish a water resources working group and sponsor an annual water conservation conference

## PROCUREMENT

**Goal: 90% of all office paper purchases will be 100% recycled content; 10% decrease in the amount of office paper purchased by 2020**

### Background

SF State is increasing its sustainable procurement practices through active participation in the California State University Buy Recycled program. This includes encouraging campus users to buy recycled content products when available and obtaining content certifications from product vendors. In FY 08-09, 88% of the purchases in reportable categories were recycled content products. Special attention has been directed at the office supply contract. SF State has worked with its contract vendor to automatically direct orders for copy paper and other paper based office supplies to product codes for recycled content alternatives. In addition, during FY 08-09 the University worked with its reprographics equipment vendor to refresh the University's fleet of 200 photocopiers, updating them to more energy efficient equipment.

### Initiatives

Going forward, SF State will continue working with its office supply contractor to promote sustainability through the following programs/initiatives:

#### **1. Increase Recycled Content Purchases**

Increase the utilization of recycled content products through the hosting of product fairs and switching to 100% recycled content copy paper.

#### **2. Reduce Cardboard Packaging**

Implement a program where office products would be delivered in reusable plastic bins instead of cardboard boxes.

#### **3. Reduce Delivery Schedule of Office Supplies**

Reduce the current daily delivery schedule to three days/week in order to minimize fuel consumption and emissions.

#### **4. Consolidate and Update Reprographics Equipment**

Update copier and reprographics equipment, specifically seeking to replace standalone printers and faxes with consolidated and more efficient multifunctional devices.

#### **5. Re-Open the SWAP Shop**

A permanent space has been created to house the SWAP Shop property re-utilization program. While employee attrition and budget shortfalls have affected the University's ability to staff the program in FY 09-10, the Property Office remains committed to its ongoing objective to promote equipment reuse and redistribution on campus. In addition, the Property Office will continue to play a role in waste stream diversion through facilitating surplus auction and/or donations of still useful equipment.

## FOOD SERVICES

**Goal: Decrease food waste by 10%; increase local food purchases by 10% and increase energy efficiency by 30% by 2020**

### Background

Chartwells is a private company that runs the dining centers on SF State's campus. Chartwells is creating sustainable and socially just dining and catering options for the campus community. Currently, Chartwells is reducing its waste through a TrimTrax Program, implementing composting, leading staff recycling and composting training, introducing reusable to-go containers, and employing sustainable fish and farm purchasing guidelines.

### Initiatives

#### 1. Food Waste Reduction

Food waste throughout the food system is responsible for an enormous amount of emissions. Organic matter, especially food scraps, is a big contributor to methane gas formation in landfills. Methane is a greenhouse gas 23 times more potent than carbon dioxide in trapping heat close to the earth's surface. Over the past two years, Chartwells has developed a program called TrimTrax. This is a food waste reduction program and green initiative that noticeably cuts operating costs as well as waste sent to landfills. In the past year, Chartwells has reduced food waste by 2% from the previous year and the goal is to continually reduce food waste 2% each year through 2020. TrimTrax is designed to be implemented and executed by staff in order to increase engagement and operational efficiency, as well as create awareness regarding the environmental impact of food waste. The program tracks and measures food waste in the following categories:

- Production waste (food thrown out prior to cooking/service such as vegetable peelings)
- Over produced (unusable food that has already gone through production)
- Unused/out-of-date inventory (expired, spoiled or overcooked)

#### 2. Offer Fair Trade and Rainforest Alliance Certified Coffee

Coffee production can have a tremendous impact on the social and environmental well being of the countries where it is produced. Responsible production methods are certified in a variety of ways through a multitude of organic producers/farms such as Fair Trade, Rainforest Alliance, Shade Grown, Bird Friendly, Coffee and Farmer Equity (C.A.F.E.) Practices. Currently, Chartwells is purchasing over 10 thousand pounds of sustainable certified coffee each year.

#### 3. Implement Reusable To-Go Containers

In 2010, Chartwells initiated its reusable To-Go Container program at City Eats Dining Center. Formerly, residents were offered to-go containers made out of compostable materials. Even though Chartwells was proud to offer compostable foodware, there was a large increase in trash and composting due to this program. Chartwells reevaluated its options and decided to invest in reusable to-go ware. Since the inception of the program in January 2010, Chartwells has eliminated the 56,000 to-go containers that would have otherwise gone to the landfill in just three months time.

Café in the Park, the smaller dining center, has also seen a steep decrease in waste over the last year when it replaced its bottled soda and water program with a fountain-only option. Since August 2009, Chartwells avoided sending over 90,000 bottles to the landfill.

#### **4. Adapt the Monterey Bay Aquarium Seafood Watch Program**

Chartwells is committed to protecting the threatened global fish supply. In collaboration with the Monterey Bay Aquarium Seafood Watch program, a landmark purchasing policy was established in 2006 that removes unsustainable wild and farmed seafood from the menus. Below are details of this initiative:

- Chartwells implemented a sustainable seafood policy on March 1, 2006 in partnership with Seafood Watch.
- City Eats Dining Center has replaced Atlantic cod, a species that leading conservationists have recommended consumers avoid, with the more environmentally-sound Pacific cod, Pollock and other alternatives.
- Chartwells also plans to seek ways to decrease its use of shrimp and salmon that are farmed in an unsustainable manner. These two species are extremely popular with consumers but are of concern to environmentalists.
- Chartwells has eliminated all other “Avoid” species based on the Monterey Bay Aquarium's Seafood Watch list, and increased its use of “Best Choices”.

#### **5. Support Local Family Farms**

In support of its companywide commitment to sustainability and wellness, Chartwells has been making strides to establish relationships with local farmers and produce distributors. Chartwells defines “local” as any farm within a 150 mile radius from the campus.

#### **6. Energy Efficient Kitchens**

By 2012, Chartwells will replace all out-dated and inefficient kitchen equipment (ovens, refrigerators, stoves, etc.) with Energy Star equipment. A 30% reduction of energy consumption is anticipated.

## IMPLEMENTATION

The University's next step will be to prioritize, attach timelines and assign responsibility to the initiatives outlined herein. The Sustainability Committee, with support from the Sustainability Programs Manager, will maintain overall responsibility for implementing this plan in collaboration with the Transportation Committee, the Energy and Academic Sub-Committees and many campus departments. These groups will continue to meet regularly to implement the CAP.

With this Climate Action Plan, the University completes its first work cycle to fulfill the American College and University Presidents' Climate Commitment. This is an extensive plan rooted in holistic sustainability and much work lies ahead. Collaboration from all aspects of the campus community will be required. Ultimately this process will advance San Francisco State University's goal to become an international exemplar of sustainability among urban, public institutions of higher education.