

## Sustainability Task Force Report



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## **Sustainability Task Force Members**

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## Executive Summary

In recent years, the challenges of diminishing global resources and current and future climate change have become part of everyone's consciousness. Creating and promoting a culture of sustainability has emerged as an important and growing part of the educational and outreach missions of San Jose State University and is one of President Whitmore's key goals for our campus. The Sustainability Task Force was charged with: 1) assessing best practices in higher education regarding sustainability, and to survey current sustainability practices, educational programs and research at SJSU, and 2) making recommendations to the Academic Senate and the President to build SJSU's sustainability programs and position SJSU to be a leader among universities in sustainability. Here we summarize our general recommendations for embedding sustainable practices in the culture of the university as well as our list of specific, top-priority action items to undertake relatively quickly.

### General Policy Recommendations:

1. Establish a Sustainability Council as a permanent committee of the Academic Senate, charged with establishing sustainability goals, evaluating campus practices to promote sustainability, and recommending new goals, actions, and policies on an annual basis.
2. Fund a full-time Sustainability Director to oversee the implementation of sustainability directives and to seek external funding and community and corporate partners for sustainability initiatives. The sustainability director should have ties to both the academic and operational sides of the university and report at a high level to each.
3. Establish a Sustainability Faculty-In-Residence in each college, and parallel positions within non-academic units.
4. Use expert panels of SJSU faculty and external experts to bring information on specific topics to the Sustainability Council and to engage faculty and students in research, community service, and internship opportunities focused on sustainable themes.
5. Establish a Sustainability Research Institute as an Organizational Research and Teaching Unit (ORTU) that will serve as a vehicle to promote interdisciplinary research in areas such as environmental policy, sustainable practices in industry, agriculture, and transportation, and that will serve as a nexus for the ongoing creation of curricula and experiential educational experiences aligned along sustainable themes.
6. Regularly conduct environmental audits of university operations to assess sustainability of energy and materials use, lower costs, and provide direction for new operational policies.
7. Promote full implementation of existing CSU and SJSU sustainability policies such as CSU Executive Order EO 987 and Associated Students Board of Directors Resolution 08-09/02.
8. Sign the Talloires Declaration and the American College and University Presidents Climate Commitment.
9. Identify resources to support programs to develop campus awareness on sustainability practices and ways to become involved. A fully functional and regularly maintained sustainability web site would be an integral part of this effort.

10. Promote continued collaboration on sustainability focused curriculum including interdisciplinary courses, minors, and degree programs.
11. Establish an interdisciplinary environmental/sustainability literacy requirement for all undergraduate students, requiring students to take at least one Core GE or SJSU studies course with sustainability as a central course focus.
12. Establish certificates, professional masters degrees, and other professional training opportunities geared to the emerging green enterprise work force of our region.
13. Partner with the City of San Jose, other local municipalities, and regional partners to educate the public and promote a sustainable society in Silicon Valley.
14. Hold “Earth Symposia” at regular intervals as appropriate, to share information on sustainability practices among CSU campuses and other California universities.

Specific, Top-priority Action Items:

*Facilities*

1. Work toward maximizing energy conservation efforts.
2. Establish an energy plan for campus operations to achieve a “carbon neutral” campus.
3. Implement green building design guidelines for all aspects of building and facility design and incorporate sustainability principles concretely into SJSU Master plan.
4. Develop guidelines for a sustainable land use ethic for campus lands, including water conservation measures and introduction of drought tolerant and native plants for landscaping.
5. Design and retrofit buildings as possible by incorporating, as appropriate, gray water systems, solar and sustainable energy production, and zero waste.

*Student, Faculty, and Staff Awareness/Behavioral Change*

1. Ensure availability of organic and/or locally grown food on campus.
2. Support and promote organic gardens on campus for food and hands-on learning.
3. Promote the use of non-personal car transportation modes.
  - a. Develop a better bike-oriented infrastructure.
  - b. Encourage students, staff and faculty to use mass transportation options promoted by Transportation Solutions.
4. Reduce solid waste generation on campus, especially throw-away items such as plastic utensils, polystyrene containers, and one-use plastic water bottles.
5. Require students, faculty, and staff to take an on-line tutorial on sustainable practices before they receive specific privileges such as parking passes.
6. Promote the use of previously used paper, use both sides of paper, and move to paperless communication whenever possible.
7. Establish annual sustainability awards for faculty, staff, and students.
8. Incorporate readings involving sustainability into the campus reading program.
9. Use the Martin Luther King Library as a center for sustainability talks and information for the campus and city.
10. Recognize sustainability projects, research, curriculum development and awards as activities that benefit faculty in the RTP process.

*Procurement (Administration and Finance)*

1. Enforce and expand Environmental Procurement Procedures.
2. Eliminate the purchase of virgin paper.
2. Establish and enforce sustainability guidelines for purchase of consumables and equipment.

*Curriculum and Research*

1. Identify and promote strategic, interdisciplinary multi-year research and project grants for sustainability.
2. Develop joint projects and programs with other universities, community colleges and K-12 schools.
3. Where appropriate, promote online classes and other modes of teaching that do not always require travel to campus as well as telecommuting for staff.
5. Identify and promote service learning and internships that address regional sustainability issues.
6. Secure funding for scholarships for students in sustainability-focused degrees and programs.

## **Background to the Sustainability Task Force Report**

Sustainability was defined by the World Commission on Environment and Development (1987) as activity that “meets the needs of the present without compromising the ability of future generations to meet their own needs”. However, the human enterprise is currently not sustainable. According to the Living Planet Report 2008, produced by the World Wildlife Fund, Zoological Society of London and the Global Footprint Network, our rate of resource use is 31% greater than the earth’s productivity. We are exceeding the earth’s ability to meet our energy, food, and water demands. A few results of this ecological overshoot are the current species extinction crisis, our reliance on non-renewable fuels, destruction of the earth’s rainforests, and the highest levels of CO<sub>2</sub> in the atmosphere in the last 650,000 years. To support the human population and the planetary processes on which we depend, we must significantly change the way we use the earth’s resources. If we do not, we risk leaving our children a world that will not support them; we risk resource and biosphere collapse and, perhaps, a decline of the human population with it. Some researchers, such as David Ehrenfeld (Ehrenfeld, D. 2005. The Environmental Limits to Globalization. Conservation Biology 19:318-326) suggest that if planetary support systems collapse, the institutions, societies, and nations that will fair the best are those that have found ways to use the earth’s resources sustainably.

To achieve sustainability, humans must use resources no faster than they are generated by the earth’s systems. Meeting this standard requires depending on renewable energy sources, reusing all materials so that there is no waste, and using all resources only as fast as they are naturally renewed. Inherently, sustainability solutions must integrate and address the “triple bottom line”—ecology, economics and equity. For example, since approximately 50% of the human ecological footprint is from energy, reducing our energy use and moving to renewable and ecologically-benign energy sources is critical for reducing greenhouse gas emissions. Americans waste approximately 50% of the energy we use, so becoming efficient means reducing energy costs. Reducing energy needs and moving to renewables eliminates the need for fossil fuel driven power plants that degrade the environment of local communities. Achieving sustainable use of resources is the only way to ensure stable and healthy economies and societies.

In the last decade, universities and colleges have recognized they play a key role in leading society to a sustainable future. Annually, American colleges and universities serve 14.5 million students, people who will become our next leaders. Universities have an obligation to ensure their students are environmentally literate and understand their responsibilities in helping to create a sustainable society. Universities also must lead by example, greening all aspects of their operations. The Association for the Advancement of Sustainability in Higher Education (AASHE) lists almost 90 universities nationwide with varying levels of sustainability efforts. Most of these have campus sustainability directors and a range of programs to reduce energy use and materials waste. One of the most extensive programs is that at Arizona State University (ASU), which has a Global Institute for Sustainability with its own green building and a School of Sustainability. ASU policies and activities seek to promote sustainability in campus operations (energy, waste, transportation, buildings, food), curriculum, research, campus culture, and the community. Academic sustainability leaders must address all facets of their institution.

The CSU system and individual campuses have taken substantial steps recently to promote system-wide sustainability. Most notable is Executive Order No. 987: Policy Statement on Energy Conservation, Sustainable Building Practices, and Physical Plant Management for the California State University, issued by the Chancellor on August 2, 2006. EO 987 “reaffirms the

need to conserve energy in order to achieve the goal originally set in 2001 and reevaluated in 2005. Our new goal is to reduce consumption by 15% by the end of FY 2009/10, as compared to 2003/04.” The EO states that, “The CSU shall develop a strategic plan for energy procurement and production to reduce energy capacity requirements from the electricity grid, and to promote energy independence....” And it states, “The CSU will endeavor to meet or exceed the State of California and California Public Utilities Commission Renewable Portfolio Standard (RPS) that sets a goal of procuring 20% of its electricity needs from renewable sources by 2010 subject to the constraints of program needs and standard budget parameters.” The EO also sets goals and lists specific actions to achieve energy conservation, meet sustainable building practices, and achieve sustainable physical plant operation. A CSU-level Sustainability Advisory Committee was initiated to implement policy on energy conservation, sustainable building practices, and physical plant management. At the CSU-level, there is a strong commitment to addressing climate change by reducing greenhouse gasses, conserving energy and switching to renewable energy resources, green building, and waste reduction. For example, as a member of the Climate Action Registry, the CSU published the Emissions Inventory for CO<sub>2</sub> for 2006 for the California State University System, an audit of the CO<sub>2</sub> output for the entire CSU ([http://www.calstate.edu/cpdc/peu/CSU\\_CO2\\_Emissions\\_Report.pdf](http://www.calstate.edu/cpdc/peu/CSU_CO2_Emissions_Report.pdf)). The CSU maintains a sustainability website at <http://www.calstate.edu/cpdc/sustainability/> that describes CSU-wide policies and activities.

Many of universities in the CSU system are developing and implementing their own sustainability policies; some campuses are more proactive than others. The CSU Systemwide Sustainability Summary (<http://www.sjsu.edu/sustainability/docs/SSS.pdf>) shows some of the activities at the various campuses. This table and a study done by students in the Spring 2008 Environmental Studies Senior Seminar (EnvS 198) showed that Chico State, Humboldt State, Sonoma State, and Cal Poly SLO typically had the best sustainability records with respect to enacted campus policies, teaching/research/curricular offerings, and operations and green building. Overall, SJSU was in the middle of CSU pack, doing relatively well with respect to curriculum and moderately well on operations. Some high points at SJSU are Facilities’ energy conservation efforts and high materials diversion rates (87% last year), the large number of environmental classes offered through Environmental Studies (established in 1970, it was one of the first such departments in the US), and new cross-curricular minors. But, SJSU lags in campus sustainability policies, which are essential to driving a campus-wide sustainability.

Recognizing SJSU’s need to move toward sustainability and supporting President Whitmore’s campus sustainability objective, the Academic Senate created the Task Force on Sustainability (March 10, 2008 meeting) to survey sustainability efforts at SJSU and other universities, study SJSU’s sustainability practices and issues, and make recommendations concerning sustainability at SJSU. The Task Force is a step toward “making sustainability a central concern of our institution”. We reviewed information on the operations, curriculum and research at SJSU and evaluated the key aspects of sustainability practices at other universities that make them successful. Based on this information, the Sustainability Task Force offers this report to the Academic Senate. We make recommendations on an organizational structure and key activities to be put into a campus-wide Sustainability Policy—a policy that will allow SJSU to set, implement and assess sustainability goals and policies for the long term and infuse the campus with a culture of sustainability.

These recommendations will help ensure that our university is a valued and effective partner in Silicon Valley and a sustainability leader among academic institutions.

## **Recommendations for San Jose State University's Sustainability Policy**

Purpose of a San Jose State University Sustainability Policy: Provide a framework that will allow San Jose State University to develop and implement short- and long-range actions, policies, and strategies to promote environmental sustainability in all facets of university teaching, research, planning, operations, and finance.

### Introduction

Universities have an obligation to ensure they operate sustainably and ensure their students are environmentally literate and understand their responsibilities in helping to create a sustainable society. Achieving these goals requires action at all levels of university administration and infrastructure and requires promoting sustainability literacy and action among all SJSU students as well as fostering academic research into achieving a sustainable society.

In this policy section, we recommend a number of general components to be included in a Sustainability Policy at San Jose State University that will result in setting, implementing, and assessing sustainability goals and actions SJSU. We also suggest a range of top-priority actions related to university operations, research, and academics that should be called out in SJSU's Sustainability Policy and implemented quickly at SJSU.

### Components of a Sustainability Policy at SJSU

This section identifies a number of general components that we recommend be included in San Jose State University's sustainability policy. We do not prioritize these elements as we view them all as essential, however, they may be implemented in a phased manner. The core of this policy is an organizational structure that will result in setting, implementing, and assessing sustainability goals, actions, and policies at SJSU. Points 1-5 describe this organizational structure. This structure is designed to promote intra-campus coordination and interdisciplinary collaboration. Only through such cooperative efforts can we be successful. The success of our endeavor is also dependent on a long-term and active commitment by the University administration, the Sustainability Council, and people at all levels of the University. Some aspects of campus sustainability will be achieved relatively quickly and easily, but others will take time and concerted effort; these can only be achieved through our persistent and dedicated commitment. The other points in this section describe general sustainability actions the University should undertake. These elements allow the University to develop goals, determine where sustainability actions are needed, and implement specific measures for achieving a sustainable university. We recommend these elements as a Sustainability Policy to be reviewed and ultimately passed by the Academic Senate to be implemented by the President.

1. Establish a Sustainability Council (Figure 1 and 2), as a permanent committee of the Academic Senate, comparable to a board of directors, charged with establishing sustainability goals, regularly evaluating campus actions to promote sustainability, and recommending new goals, actions and policies on a yearly basis. This Council will regularly review our progress toward sustainability goals. This Council will report to the University President. Members will include representatives from each college and all other major administrative and auxiliary units at SJSU. Faculty members will use this committee as part of their service commitment; members from other units will have this committee work integrated into their work plans.



2. Fund a full-time Sustainability Director (Figure 1 and 2), comparable to an executive director, who is well-connected within the University to oversee the implementation of sustainability directives and who seeks funding for sustainability initiatives. The Sustainability Director will develop action plans, timelines, and methods to implement and assess sustainability mandates. The Sustainability Director will report to the Office of the President. The Sustainability Director will also provide single-point-of-contact to connect university to external partners and stakeholders (e.g. City of San Jose Green Vision staff) in order to facilitate timely communication, linkages of expert resources and effective action across campus community. One staff position is required to support the Sustainability Director. The University will commit to funding these positions; however, over time, these positions are expected to be funded partially or entirely through savings resulting from sustainability actions and from grants.
3. Establish a Faculty-In-Residence program for all Colleges, and a parallel position in all other SJSU units (Figure 1 and 2), charged with informing all members of the faculty and staff of SJSU's sustainability goals, promoting action to meet those goals, and reporting to the Sustainability Director on progress toward meeting sustainability goals. Faculty will receive 0.2 assigned time for this position; those in other units will have their work load reduced to compensate for this extra task.
4. Use expert panels of SJSU faculty and other external experts (Figure 1 and 2) to bring information on specific topics to the Sustainability Council and engage faculty and their students in research that assists the Sustainability Council and Director.
5. Establish a Sustainability Research Institute (Figure 1 and 2; Appendix 1), which will take the structural form of Organizational Research and Training Unit (ORTU) and which will be a vehicle to promote, interdisciplinary sustainability research as well as faculty collaboration on research, projects, and curriculum that builds sustainability into all aspects of SJSU. This ORTU will be the centerpiece for faculty from different colleges (e.g., Social Sciences and Engineering) to conduct joint research and work on larger, longer term sustainability issues, such as climate change, water conservation, and energy policy. This Institute will have a director and staff funded through grants and contracts that move through the Institute. See Appendix 1 for a more complete description.

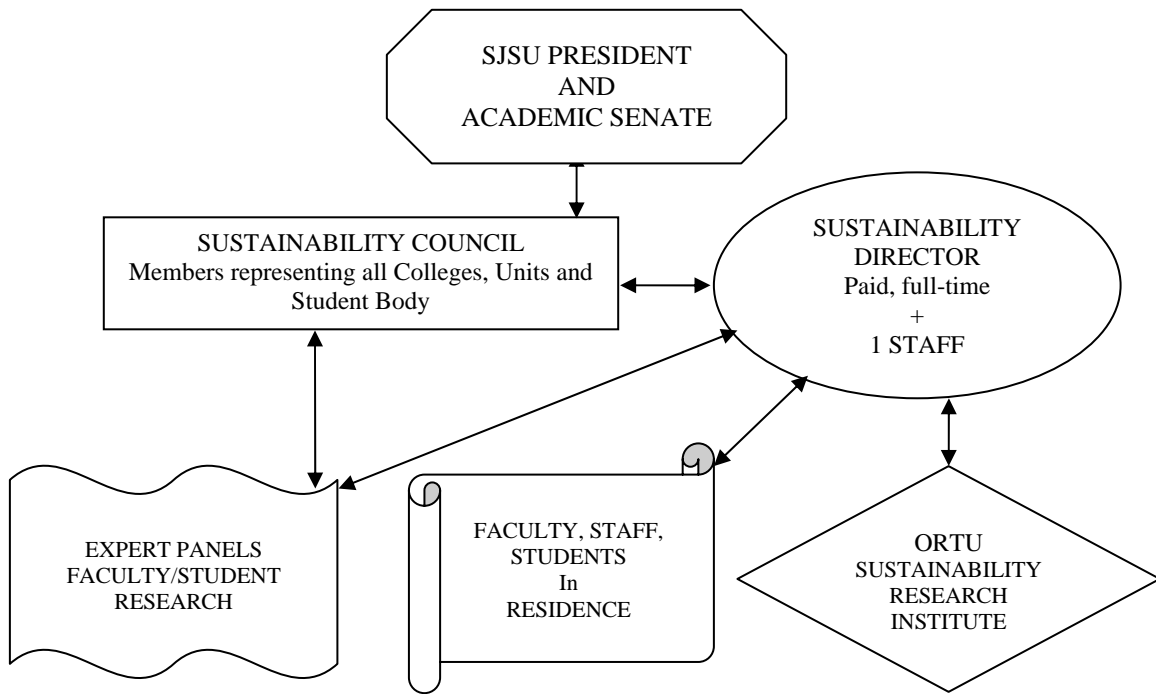


FIGURE 1. Organizational Structure for Sustainability Program Implementation and Reporting

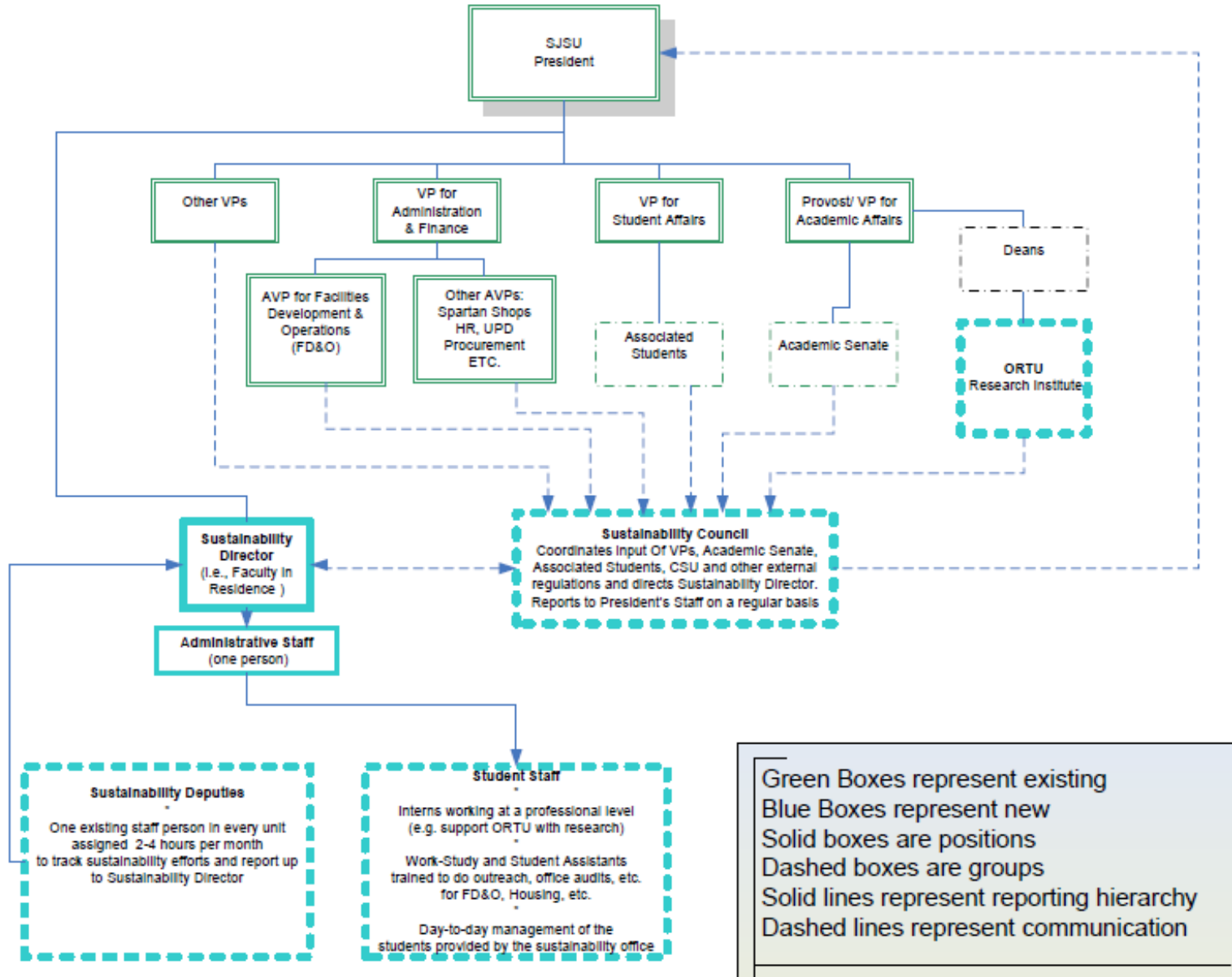


FIGURE 2. Integration of Sustainability Organizational Structure at SJSU

6. Regularly conduct environmental audits of University operations to assess sustainability of energy and materials use and to provide direction for new sustainability actions. The Sustainability Committee will set the timeframe for audits and ensure a review of the audit by key people that results in a list of action items in accordance with CSU policies. The first sustainability audit should begin in the 2009-10 AY and be completed no later than 2011-2012.

The Task Force recommends that SJSU use STARS 0.5 as the basis for guiding its sustainability audit. STARS is an acronym that stands for Sustainability Tracking and Rating System developed by the Association for the Advancement of Sustainability in Higher Education, a leader in promoting sustainability in 2- and 4-year colleges and universities in the U.S. and Canada. It is a voluntary, self-reporting framework for gauging relative progress toward sustainability for colleges and universities. The development of STARS is guided by a Steering Committee, Strategic Advisors, and Technical Advisors. Approximately 70 universities in the U.S. have tested STARS during the 2008 pilot period, including Chico State and Sacramento State University. Outside the California State University System, other participants in the STARS pilot program include De Anza College, UC San Diego, UC Santa Barbara, and Santa Clara University. Since this rating framework is designed specifically for institutions of higher education, it is a good fit for SJSU.

7. Promote full implementation of existing CSU and SJSU sustainability policies, including CSU Executive Orders on sustainability, such as EO 987, and the Associated Students Board of Directors Sustainability Resolution 08/09-02 (Appendix 2).
8. Sign the Talloires Declaration (Appendix 3) and American College and University Presidents Climate Commitment (Appendix 4).
9. Develop and provide resources to support programs to develop campus awareness on sustainability policies and ways to be involved (Appendix 5). Specifically, support a central information location where anyone in the campus community can find out information on sustainability policy, actions by faculty, staff and students, and what people can do to promote a sustainable SJSU and society.
10. Promote collaboration on sustainability-focused curriculum including interdisciplinary courses and minors. In particular, encourage faculty in all disciplines to infuse sustainability into their curriculum through implementation of a faculty development program (FDP) at SJSU (Appendix 6). Such programs have been found to influence not only teaching, but research innovation, interdisciplinary dialogue, and campus quality of life. See Appendix 6 for further discussion of this concept and examples of FDPs in action.
11. Establish an interdisciplinary environmental/sustainability literacy requirement for all undergraduate students. Specifically, require students take at least one Core GE or SJSU Studies course with sustainability as a central course focus. A survey of approved courses at SJSU by Rona Haluilani and her shows a wide range of courses in different departments with sustainability as a partial or central focus (Appendix 7), but only 4 Core GE courses and 9 SJSU Studies courses that have a central or partial focus on sustainability (Appendix 8). We recommend SJSU establish standards and SLOs for the content of sustainability-focused courses including the effects of humans on resource sustainability, link to science and/or

social science principles, link to environmental justice and social equity, and include solutions needed at global, local, and individual levels.

12. Establish certificate programs, Professional Masters degrees, and other professional training programs for students and the community.
13. Partner with the City of San Jose, other interested municipalities, local industry, and non-governmental organizations to educate the public and promote a sustainable society in Silicon Valley. Mayor Reed's Green Vision program for City of San Jose and the recently announced Silicon Valley Greenprint, jointly led by Joint Venture Silicon Valley Network and the Silicon Valley Leadership Group, are just two examples of how external community could leverage campus expertise and resources (e.g. faculty-led research initiatives) to enable better informed policies and practices associated with sustainability.
14. Hold an "Earth Symposium", at regular intervals as appropriate, to share information on sustainability practices among CSU campuses and other universities in California.

#### Specific, Top-priority Action Items:

We suggest the San Jose State University Sustainability Policy call out some specific actions related to university operations, research, and academics that should be implemented quickly at SJSU. While the Sustainability Task Force has identified a range of specific actions that we can take to become more sustainable and save money (Appendix 9) and increase campus sustainability awareness (Appendix 5), we agreed the list below represents high priority action items. We recommend the Sustainability Council address implementation of these items immediately. Ultimately, though, the Sustainability Council will be responsible for identifying the actions and policies the campus should undertake.

#### Facilities

1. Recognize that conservation is the cheapest and easiest way to reduce both our consumption of externally generated energy and our carbon footprint and work toward maximizing our conservation efforts.
2. Establish an energy plan for campus operations, including a focus on energy conservation, switching to renewable energy resources, and other approaches, to achieve a "carbon neutral" campus.
3. Implement green building design guidelines for all aspects of building and facility design and incorporate sustainability principles concretely into SJSU Master Plan. For example, the Chancellor's office has developed a program that dovetails with LEED® criteria. In addition to complying with this program, SJSU should determine when to exceed these goals.
4. Develop guidelines for a sustainable land use ethic for campus lands, including guidance on drought-tolerant and native landscaping and green building uses.
5. Design and retrofit buildings to reduce waste and recycle materials using appropriate technologies such as gray water systems, solar and sustainable energy production, and zero waste systems.

Student, Faculty and Staff Awareness/Behavioral Change

1. Ensure the availability of organic and/or locally grown food on campus for students and the entire campus community.
2. Support and promote organic gardens on campus for food and hands-on learning.
3. Promote the use of non-personal car transportation modes, including developing bike-oriented infrastructure including bike lanes, bike parking, and an on-campus bike co-op, and encouraging students, faculty and staff to utilize mass transit options promoted by Transportation Solutions. Transportation Solutions, which functions under the auxiliary organization AS, won a 2009 Clean Air Award from Breathe California.
4. Reduce solid waste generation on campus, especially throw-away items such as plastic utensils, polystyrene containers, bags, and one-use plastic water bottles.
5. Require students, faculty and staff take an on-line tutorial on promoting sustainability before they receive specific privileges such as parking passes.
6. Promote the use of previously used paper, use both sides of paper, and move to paperless communication whenever possible.
7. Establish annual sustainability awards for faculty, staff and students who will be honored at existing events such as Service Recognition Ceremony and the Honors Convocation.
8. Use MLK Library as a central location for sustainability talks and information for the campus and the community.
9. Recognize sustainability projects, research, curriculum development and awards as activities that benefit faculty in the RTP process.
10. Include readings with sustainability as a theme in the campus reading program.

Procurement

1. Enforce and expand Environmental Procurement Procedures.
2. Eliminate the use of virgin paper through measures such as procurement of 100% only post-consumer recycled content paper, promoting use of both sides of paper, and going to paperless methods as often as possible.
3. Establish and enforce sustainability guidelines for purchase of consumables and equipment.

Curriculum and Research

1. Identify and promote strategic, interdisciplinary, multiyear research and project grants for sustainability.
2. Where appropriate, promote on-line classes and other modes of teaching that do not require travel to campus, as well as telecommuting, when appropriate. SJSU has a Telecommuting Policy (Human Resources, February 12, 2009) that provides guidelines for supporting telecommuting when it is the best interest of employees and sustainability.

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3. Develop joint projects and programs with other community colleges and K-12 educators.
4. Identify and promote service learning and internship opportunities that address regional sustainability issues.
5. Secure funding for scholarships for students in sustainability-focused degrees and programs.

## **APPENDIX 1. Creation of a New Sustainability Research Institute at SJSU**

The Task Force recommends that the establishment of the Institute be a major priority for the Sustainability Faculty in Residence during the 2009-2010 academic year. Financially, the short-term goal for the Institute would be economic self-sufficiency within three to five years of inception.

Organizationally, the Director of the Institute could report to two main Deans, similar to the reporting structure for the newly created Immigration ORTU. Likely Colleges well suited to head this effort include Science, Engineering, Business, and Social Sciences. Several ORTUs already in existence on campus could be collaborative partners with the Sustainability Research Institute including the Mineta Transportation Institute, the newly formed ORTU focused on Immigration, the Global Studies Institute, and the Survey and Policy Research Institute.

A number of similar sustainability-focused research institutes are functioning well within higher education and the California State University system. The recently formed Global Institute of Sustainability at Arizona State University provides a strong model for consideration. The following excerpt from their website helps illustrate the mission of their Institute. Housed within their Institute are 20 research programs, ranging from the Arizona Water Institute (a cross-college collaboration including several universities) to Greater Phoenix 2100 (focused on long-term sustainable regional planning). The focus of SJSU's Institute would be similar, but with a regional focus on Silicon Valley issues.

The Global Institute of Sustainability is charged with catalyzing and advancing interdisciplinary research and education on environmental, economic, and social sustainability, bringing together life scientists, social scientists, engineers, humanists, and government and industry leaders to share knowledge and develop solutions to real-world problems.

Members benefit from enhanced administrative services and collaborative opportunities provided by the Institute such as proposal development and grants management; potential to request research seed funding; meeting/conference planning and coordination; media relations, communications and design expertise; educational and public outreach activities; data analytics and informatics resources.

A federated arrangement of researchers and research units can provide creative opportunities to connect and integrate sustainability research at the University and expand ASU's capacity to communicate its commitment to sustainability. (Arizona State University, n.d.) Closer to home, a number of CSU campuses have research institutes focused on specific sub-components of sustainability. For example Cal Poly has created its Renewable Energy Institute (REI), which is "a non-profit organization established to promote teaching, research, development, and community service in solar and renewable energy technologies and sustainable community infrastructure." In fact, one of its main research projects is called the Campus Sustainability Initiative, and the purpose of this project is to put into action the campus' environmental policy in concert with the Cal Poly Master Plan and campus community members. Humboldt State also has a number of on-campus organizations with a sustainability focus, the most research-oriented of which is Humboldt Bay Center for Sustainable Living. This Center is the future home of the Humboldt Bay Eco-Hostel the Center for Sustainable Living, which will be a collaborative learning center for on-going environmental research, sustainability conferences, "green" business incubation, exhibits, tours and hands-on workshops. However, none of the research institutes researched in the preparation of this report addresses sustainability as holistically as the ASU model.



## APPENDIX 2. Associated Students Resolution



**Associated Students**  
A.S. Government

A.S. House  
One Washington Square  
San José, California 95192-0128  
t: 408-924-6240  
f: 408-924-6258

[www.as.sjsu.edu](http://www.as.sjsu.edu)

**Associated Students, SJSU, Board of Directors’  
Resolution 08/09-02  
RESOLUTION SUPPORTING CAMPUSWIDE  
SUSTAINABILITY EFFORTS AT SAN JOSÉ STATE  
UNIVERSITY**

**Whereas,** Associated Students, SJSU is representative of the opinions and sentiments of more than 30,000 students; and

**Whereas,** California State University Executive Order No. 987 has set the goal to reduce energy consumption 15% by the end of fiscal year 2009/2010; and

**Whereas,** The City of San Jose serves as a symbol of innovation and a leader of ideas for the greater Silicon Valley whose mayor has laid before his constituents a “Green Vision”, a plan to become a zero waste city with 100 percent landfill diversion and the development of 25,000 green collar jobs; and

**Whereas,** San Jose State University students, faculty, departments, and auxiliaries have shown an increasing trend toward more sustainable practices; and

**Whereas,** Associated Students and its respective departments have displayed a sense of shared responsibility in reducing waste, prioritizing recycling, reducing energy consumption and are encouraged to continue doing so through innovation and personal initiative; therefore be it;

Associated Students is :  
A.S. Government  
Campus Recreation  
César E. Chávez  
Community Action Center  
Child Development Center  
Computer Services Center  
General Services Center  
Marketing & Events  
Print Shop  
Transportation Solutions

*Resolved,* That Associated Students, SJSU supports the use, sale, and accessibility of more fresh, organic and/or local produce on campus, a good example being the Spartan Smart Cart; therefore be it

*Resolved,* That Associated Students encourages and commends all of its departments' and the University's efforts to increase practical recycling habits, replace incandescent bulbs with fluorescents; procure environmentally responsible products, as well as efforts to switch to more recyclable or compostable materials; therefore be it

*Resolved,* That San Jose State University is encouraged by the Associated Students Board of Directors to meet the following sustainability goals within the next two (2) to five (5) years in order to reduce waste and therefore reduce the burden of cost:

- (1) Centralize and further incentivize procurement of sustainable office and teaching related products
- (2) Reduce the retail consumption of polystyrene, plastic bags, water bottles and virgin paper on campus.
- (3) Foster interdisciplinary environmental literacy for all undergraduates
- (4) Support the movement by recommending the hiring of a Sustainability Manager/Coordinator or adding additional responsibilities to an existing position in order to lead and maintain improvements to campus sustainability policy and coordinate efforts of all stakeholders.
- (5) Present the American College & University Presidents Climate Commitment as well as the Talloires Declaration to President Whitmore for signing and execution; therefore be it;

*Resolved,* That Associated Students will make this document public and will forward this resolution to all affected parties and media sources, including but not limited to: The Spartan Daily, the San Jose Mercury News, the Academic Senate, San Jose State President Jon Whitmore, the San Jose City Council, San Jose Mayor Reed, Executive Director of Spartan Shops Jerry Minnaugh, Cathy Busalacchi, Richard Kelley, and all Associated Students Managers.

*Rationale,* Accomplishing these goals will contribute to a more sustainable campus, and a decrease in San Jose State University's overall carbon footprint.

Respectfully submitted by:  
Sarah Bronstein, Director of Community and Environmental Affairs

Supported by:  
William Cavu-Litman, A.S. President  
Albert Hsieh, A.S. Vice President

Passed and Adopted by the Associated Students of San José State University  
Board of Directors at a regular meeting held February 11, 2009 by a vote of

13-Yea 0-Nay 0-Abstention 0-Absent

\_\_\_\_\_  
Albert Hsieh, Vice President and Chair  
Associated Students, SJSU

\_\_\_\_\_  
Date

### **APPENDIX 3. Talloires Declaration: University Presidents for a Sustainable Future**

The University Leaders for a Sustainable Future (2001) make this statement about the Talloires Declaration: “Composed in 1990 at an international conference in Talloires, France, this is the first official statement made by university administrators of a commitment to environmental sustainability in higher education. The Talloires Declaration (TD) is a ten-point action plan for incorporating sustainability and environmental literacy in teaching, research, operations and outreach at colleges and universities. It has been signed by over 350 university presidents and chancellors in over 40 countries.”

The ten-point plan is as follows:

1. Use every opportunity to raise public, government, industry, foundation, and university awareness by publicly addressing the urgent need to move toward an environmentally sustainable future.
2. Encourage all universities to engage in education, research, policy formation, and information exchange on population, environment, and development to move toward a sustainable future.
3. Establish programs to produce expertise in environmental management, sustainable economic development, population, and related fields to ensure that all university graduates are environmentally literate and responsible citizens.
4. Create programs to develop the capability of university faculty to teach environmental literacy to all undergraduate, graduate, and professional school students.
5. Set an example of environmental responsibility by establishing programs of resource conservation, recycling, and waste reduction at the universities.
6. Encourage the involvement of government (at all levels), foundations, and industry in supporting university research, education, policy formation, and information exchange in environmentally sustainable development. Expand work with nongovernmental organizations to assist in finding solutions to environmental problems.
7. Convene school deans and environmental practitioners to develop research, policy, information exchange programs, and curricula for an environmentally sustainable future.
8. Establish partnerships with primary and secondary schools to help develop the capability of their faculty to teach about population, environment, and sustainable development issues.
9. Work with the UN Conference on Environmental and Development, the UN Environment Programme, and other national and international organizations to promote a worldwide university effort toward a sustainable future.
10. Establish a steering committee and a secretariat to continue this momentum and inform and support each other's efforts in carrying out this declaration.”

## APPENDIX 4. American College & University Presidents Climate Commitment



### American College & University Presidents Climate Commitment

We, the undersigned presidents and chancellors of colleges and universities, are deeply concerned about the unprecedented scale and speed of global warming and its potential for large-scale, adverse health, social, economic and ecological effects. We recognize the scientific consensus that global warming is real and is largely being caused by humans. We further recognize the need to reduce the global emission of greenhouse gases by 80% by mid-century at the latest, in order to avert the worst impacts of global warming and to reestablish the more stable climatic conditions that have made human progress over the last 10,000 years possible.

While we understand that there might be short-term challenges associated with this effort, we believe that there will be great short-, medium-, and long-term economic, health, social and environmental benefits, including achieving energy independence for the U.S. as quickly as possible.

We believe colleges and universities must exercise leadership in their communities and throughout society by modeling ways to minimize global warming emissions, and by providing the knowledge and the educated graduates to achieve climate neutrality. Campuses that address the climate challenge by reducing global warming emissions and by integrating sustainability into their curriculum will better serve their students and meet their social mandate to help create a thriving, ethical and civil society. These colleges and universities will be providing students with the knowledge and skills needed to address the critical, systemic challenges faced by the world in this new century and enable them to benefit from the economic opportunities that will arise as a result of solutions they develop.

We further believe that colleges and universities that exert leadership in addressing climate change will stabilize and reduce their long-term energy costs, attract excellent students and faculty, attract new sources of funding, and increase the support of alumni and local communities.

Accordingly, we commit our institutions to taking the following steps in pursuit of climate neutrality:

1. Initiate the development of a comprehensive plan to achieve climate neutrality as soon as possible.
  - a. Within two months of signing this document, create institutional structures to guide the development and implementation of the plan.
  - b. Within one year of signing this document, complete a comprehensive inventory of all greenhouse gas emissions (including emissions from electricity, heating, commuting, and air travel) and update the inventory every other year thereafter.
  - c. Within two years of signing this document, develop an institutional action plan for becoming climate neutral, which will include:
    - i. A target date for achieving climate neutrality as soon as possible.
    - ii. Interim targets for goals and actions that will lead to climate neutrality.
    - iii. Actions to make climate neutrality and sustainability a part of the curriculum and other educational experience for all students.
    - iv. Actions to expand research or other efforts necessary to achieve climate neutrality.
    - v. Mechanisms for tracking progress on goals and actions.

*(continued...)*

2. Initiate two or more of the following tangible actions to reduce greenhouse gases while the more comprehensive plan is being developed.
  - a. Establish a policy that all new campus construction will be built to at least the U.S. Green Building Council's LEED Silver standard or equivalent.
  - b. Adopt an energy-efficient appliance purchasing policy requiring purchase of ENERGY STAR certified products in all areas for which such ratings exist.
  - c. Establish a policy of offsetting all greenhouse gas emissions generated by air travel paid for by our institution.
  - d. Encourage use of and provide access to public transportation for all faculty, staff, students and visitors at our institution.
  - e. Within one year of signing this document, begin purchasing or producing at least 15% of our institution's electricity consumption from renewable sources.
  - f. Establish a policy or a committee that supports climate and sustainability shareholder proposals at companies where our institution's endowment is invested.
  - g. Participate in the Waste Minimization component of the national RecycleMania competition, and adopt 3 or more associated measures to reduce waste.
3. Make the action plan, inventory, and periodic progress reports publicly available by providing them to the Association for the Advancement of Sustainability in Higher Education (AASHE) for posting and dissemination.

In recognition of the need to build support for this effort among college and university administrations across America, we will encourage other presidents to join this effort and become signatories to this commitment.

Signed,

\_\_\_\_\_  
President/ Chancellor Signature

\_\_\_\_\_  
President/ Chancellor Name

\_\_\_\_\_  
College or University

\_\_\_\_\_  
Date

Please send the signed commitment document to:

Presidents' Climate Commitment  
c/o Second Nature  
18 Tremont St., Suite 1120  
Boston, MA 02108

or fax to: 320-451-1612  
or scan & email to: ACUPCC@secondnature.org

## **APPENDIX 5. Sustainability Awareness at SJSU**

### **I. Subcommittee goals:**

We have compiled information and made recommendations regarding sustainability awareness on the campus of San Jose State. Our definition of awareness includes both being aware of sustainability-related programs on campus as well as being aware of how individual behavior contributes to sustainability. The three areas of sustainability on which we focused were: waste, energy use, and transportation. We compiled available information on the current state of awareness at SJSU. We also gathered information on methods at other campuses that increase awareness in order to identify areas in which sustainability awareness at SJSU can be improved and to make specific recommendations on actions that can be put in place on campus.

### **II. Current state of awareness at SJSU**

#### **A. Student, faculty, and staff survey results**

Survey conducted by Megan Fluke, Environmental Studies student, on the state of sustainability on campus in 2008

As a part of a course project for ENV5 198, a student surveyed nine students, faculty, and staff with regards to their opinions of sustainability on campus.

Respondents were asked whether they were aware of any CSU or University-wide policies regarding sustainability. Of the nine surveyed, only two were aware of specific policies. When asked how easily interested persons could access information about sustainability on campus, most respondents indicated they felt the ease of access ranged from difficult to moderate. Also, when asked to rank sustainability effort coordination on campus from completely decentralized to completely centralized, nearly all respondents felt it was completely decentralized. While most acknowledged there was some effort to initiate sustainability activities on campus, there appears to be no coordination among parties involved (*e.g.*, between students and staff). In a related set of responses, when asked to numerically rate the interest and involvement of students, faculty, staff, and administrators in sustainability activities, each group generally ranked themselves highest (*e.g.*, staff thought staff were most involved, students thought students were most involved). Yet none of the respondents ranked any group's level of involvement or interest as highly involved.

Conclusions: Awareness of sustainability activities on campus is poor. While some efforts are underway, there is little knowledge of them outside of those people directly involved. Coordination among groups or activities is poor.

#### **B. Transportation survey results**

Survey conducted by Eyedin Zonobi, Manager of Transportation Solutions, Fall 2008

Transportation Solutions (TS) conducts annual student surveys on awareness of TS services and use of different modes of transportation. The SJSU TS services is a leader among CSU campuses in making alternative transportation accessible to students. In 1994, an EcoPass

became available to all SJSU students, as paid for by student fees. This pass enables them to ride Santa Clara Valley public transportation for free and was initiated to reduce pressure on the limited parking resources on campus. After ~7 years, it became clear that students were not yet aware of this pass, so TS was founded. It is currently a self-sustaining program that coordinates access to public transportation, carpooling, and other transportation-related topics.

In 2008, there were 4075 respondents to the survey. Of those, ~90% had heard of TS. The use of alternative modes of transportation in 2008 was ~50% greater than in 2001, while the percent of those who drove alone declined by more than 25% over that same time period. The top reasons students gave for using alternative modes of transportation were 1) the availability of the EcoPass or other Transportation Solutions services, 2) to avoid traffic and parking hassles, 3) to avoid paying for parking, 4) to avoid paying for gas, and 5) because it is good for the environment. Only 4% of students who responded said they used alternative modes of transportation due to awareness of “Spare the Air” days. Of those respondents aware of “Spare the Air” days, more than 2/3 chose to drive their cars even when a “Spare the Air” day was called.

There were a variety of ways in which students had been made aware of the EcoPass and other Transportation Solutions services. The most common sources for information were 1) a mailed brochure, 2) student orientation, and 3) friends. Once students learned of TS services (such as the EcoPass), 53% made use of them by taking the bus or light rail, while previously, only 14% had.

Conclusions: Students do use alternative modes of transportation, but primarily for financial reasons and not for environmental reasons. However, the availability of the various TS services does reduce the number of people who drive alone to campus.

### **III. Sustainability awareness practices on other campuses**

We have compiled a list of sustainability practices on other California campuses (see Table 1), focusing on practices that target the behavior of individuals.

#### **General:**

- Sustainability Audits: Dormitories, Offices, Fraternity/sorority/community outreach.
- Educate custodial staff in sustainable practices in their own language.
- Teach sustainable vocabulary in ESL classes.

#### **Energy:**

- Laboratory Fume Hoods: Training for students to survey and benchmark performance. Auditor makes an appointment, estimates carbon footprint based on existing situation, provides occupants with information about improving and returns at a later date to check if changes have been implemented. If meter data is not available, performance enhancements can be spot-checked during before and after visits to the site. Competition between units can be based on occupant compliance with suggested checklist.



- Campus lighting audits: Training auditors to take light meter readings and identify lighting fixtures in order for facilities to know where to target large-scale lighting upgrades.
- General Outreach programs: CFL give-away, Green Events such as Earth Week, Residence hall move-in and move-out programs. For move in, show resources conservation practices and help students understand that their fees are affected by their composite behavior, for move out, provide assistance in disposing of unwanted possessions in an environmentally friendly way (e-waste containers, goodwill runs, recycling bins, etc.). Avoiding disposable food containers by bringing your own coffee/water container.
- Computer/Monitor shut-down education. When should you shut off the monitor? When should you shut the whole system down? What powersave settings are best for your situation.
- Vending misers. These turn off the lights on the vending machine when nobody is around.
- Encourage instructors to turn off lights and open the curtains when there is enough daylight in the classroom.

**Waste:**

- General Outreach programs: Residence hall move-in and move-out programs. For move in, show resources conservation practices and help students understand that their fees are affected by their composite behavior, for move out, provide assistance in disposing of unwanted possessions in an environmentally friendly way (e-waste containers, goodwill runs, recycling bins, etc.). Avoiding disposable food containers by bringing your own coffee/water container.
- Food Service: local, organic and nutritious food available at residence dining and food courts. Compostable serviceware that is actually composted locally - perhaps on campus? Demanding that branded food providers (Burger King, Sbarro, etc.) comply with campus policies. No trays in dining commons.
- Water Conservation: low flow showerhead audit
- Take back the Tap: encourage refillable bottle use to avoid purchased water. Work with campus offices and procurement to severely limit purchase of bottled water, both individual containers and the office water cooler, water coolers use a fair amount of energy to heat and cool water and are on 24/7/365.

**Transportation**

- Incentives for carpooling, vanpooling
- Transportation passes

**Table 1.** Sustainability awareness activities in place on other CSU and UC campuses.

Successful UC / CSU Programs that SJSU May Wish to Emulate												
These are mostly student-run programs from the Green Campus program. SJSU could implement similar programs by hiring its own student staff	San Diego State	Chico State	Humboldt State	CSU San Bernardino	CalPoly SLO	CSU Pomona	UC Merced	UC Berkeley	UC Irvine	UC San Diego	UC Santa Barbara	UC Santa Cruz
	Project Description											
Audit - Dorms	x		x	x								x
Audit - Fraternity/Sorority Audits/Outreach	x			x			x					
Audit - Lab Fume Hood program				x		x	x	x		x	x	
Audit - off campus (Energy Detective)	x	x	x				x		x			
Audit - Offices	x	x	x	x			x		x			x
Assist Facilities in Lighting Audit	x	x	x		x			x		x	x	
Compact Fluorescent Lightbulb Exchange - give away	x	x	x	x	x	x	x			x	x	
Food Service Dining - Green or green practice	x	x		x				x				x
Low Flow Showerheads				x								x
Outreach - Other Green Events (earth week, etc)	x	x	x	x	x		x		x			x
Outreach - Teach Sustainability in ESL classes				x								
Outreach - Teach Sustainability to Custodial in Native language (Spanish)												x
Outreach - Welcome week - Residence Hall awareness event	x		x	x	x		x					
Power Management Software	x	x		x					x			
Residence Hall Competition - with meters	?	x	x	x			x		?			?
Residence Hall Competition - without meters	?	x		x				x	?			?
Vending Misers			x	x			x					
Distribute Re-usable cups at events	x											
Open Blinds, turn of lights in classrooms	x											
Trayless dining				x								
Take back the tap	x											

**IV. Recommendations for SJSU**

**A. Areas in which sustainability awareness could be enhanced**

Through compiling information for this report, it became clear that there were many areas in which sustainability awareness needs to be enhanced on campus, including enhanced awareness of sustainability programs that are already in place.

**1. Waste**

SJSU has an excellent program for recycling on campus. Awareness of these programs and the amount of recycling currently occurring could be enhanced so that people could make further use of them. Specific areas in which further waste reduction could be enhanced:

- Paper use (specific recommendations for paper reduction are listed below under faculty and staff awareness)
- Water use in dorms (low flow showerheads and water-saving washing machines may be ways to increase conservation)
- Wider availability of recycling bins (such as in department office mailrooms)
- Eliminate plastic bottles on campus, but disperse drinking water coolers so that people may refill cups and their own bottles.

## **2. Energy**

SJSU has currently installed energy-saving fluorescent bulbs and ballasts throughout many University buildings. Other areas in which energy awareness could be enhanced:

- Turning off computer monitors or putting computers in sleep mode rather than leaving the computer on or turning off the whole computer off
- Individuals encouraged to replace incandescent lamps on desks and in dorms with CFL
- Energy audits of dorms and departments can help increase awareness of how much energy is currently being consumed (see student awareness section below for specific program that utilizes audit information).

## **3. Transportation**

While SJSU is a leader in organizing alternative transportation, there remain some areas in which sustainability can be enhanced.

- Students driving through parking garage, even when there are no available student parking spaces. Driving to the roof of the garages consumes gas, but many students do this in spite of signs posted at street-level indicating the parking ramp is full.
- Remote parking is costly to the University. Several hundred students park at the remote lot on South campus and take a shuttle to campus. However, running the shuttle costs the University several thousands of dollars weekly. Eliminating the remote lot would save money.

Both of these issues center around availability of parking. The current TS services has reduced the demand for parking on campus by reducing the number of solo drivers. Enhancing carpooling and vanpooling incentives (for example, through reserved prime parking spots or reduced permit fees) is a further way the demand for parking can be reduced.

## **B. Programs to increase sustainability awareness on campus**

For each of the specific programs below, an estimated cost ranking was assigned. However, while there may be costs to the University associated with initiating sustainability awareness programs, the ultimate result is likely to be financial savings due to changes in behavior that lead to reduced consumption and waste on campus.

### **1. Overall**

- Create “Sustainability coordinator” position for University that can coordinate efforts across units on campus. Current lack of coordination appears to be one of the major blocks to sustainability awareness. (Moderate cost for salary of coordinator position)
- Sustainability website is already a valuable resource for sustainability-related activities on campus, but additional personnel may be needed to maintain the site

### **2. Faculty**

Throughout the interviews conducted to complete this report, there were frequent comments about the need for faculty to become more aware of sustainable practices on campus. Through their interactions with both staff and students, they occupy a pivotal role in influencing awareness and behavior on campus. Therefore, programs to increase faculty awareness have cascading effects to other groups on campus.

- General sustainability awareness at new faculty orientation (low cost)

- Create faculty-in-residence for sustainability to create awareness among existing faculty (low cost)
- Increase training and access to paper-less course instruction (especially to for the less web-savvy faculty), such as facilitating website construction so faculty may distribute assignments and greensheets online and so that students may turn in assignments online. (Low cost. Requires planning and coordination, but with expected future savings.)
- When paperless technology is not an option, identify ways to decrease paper waste. For example, faculty can reduce paper waste by only ordering copies of course readers for the number of students they know are in their class, rather than for the number of students they *expect* in class. (Cost savings).

### 3. Students

- “Dorm wars.” Program as designed by team of ENV5 198 students in 2008. Dorms compete to see which can save the most energy as compared with a year before, according to energy audits. Points are awarded based on number of students participating and on the amount of energy saved. Prizes are awarded for winners. (Low cost. Requires planning and coordination, but with expected future savings.)
- “The great SJSU sustainability race.” Program designed by ENV5 198 student in 2009 in which students participate in a scavenger hunt. The questions asked pertain to sustainability and awareness of how individual behaviors affect sustainability. To find the answer, students would need to go to the place on campus most associated with the topic (*e.g.*, to find an answer to a question about the EcoPass, students would go to Transportation Solutions). Prizes awarded for winners. (Low cost. Requires continued student involvement to organize and run hunt.)
- Information about sustainability programs and behaviors distributed at Orientation, Fall Welcome Days, Sustainability Week (Low cost). (Transportation Solutions already distributes information at Orientation)
- Required course in sustainability

### 4. Staff

- General sustainability training (low cost)
- For administrative staff, specific training regarding paper use and recycling (low cost, with expected future savings)
- Audits of energy use taken for departments and units. Results distributed along with information regarding how to reduce energy use. (low-moderate cost, with expected future savings)
- Much like the “dorm wars” for students, units and departments on campus could compete to reduce energy use (based on audits), or reduce paper consumption (based on purchasing history). Winning units could be awarded money to be used at their own discretion. (Low cost for money award to unit, but some savings due to reduced consumption)

## **APPENDIX 6. Infusing Sustainability Across the Curriculum: Implementing a Faculty Development Program at SJSU**

### ***Objective:***

To provide a rationale for the implementation of a faculty development program (FDP) at SJSU that encourages faculty in all disciplines to infuse sustainability into their curriculum.

### ***Rationale:***

A key mission of universities is to train students to understand and respond to the ever-changing problems society faces, including the particularly daunting task of addressing the global environmental crisis. From math to music, engineering to English, sustainability is an issue that cuts across the disciplines. However, according to Camblin & Steger (2000), it is unrealistic to assume that faculty can integrate sustainability and/or environmental issues into their curriculum solely through self-education. Recognizing that faculty are the experts in their own disciplinary specialization, the purpose of a Sustainability Across the Curriculum FDP is not to *teach* faculty about sustainability, but to encourage them to explore different means they can *engage with students* through their curriculum on these complex, interdisciplinary issues through a structured learning community. Some examples from a FDP at Emory University include (Bartlett & Rappaport, forthcoming):

- In Anthropology, taking an anthropological approach to sustainable fisheries in Central America
- In English, critiquing, reading, writing poems that focus on nature
- In Journalism, researching and writing a news piece on toxic contamination in Alabama
- In Music, a course that focuses on music and social politics
- (see, e.g. [www.cliftoncommunitypartnership.org/uploads/documents/2009/02/2009020609193643/Sustainability20Courses.pdf](http://www.cliftoncommunitypartnership.org/uploads/documents/2009/02/2009020609193643/Sustainability20Courses.pdf) for a wide range of courses at Emory that incorporate sustainability into the curriculum)

### ***Benefits:***

The benefits of a FDP focused on sustainability reaches far beyond the obvious impact on students and faculty in the classroom. According to a forthcoming article by Bartlett and Rappaport, this type of FDP influences teaching, research innovation, interdisciplinary dialogue, as well as quality of life, and has a long-lasting impact on both faculty participants and the greater university community.

### ***Teaching:***

- Participation in a FDP typically results in changing multiple courses (beyond the minimum required as a participant in the FDP) resulting in significant impact on students at the university;
- A range of pedagogical innovations are implemented including new course readings, new course modules, new assignments, or a completely new paradigm for teaching the course;
- FDP participants are more likely to encourage students to become involved in their community.

### ***Research and Scholarship:***

- FDP typically focus on curricular changes, yet significant percentages of faculty surveyed by Bartlett and Rappaport report that their research activities are positively influenced by the program;
- According to FDP participants, they are more likely to engage in interdisciplinary research (and teaching) and seek to engage in interdisciplinary collaborations with faculty across the university;
- Participants report a much greater connection to the university community.

**Personal Action:**

- FDP participants report that they are more aware of environmental and sustainability issues and have personally changed their behavior both at the office (e.g. environmentally-preferred purchasing, reduced energy use, increase in walking to work) and at home (e.g. reduced water use, more sustainably-sourced meals, changed incandescent to fluorescent bulbs, etc.);
- Participants indicate that they have a much stronger connection to the living ecosystem around them.

***Example of Sustainability Across the Curriculum Faculty Development Program***

Universities across North America have implemented Sustainability Across the Curriculum FDPs over the past several years, including Penn State, the University of British Columbia, Tufts University, Evergreen College, and many others. Examples of particularly well-known and well-documented programs are those at Tufts (Environmental Literacy Institute, an EPA and corporate grant-funded program that ran from 1990-1995), Northern Arizona University (the Ponderosa Project directed by Dr. Geoff Chase, who is currently Dean of Undergraduate Studies at San Diego State University), and Emory University (the Piedmont Project, spear-headed by Dr. Peggy Bartlett in 2002). The points below summarize the approach taken at Emory, which is adapted from Northern Arizona University's FDP.

- Faculty from a wide range of disciplines apply to join a 20-member faculty cohort
- A 2-day workshop during the Spring semester brings the cohort together to stimulate interest, ideas, and innovation as to how to infuse sustainability into their curriculum
- Cohort members spend time during the summer revising their curriculum based on ideas generated during the workshop for at least one-course
- Cohort members gather for a 1-day meeting in August to share and discuss their work
- Upon completion of a revised syllabus, cohort members receive a \$1,000 stipend
- Financial resources required for program:
  - Stipends for cohort members:  $\$1,000 \times 20 = \$20,000$
  - Course release and/or stipend for workshop coordinators (1-2 faculty members): varies depending on faculty pay rate and/or stipend level, for SJSU, approx. \$5,000 per faculty member
  - Workshop funding (food, supplies, etc.): varies, approx. \$3,000-5,000

***Resources:***

Barlett, P. F. & Chase, G. W. (Eds.). (2004). *Sustainability on campus: Stories and strategies for change*. Chambridge: MIT Press.

Barlett, P. F. & Rappaport, A. (forthcoming). Long-term impacts of faculty development programs: The experience of TELI and Piedmont. *College Teaching*.

Camblin, L. D. & Steger, J. A. (2000). Rethinking faculty development. *Journal of Higher Education*, 46(2), 177-211.

Cortese, A. (1992). Education for an environmentally sustainable future. *Environmental Science and Technology*, 26(6), 1108-1114.

Eisen, A. & Barlett, P. F. (2006). The Piedmont project: Fostering faculty development toward sustainability. *Journal of Environmental Education*, 38(1), 25-38.

**APPENDIX 7.****Sustainability in the SJSU Curriculum: Degrees, Minors, and Courses**

This list of courses and programs was compiled by a team lead by Rona Haluilani and was reviewed by the Sustainability Task Force. We have endeavored to be as complete and comprehensive as possible, but we recognize we may have missed included courses or even programs that have a partial or central focus in sustainability. We expect this list to evolve and change and welcome information that could improve it.

**College of Applied Arts and Sciences****College-level**

157 Community Action/Community Service (partial)

**Department of Health Sciences**

HS 161 Epidemiology (partial)

HS 167 Biostatistics (partial)

HS 265 Environmental Health (central)

HS 266 Computational Public Health Statistics (partial)

**Department of Hospitality and Recreation Management**

HRTM 20 Sanitation and Environmental Issues in the Hospitality Industry (central)

HRTM 101 Multicultural Community and Global Issues (partial)

HRTM 103 Facility Planning and Design (partial)

HRTM 109 Ecology, Culture, and Responsible Recreation (Central)

HRTM 135 Management of Facilities and Areas (partial)

HRTM 156 Principles of Sustainable Travel and Tourism (Central)

HRTM 218 Tourism Planning and Development (partial)

**Department of Nutrition and Food Sciences**

NUFS 20 Sanitation and Environmental Issues in the Hospitality Industry (central)

NUFS 111 Food Service Production Management (partial)

NUFS 103 Food Processing and Packaging (partial)

NUFS 115 Issues in Food Toxicology (partial)

NUFS 117 Food Evaluation Techniques (partial)

NUFS 133 Food Processing and Packaging II (partial)

NUFS 139 Hunger and Environmental Nutrition (central)

NUFS 170 Packaging Development and Management (partial)

**College of Business****Department of Organization and Management**

BUS 166 Business and Society (partial)

BUS/ENVS 167 Managing Environmental Issues (central)

BUS 168 Global Business and Human Rights (central)

BUS 187 Global Dimensions of Business (partial)

BUS 196S Green Entrepreneurship (central)

BUS 202 Global Business (partial)

BUS 144 Supply Change Management (partial)

## College of Education

### Department of Child Development

CHAD 160 Child Development (Partial)

### Department of Elementary Education

EDEL 108B Curriculum: Science (Central)

## College of Engineering

### Department of Civil and Environmental Engineering

#### *Minor in Green Engineering*

#### **Courses**

CE 112 Mechanics of Materials (partial)  
CE 121 Transportation Engineering (partial)  
CE 122 Traffic Engineering (partial)  
CD 123 Highway and Street Design (partial)  
CE 140 Soil Mechanics (partial)  
CE 150 Water Resources Engineering (central)  
CE 152 Engineering Hydrology (partial)  
CE 153 Groundwater Flow and Transport (partial)  
CE 170 Principles of Environmental Engineering (central)  
CE 173 Engineering and the Environment (central)  
CE 222 Transportation Engineering planning  
CE 224 Traffic Operations (partial)  
CE 226 Topics in Transportation Engineering (partial)  
CD 241 Groundwater Seepage and Drainage Control (partial)  
CE 242 Experimental Soil Mechanics (partial)  
CE 250 Water Resources Engineering (partial)  
CE 252 Advanced Hydrology (partial)  
CE 271 Water Treatment and Plant Design (partial)  
CE 272 Wastewater treatment and plant design (central)  
CE 274 Industrial and Hazardous Waste Management and Treatment (central)  
CE 275 Biosolids and residual management engineering (partial)  
CE 279 Special Topics in Environmental Engineering (partial)  
CE 281 Physical Chemical Processes in Environmental Pollution Control (central)  
CE 282 Biological Processes in Environmental Pollution Control (central)

### Department of Mechanical and Aerospace Engineering

ME 198 Technology and Civilization (partial)



## College of Humanities and the Arts

### Department of Philosophy

PHIL/ENVS 126: Environmental Ethics and Philosophy (central)

### School of Art and Design

ArtH 072 Design in Society (Potential for integration with sustainability-related curriculum)

ArtH 192C History of Interior Design (Potential for integration with sustainability-related curriculum)

DSID 130 Sustainable Design (central)

HUM/COMM/ENVS/GEOL/MET 168: Global Climate Change (9 units) (central)

### School of Music

MusC 019 Music in World Cultures (No obvious environmental content listed in course description, but with potential for integration with sustainability-related curriculum)

### Department of Radio, TV and Film

RTVF 040 Telecommunications and Society

RTVF 110 Electronic Media and Culture (No obvious environmental content listed in course description, but with potential for integration with sustainability-related curriculum)

### Department of American Studies

AMS/ENVS 159: Nature and World Cultures (central)

### Department of Religious Studies

RelS 164 Challenges in Nature and Religion

## College of Science

### Department of Biological Sciences

*BA, Concentration in Biodiversity Stewardship*

#### Courses

Biol 010 The Living World (Central)

Biol 110 Biodiversity and Biopolitics (Upper Division GE) (Central)

Biol 20 Ecological Biology (GE) (Partial)

Biol 104a/104B Natural History of California Wildlife (Partial)

Biol 122 Bacterial Diversity (Partial)

Biol 137 Principles of Toxicology (Partial)

Biol 160 Ecology (major's course) (Central)

Biol 163 Conservation Biology (major's course) (Central)

Biol 164: Conservation Biology Techniques (major's course)  
Biol 190/225E: Field course in Amazon Forest (Partial)  
Bot 165 Plant Communities of California (Majors course) (Partial)  
Ent 150 Biological Control (Majors course) (Partial)  
Micro 122 Bacterial Diversity (Majors Course) (Partial)

### **Department of Chemistry**

CHEM 212 Natural Products. (Partial)

### **Department of Geology**

GEOL 003/10 Planet Earth (General Education) (Central)  
GEOL 171 The End of the World (as you know it) (Central)  
GEOL/ENVS111 Earth Systems and the Environment (GE – Area R) (Central)  
GEOL 105 General Oceanography (GE Area R) (Partial)  
GEOL 108 Water, Ecosystems, and Society (Majors Course) (Central)  
GEOL 112 Hazards, Risks of Earthquakes and Volcanoes (Majors Course) (Partial)  
GEOL/HUM/COMM/ENVS/MET 168: Global Climate Change (9 units) (Central)

### **Marine Science Program**

MS 143 Chemical Oceanography (Partial)  
MS 144 Biological Oceanography (Partial)

### **Department of Meteorology**

*Joint Minor with Environmental Studies in Climate Change Solutions*

#### **Courses**

METR 10 Weather and Climate (GE B1) (Central)  
METR 112 Global Climate Change (GE Area R) (Central)  
METR/ENVS 113: Atmospheric Pollution (GE Area R) (Central)  
METR 131 Air Pollution Meteorology (Majors Course) (Central)  
METR/GEOL/HUM/COMM/ENVS/ 168: Global Climate Change (9 units) (Central)

## **College of Social Sciences**

### **Department of Communications Studies**

COMM/ENVS 146: Communication and the Environment

### **Department of Environmental Studies**

*BS, with a Minor or with Concentration in Energy, Environmental Impact Assessment, or Environmental Restoration and Resource Management*

*BA, with a Minor or BA, Teacher Preparation*

*Minors in Environmental Studies, Energy Policy and Green Building, or Park Ranger Administration*

*Joint Minor with Meteorology in Climate Change Solutions*

**Courses**

- ENVS 001 Introduction to Environmental Issues (Central)
- ENVS 010 Life on a Changing Planet (Central)
- ENVS 100W Environmental Research and Writing (Central)
- ENVS 105 Environmental Change and Problems, San Francisco Bay Area (Central)
- ENVS/ECON 107: Introduction to Environmental Economics and Policy (Central)
- ENVS 110 Resource Analysis (Central)
- ENVS/BIOL 112: Hazardous Waste (Central)
- ENVS 116 Solar Energy Theory and Applications (Central)
- ENVS 117 Human Ecology (Central)
- ENVS 118 Gardens, Culture and Environment (Central)
- ENVS 119 Energy and the Environment (Central)
- ENVS 124 Introduction to Environmental Law (Central)
- ENVS 125 Advanced Environmental Law (Central)
- ENVS 128 Water Resource Management (Central)
- ENVS 129 Water Policy in the Western U.S.
- ENVS 130 Energy Policy Analysis (Central)
- ENVS 132 Solar Home Design (Central)
- ENVS 133 Alternative Energy Strategies (Central)
- ENVS/POLS 135: U.S. Environmental Policy (Central)
- ENVS 140 Politics and the Environment (Central)
- ENVS 144 California Environmental Controversies
- ENVS 148 Recycling and Resource Management (Central)
- ENVS/AFAM: 151: Race, Poverty and the Environment (Central)
- ENVS/PKG 152: Environmental Issues and Global Distribution of Goods (Central)
- ENVS 154 Sustainable Agriculture (Central)
- ENVS 158 Environmental Education (Central)
- ENVS/GEOG 165: National Parks (Central)
- ENVS 166 Nature and Conservation Photography (Central)
- ENVS/GEOL/HUM/COMM//MET 168: Global Climate Change (9 units) (Central)
- ENVS 170 Introduction to Environmental Health and Safety (Central)
- ENVS 181 Environmental Resource Center (Central)
- ENVS 185 Environmental Impact Analysis (Central)
- ENVS 187 Environmental Restoration (Central)
- ENVS 189 Coastal Field Studies (Central)
- ENVS 190 Advanced Environmental Impact Assessment (Central)
- ENVS 191 Advanced Environmental Restoration (Central)
- ENVS 193 Supervised Projects and Research (Central)
- ENVS 194 Environmental Internship (Central)
- ENVS 195 Instructor Assistant in Environmental Studies (Central)

**Department of Geography**

GEOG/ENVS 121 Population and Global Change (Central)

**Department of Economics**

ECON/ENVS 108: Benefit Cost Analysis (Partial)

**Department of Urban Planning**

URBP/ENVS 123 Historic Preservation and Neighborhood Revival (Partial)

URBP/ENVS 134 Topics in Historic Preservation (Partial)

URBP/ENVS 136 Introduction to Land Use and Facilities Planning (Partial)

URBP/ENVS 142 Introduction to Environmental Planning (Central)

URBP/ENVS 169 Introduction to Computers in Planning (Partial)

URBP/ENVS 178 Introduction to Transportation and Urban Planning (Partial)

URBP/ENVS 179 Urban Geographic Information Systems (Partial)

**Undergraduate Studies**

UNVS 109 Climate Solutions

## APPENDIX 8. Approved GE courses with Sustainability-focused

Course Number	Title	Unit	Contact Person	Central/Partial**	Core GE or SJSU Studies
AMS/ENVS/HUM 159	Nature and World Cultures	COHA	Scott Guenter, Coordinator	central	SJSU Studies
CASA/COB/ED/ENG/HA/COS/COSS	Climate Solutions	COE	Pat Backer COE	Central	Core
BIOL 010	The Living World	COS	John Boothby, Chair	partial	Core
BIOL 020	Ecological Biology	COS	John Boothby, Chair	central	Core
COMM/ENVS/GEOL/HUM/METR 168/168W	Global Climate Change	COSS	Dennis Jaehne, Chair & Lynne Trulio, Chair	central	SJSU Studies
ENVS 001	Introduction to Environmental Issues	COSS	Lynne Trulio, Chair	central	Core
ENVS 010	Life on a Changing Planet	COSS	Lynne Trulio, Chair	central	Core
ENVS 100W	Environmental Research and Writing	COSS	Lynne Trulio, Chair	central	SJSU Studies
ENVS 152	Environmental Issues and the Global Distribution of goods	COSS	Lynne Trulio, Chair	central	SJSU Studies
GEOL/ENVS 111	Geology and the Environment	COS	Richard Sedlock, Chair	central	SJSU Studies
METR 112	Global Climate Change	COS	Alison Bridger, Chair	central	SJSU Studies
METR/ENVS 113	Atmospheric Pollution	COS	Alison Bridger, Chair	central	SJSU Studies
NUFS 115	Issues in Food Toxicology	CASA	Lucy McProud, Chair	partial	SJSU Studies
NUFS 139	Hunger and Environmental Nutrition	CASA	Lucy McProud, Chair	partial	SJSU Studies
PHIL/BUS/JS 186	Professional and Business Ethics	COHA	Rita Manning, Chair	partial	SJSU Studies

\* This list of courses and programs was compiled by a team lead by Rona Haluilani and was reviewed by the Sustainability Task Force. We have endeavored to be as complete and comprehensive as possible, but we recognize we may have missed included courses or even programs that have a partial or central focus in sustainability. We welcome any information that could improve it.

\*\* Denotes whether sustainability content is a central focus of the course or a partial focus.

## **APPENDIX 9. Sustainability and Cost Saving Measures**

The measures listed below help protect the planet and save the campus money at the same time. The measures are divided into three groups from the easiest and least capital intensive to achieve the more difficult and/or costly to initiate.

### **Small Scale Effort**

- Establish a No Smoking policy on campus – eliminates cigarette butt litter and saves money on clean up.
- Recycle coffee grounds to use on plants – avoids the cost of waste removal and reduces purchase costs of fertilizer.
- Embrace telecommuting, e-learning, blackboard, turn-it-in, conference calls, e-meetings -- not only do employees and students save by not having to commute to campus, the campus does not have to have as many buildings and saves on not having to condition existing space.
- Establish a deposit on plastic bags – reduces trash pickup and waste hauling costs.
- Institute campus-wide computer power saving settings – the cost of resources to oversee and coach users in implementing these settings can be offset by savings in energy.
- Work with Procurement to enforce and expand green purchasing practices campus-wide -- as the demand for green products increases, the price of green products will decrease.
- Identify and purchase copiers, printers, computers/monitors with performance standards greater than Energy Star standards The total-cost-of-ownership will be less if highly efficient equipment is purchased.
- Establish campus policy to use email as a means of disseminating announcements rather than using flyers -- saves cost of paper and waste hauling.
- Decrease parking rates further for motorcycles and hybrids - motorcycle parking takes up less space than car parking, freeing up resources.
- Establish a prominent link to the campus sustainability web site from the SJSU home page to provide greater visibility. The webpage should be maintained by the newly established office of the Sustainability Director and will eliminate duplication of effort, which is a waste of our time and resources.
- Ensure that the Climate Solutions Initiative and Global Climate Change courses remain permanent; expand GE courses relating to sustainability -- sustainability classes make our graduates more valuable in the workforce and are a good investment in California's future.

- Incorporate sustainability into all classes
- Make basic sustainability literacy a graduation requirement
- Maintain a campus sustainability committee

## **Mid-Scale Effort**

- Take Back the Tap/Lug-a-Mug –
- Remove bottled water vending machines on campus
  - Awareness campaign: Publicize the drinkability of campus water (post signs pointing to test results web site); discuss the impacts of disposable beverage containers.
  - Install pay for fill stations next to existing fountains, run by Spartan shops or turn existing fountains into fill stations.
  - Decrease purchased water deliveries to campus. Lack of confidence in tap water has lead to extensive purchases of delivered water. Save money and energy by having procurement establish a policy of requiring justification for water coolers in offices that have tap water readily available.
- Install Smartboards in the classrooms so faculty can distribute electronic notes and therefore decrease the use of paper probably would need to id a source of revenue for this. The energy and resources required to build and run smart boards may have a higher carbon footprint than the paper that would be saved.
- Investigate ways to avoid throwing away reusable furniture
  - Provide means for reusable furniture to find a new home on campus
  - Standardize on one brand/style for all new purchases of system furniture so that parts are interchangeable and reconfigurable
  - Donate unwanted furniture to other public entities, as permitted by state laws on disposal of public property.
- Publicize the impact of chewing gum clean up (this is probably a small-scale item and should be moved there.)
  - Chewing gum clean-up requires the use of fresh water and energy to scrub sidewalks
  - Establish chewing gum disposal stations in anticipation of being able to deliver used gum to a recycling facility (program being developed in Europe which incorporates used gum into construction material)
  - Establish areas of xeriscaping on campus – the cost of relandscaping will be offset by savings in water.
- Install recycling facilities on campus to capture bottles and cans currently being scavenged from our recycling bins and taken off campus – consider reverse vending machines which could be revenue neutral or positive.

- Partner with City of San Jose and Valley businesses to leverage use of green technologies on campus
  - Establish SJSU Institute of Sustainability
  - Expand campus bike program – add more cages
- Sign the President's Climate Commitment and the Talloires Declaration.
- Reduce cars from campus by encouraging ride sharing, making campus more bike friendly.

## **Large Scale Efforts**

- Create Campus Sustainability Officer position - if efforts in conservation, such as residence hall and office audits save money, this could be close to self-funded.
- Use recycled water for irrigation across campus and for use in urinals/toilets in King Library and all newly constructed buildings on campus.
- Create campus site for experimenting with clean energy design, construction, operations and management – like teaching hospitals for med students possibly grant funded?
- Install individual metering systems for campus buildings to determine where conservation efforts are succeeding or failing -- providing feedback to building occupants helps them know when their conservation efforts are paying off, and thus can lead to conservation practices becoming institutionalized.
- Install alternative energy facilities across campus; expand facilities on roof of Engineering Building Start with grant funded research projects.
- Consider preserving, retaining or revitalizing existing buildings rather than demolishing and building new buildings -- preservation is environmentally sustainable and usually cost neutral or cost positive.
- New buildings should use green and sustainable principals, make buildings minimum LEED Silver with the goal of LEED platinum -- sustainable design leads to lower lifecycle costs; favor strategies with 1-5 year payback period for implementation.

Future building maintenance and renovation projects should use green products and practices -- our goal should be to operate all buildings at a LEED® silver level or better. We may not want to do the paperwork (Labor value ~\$10,000 - \$30,000 per building) on each building, but we can implement the practices campuswide.



## **Appendix 10. Faculty and their Sustainability-related Research**

### **College of Applied Sciences and Arts**

#### **Department of Hospitality and Recreation Management**

Dr. Suzy Ross: sustainable recreation and travel.

#### **Department of Justice Studies**

Dr. Steven Lee: environmentally friendly storage of DNA samples.

#### **Department of Kinesiology**

Dr. Jay Johnson: impact of climatic change on human physical experiences.

#### **Department of Nutrition and Food Sciences**

Marjorie Freedman: food, nutritional awareness on campus, sustainable agriculture, use of locally grown foods, reduction of food waste, vermiculture.

Ashwini Wagle: consumer acceptance of bio based disposable food wares, hunger and environmental nutrition.

### **College of Engineering**

#### **Materials and Chemical Engineering**

Guna Selvadury: disaster mitigation and preparedness.

#### **Department of Civil and Environmental Engineering**

Udeme J. Ndon: environmental biotechnology, treatment of wastewaters, hazardous compounds, bioremediation.

Jan Botha: Transportation engineering, airport planning and energy efficient roadway design.

Kurt McMullin: response of structures to earthquakes and other catastrophic events.

#### **Department of Industrial and Systems Engineering**

Yasser Dessouky: calculating the carbon footprint of the supply chain for the semiconductor industry, modeling efficient transportation design.

Jacob Tsao: automated transportation, modeling of efficient cargo transportation

#### **Department of Mechanical and Aerospace Engineering**

Pat Backer: green technology.

Lili He: novel refracting concentration solar system.

Tai-Ran Hsu, Nicole Okamoto, Jinny Rhee, Raymond Yee, Jim Mokri: solar-mechanical engineering, including ZEM vehicle, cogenerating photovoltaic and thermal solar collector.

J. Rhee and J. Mokri: Cogenerating photovoltaic and thermal solar collector

**College of Science**

**Department of Biological Sciences**

Jeff Honda: biodiversity of insects and impact of insects on food production.

Michael Kutilek: population and community ecology of large mammals. Wildlife management of endangered mammalian species.

Susan Lambrecht: plant ecology, conservation, functional morphology, and physiology. Effects of invasive plant species and influence of fires on plant communities.

Stephanie McDonald: small mammal population dynamics in various California floristic communities. Biodiversity and habitat choice of small mammals in California.

John Matson (FERP): biogeography, biodiversity, and ecology of Neotropical mammals. Collaborations with Carnegie Museum on Central American mammalian biogeography.

Elizabeth McGee: effects of climate and geography on primate evolution/survivorship. Stable isotope studies of extant and fossil mammals.

William Murray: epidemiology of infectious diseases. Parasitic infections of humans and other animal-borne pathogens.

Cleber Ouverney: microbial ecology of human pathogens as influenced by environmental changes.

Leslee Parr: population ecology of endangered marine organisms, effectiveness of marine preserves.

Nishanta Rajakaruna: effects of soil contaminations and unusual compounds in soil on plant communities. Edible sustainable plants.

Sabine Rech: environmental microbiology, bioremediation of toxic compounds.

**Department of Chemistry**

Joseph Pesek: Capillary separation of chemical compounds and applications to environmental sciences and biotechnology.

Herbert Silber: nuclear science training/nuclear energy as a renewable resource.

Roger Terrill: chemistry of electroluminescent materials and application of thin metal films as chemical sensors.

**Department of Meteorology**

John Abatzoglou: large scale atmospheric dynamics, impacts of climate change on weather patterns, fire weather

Robert Bornstein: urban weather and climatic change, modeling air quality,

Alison Bridger: atmospheric dynamics, numerical weather prediction

Craig Clements: micrometeorology – influences of fires, mountain boundary layers, and pollution on climate

Eugene Cordero: study of climate change, climate change public education, reduction of carbon footprints by use of locally grown foods.

Menglin Jin: computer analysis of satellite climate data. Effects of urbanization, cloud-aerosol interactions and other factors on local climates.

Mike Voss: synoptic meteorology, climate forecasting

**Moss Landing Marine Lab**

Gregory Cailliet – age studies of fish and implications for sustainable fisheries

Kenneth Coale – marine geochemistry – assays and biotic impact of trace metals in organisms and aquatic and terrestrial environments.

Jonathan Geller – impacts of biological invasions in marine invertebrate communities.

Michael Graham – roles of seaweeds, seagrasses and marsh plants in regulating marine communities. Environmentally mediated changes in the structure of marine communities.

Jim Harvey – vertebrate marine ecology, influences of human intervention and environmental change on marine vertebrate communities.

Nick Welschmeyer – environmental effects on phytoplankton and zooplankton communities, effects of invasive species.

**College of Social Sciences**

**Department of Anthropology**

William Reckmeyer: recommendations on global policies, California agricultural and levee policies, systematic linkages between main global challenges, global citizenship.

**Department of Communication Studies**

Anne Marie Todd: public communication about green practices and climate change education, food advertising and environmental issues, environmental patriotism.

**Department of Environmental Studies**

Katherine Kao Cushing: Water Resource Management, Environmental Certification Systems, Environmental Policy Implementation in China, Residential Street Livability, Sustainability in higher education institutions

Gary Klee: Coastal and Marine Sanctuary Management; Human Ecology (Emphasis Traditional Systems of Natural Resource Management); International Development (e.g., Peace Corps); Gardens, Culture and the Environment; Nature and Conservation Photography.

Heather Larson: residential energy design and building codes.

Bruce Olszewski: Integrated Waste Management, Materials Conservation (Recycling), Urban Water Conservation, and Environmental Policy.

Rachel O'Malley: Insect Ecology and Conservation; Sustainable Agriculture and Development; Environmental Impact Assessment; Restoration Ecology; Environmental Justice; Statistics and Modeling

Jeannine M. Pfeiffer: Ethnoecology, biocultural diversity conservation, traditional ecological knowledge, indigenous resource management, community-based & participatory action research.

Will Russell: Forest Conservation and Restoration, Fire Ecology, Coastal Dune Ecology, and Environmental Education.

Lynne Trulio: Conservation of Rare Species, especially Burrowing Owls; Environmental Restoration; Wetlands Ecology; Recreational and Management Impacts on Wildlife; Mitigation Development and Monitoring; Adaptive Management of Restoration Programs.

**Department of Sociology**

Scott Meyers-Lipton: Gulf coast civic works act- political, social, and environmental aspects of recent Gulf Coast disasters and their aftermath.

Dan Brook: Interest in research on vegetarianism and associated environmental and health benefits (<http://www.brook.com/veg/>).

**Department of Urban and Regional Planning**

Shishir Mathur: Santa Clara affordable housing, neighborhood crime and gravel behavior, US high speed rail projects, effects of transit developments on residential property values.

Asha Weinstein Agrawal: US pedestrian behavior, public support for environmental transportation options, protection of great lakes from invasive species.

Hilary Nixon: policies and behavior involving electronic and household hazardous waste recycling, impact of motor vehicle operation on water quality, consumer preferences for alternative energy vehicles, public support for environmental transportation taxes and fees.

**San Jose State University Research Foundation  
SJSU Sustainability Research Initiatives 2007 to Current**

Program/Project Name Title	Faculty-Lead Investigator-PI	Department	Focus Area	Collaborators/Department(s) Involved	Sponsor	Funding	
Studying Global and Regional Land Surface Skin Temperature Change Using Satellite Observations and Climate Modeling	Menglin Jin	Meteorology	Climate Change	NA	National Science Foundation	\$152,505	0
Urban Enhancement to Meteorological Modeling	Menglin Jin	Meteorology	Land Use and Climate Change	NA	University of Georgia	\$106,398	0
Seal Beach Mussels	Mark Stephenson & Kenneth Coale	Moss Landing Marine Laboratories	Endangered Species Management	NA	Department of the Navy	\$15,505	7
A Vessel for Whale Disentanglement in Central California	James T. Harvey	Moss Landing Marine Laboratories	Animal Protection	NA	Department of Commerce	\$20,000	0
Acoustic Identification and Enumeration of Epipelagic Fish and Jellyfish	James T. Harvey	Moss Landing Marine Laboratories	Animal Protection	NA	Department of Commerce	\$39,922	0
Collaborative Research: Effects of Eddies and Waves on the Westward Transport off Central California	Leonid M. Ivanov	Moss Landing Marine Laboratories	Marine Issues	Naval Postgraduate School, University California in Los Angeles and San Jose	National Science Foundation	\$333,904	0
Fiber Optic Ocean Color Sensor Development	Mark Yarbrough	Moss Landing Marine Laboratories	Marine Issues	NA	Department of Commerce	\$150,000	8
Technologies and Practices, Metabolic Verification of Plankton Viability during Ballast Treatment Testing	Nick Welschmeyer & Jon Geller	Moss Landing Marine Laboratories	Water Treatment	NA	Department of Commerce	\$308,539	7
Effects of Ocean Climate Change on Recruitment, Dynamics, and Range Shifts of Kelp Populations,	Michael H. Gram	Moss Landing Marine Laboratories	Marine Ecosystems	NA	National Science Foundation	\$571,027	0
MOBY Lwn Time-Series Uncertainty Reduction and System Enhancements for Improved Vicarious Calibration across Multiple Agency Ocean Color Satellite Missions	Mark Yarbrough	Moss Landing Marine Laboratories	Ocean Measurement Systems	NA	Department of Commerce	\$630,000	0
Tilefish Age Determination	Gregor Cailliet and Allen Andrews	Moss Landing Marine Laboratories	Marine Life	NA	Department of Commerce	\$51,635	0
Gulf of Alaska Corals	Gregor Cailliet and Allen Andrews	Moss Landing Marine Laboratories	Marine Life	NA	Department of Commerce	\$45,000	0
Enhancing the Response to Marine Mammal Stranding	James T. Harvey	Moss Landing Marine Laboratories	Marine Mammal Biology	NA	Department of Commerce	\$99,838	0
Support of the Central Coast Wetland Working Group Restoration Objectives	Gage Dayton	Moss Landing Marine Laboratories	Wetland Restoration	NA	Department of Commerce	\$85,970	0
Experimental Studies of Fire-Atmosphere Interactions and Turbulence during Grass Fires of Different Scales	Craig B. Clements	Meteorology	Wildland Fire Management	NA	Department of Agriculture	\$41,158	0
Incorporation of Marine Research and Resource Issues Into Public Education	Simona Bartl	Moss Landing Marine Laboratories	K-12 Science Education re. Watershed Mgt	NA	Department of Commerce	\$48,299	7
Testing Various Methods of Tag Attachments on Leatherback Sea Turtles	James T. Harvey	Moss Landing Marine Laboratories	Marine Mammal Safety	NA	Department of Commerce	\$18,000	0
Recycling Telephone Hotline Information	Bruce Olszewski	Environmental Science	Recycling	NA	Santa Clara County	\$62,500	0
Erosion after Fires: Sediment Transport in Ash-Laden Slurries	Emmanuel Gabet	Geology	Errosion/Land Use Issues	NA	University of Montana	\$59,014	0
Disturbance Effects on Harbor Seals in Glacier Bay	James T. Harvey	Moss Landing Marine Laboratories	Marine Mammal Safety	NA	Department of Commerce	\$31,323	0
Human Feedback from Urban Climate	Robert Bornstein	Meteorology	Climate Change	NA	Portland State University	\$145,667	7
Inland Air Quality Impacts from Urbanization of Israeli-Gaza Coast	Robert Bornstein	Meteorology	Climate Change	NA	Aquaba Special Economic Zone Authority	\$24,150	7
					<b>TOTAL AWARD FUNDING</b>	<b>\$3,040,354</b>	

As of 5/1/09

**SAN JOSE STATE UNIVERSITY SUSTAINABILITY INITIATIVES  
PROSPECTIVE EXTERNAL FUNDING SOURCES**



AGENCY/SPONSOR	PROGRAM TITLE	NOTES/PROJECT EXAMPLES	FUNDING LEVELS
<b>PUBLIC SOURCES</b>			
<b>National Science Foundation</b>	Collaboration in Mathematical Geosciences (CMG)	Supports collaborative research at the intersection of mathematical sciences & geosciences & encourages cross-disciplinary education. Projects should fall within one of three themes: math & statistical modeling of complex geosystems; understanding & quantifying uncertainty in geosystems; or analyzing large/complex geoscience data sets. Research groups must include at least one geoscientist & one math/statistical scientist. Proposals that address global change & sustainability especially encouraged	Award ranges from \$30,000 to 300,000+
	Energy for Sustainability	Supports fundamental research and education in energy production, conversion, and storage and is focused on energy sources that are environmentally friendly and renewable. Sources of sustainable energy include: Sunlight; Wind; and Biomass.	\$100,000 annual awards
	Environmental Sustainability	Supports engineering research with the goal of promoting sustainable engineered systems that support human well-being and that are also compatible with sustaining natural (environmental) systems. These systems provide ecological services vital for human survival. Four principal general research areas are supported: Industrial Ecology; Green Engineering; Ecological Engineering; & Earth Systems Engineering	\$100,000 annual awards, plus up to \$100,000 for equipment allowed
	Innovations in Engineering Education, Curriculum, & Infrastructure (IEECI)	Supports research on engineering education: including, integration of sustainability into engineering education	Past awards from \$30,000 to \$400,000
	Geomorphology and Land Use Dynamics	Supports innovative research into processes that shape & modify landscapes over a variety of length & time scales. The program encourages research that investigates quantitatively the coupling & feedback among such processes, their rates, & their relative roles, especially in the contexts of variation in climatic & tectonic influences & in light of changes due to human impact	
	Long Term Research in Environmental Biology (LTREB)	Supports the generation of extended time series of biological & environmental data that address ecological & evolutionary processes aimed at resolving important issues in environmental biology.	
	Materials Use: Science, Engineering, and Society (MUSES)	Supports multidisciplinary activities that encourage researchers in engineering, physical, & life sciences; social & behavioral sciences; economics; mathematics, & education to reach beyond their disciplinary boundaries to address complex issues related to materials use in the environment. Projects should address exploratory research issues that are viable & should create new teams of experienced researchers who can work together	

AGENCY/SPONSOR	PROGRAM TITLE	NOTES/PROJECT EXAMPLES	FUNDING LEVELS
	Geography and Regional Science	Supports research on geographic distributions & interactions of human, physical, & biotic systems on Earth's surface. Investigations on nature, causes, & consequences of human activity & natural environmental processes across a range of scales are encouraged	
<b>Environmental Protection Agency</b>	Environmental Education Initiatives	Key areas: Career Development, Capacity Building, Education Reform, Teaching Skills, Environmental Stewardship	\$50-200k plus
	STAR Research Grants	Supports environmental research by academic institutions, nonprofits, and state & local governments. Current programs: Integrated Design, Modeling, and Monitoring of Geologic Sequestration of Anthropogenic Carbon Dioxide to Safeguard Sources of Drinking Water (last deadline 1/6/09); Computational Toxicology Research Centers (last deadline 1/29/09); Novel Approaches to Improving Air Pollution Emissions Information	Undergraduate and Graduate Fellowships up to \$50,000 annually
<b>US Dept of Agriculture</b>	Higher Education Challenge Grants	Program seeks to establish sustainable urban and community forests by encouraging communities of all sizes to manage and protect their natural resources. Projects fall under the following categories: Innovative urban and community forestry for minority and underserved populations	TBD
	AFRI: Plant Biology	Seeks projects that will provide fundamental knowledge for improvement and sustainability of agricultural plant and forestry production. Topic areas are Environmental Stress (1/30/09), Biochemistry (2/20/09), Growth and Development (3/02/09)	Approximately \$12.25 million will be available in FY 09
	Scientific Cooperation Research Program	Supports long-term & short-term international collaborative research & exchange activities that promote domestic & global food security, sustainable agriculture & resource management, & trade. Projects make practical use of science to help solve mutual agricultural problems	TBD
	P3 Award: A Student Design Competition for Sustainability	Supports undergraduate & graduate teams at IHEs to create partnerships with public/private sectors. Grants awarded to research, develop, & design sustainable solutions to environmental challenges. Interdisciplinary teams from multiple engineering departments &/or departments of chemistry, architecture, industrial design, business, economics, policy, social science, & others are encouraged	Up to \$950,000 available to support approximately 50 Phase I awards and six Phase II awards
<b>US Dept of Interior</b>	Green Parks Program	Partnerships focused on "greening" national parks	TBD
<b>US Dept of Energy</b>	Photovoltaic Univ/Industry Partnerships	Supporting unique university linkages to accelerate transformational technology and processes	\$100k's
	P3 Award: A Student Design Competition for Sustainability	Supports undergraduate & graduate teams at IHEs to create partnerships with public/private sectors. Grants awarded to research, develop, & design sustainable solutions to environmental challenges. Interdisciplinary teams from multiple engineering departments &/or departments of chemistry, architecture, industrial design, business, economics, policy, social science, & others are encouraged	In FY 09, up to \$950,000 available to support approximately 50 Phase I awards and six Phase II awards
	STAR Research Grants	Current programs: Integrated Design, Modeling, and Monitoring of Geologic Sequestration of Anthropogenic Carbon Dioxide to Safeguard Sources of Drinking Water (last deadline 1/6/09); Computational Toxicology Research Centers (last deadline 1/29/09); Novel Approaches to	

AGENCY/SPONSOR	PROGRAM TITLE	NOTES/PROJECT EXAMPLES	FUNDING LEVELS
<b>PRIVATE SOURCES</b>			
<b>American Honda Foundation</b>		Supports projects that meet the needs of youth, especially minority students. Projects have included job training & math, science, technology, & environmental education improvement, including curriculum development.	
<b>Environmental Research and Education Foundation</b>		Supports research and education on solid waste management. Solicits proposals in nine long-term priority areas: Landfills; Transport/Collection; Policy/Economics; Recycling/Waste Minimization; Combustion/Waste-to-Energy; Equipment/Safety; Conversion Technologies; Life Cycle Inventory/Analysis; and Education	
<b>Hewlett (William and Flora) Foundation</b>		Supports activities that encourage the development of sound environmental policy & improve decision making on environmental issues. Three goals: to save the great ecosystems of the North American West; to slow global climate change by reducing greenhouse gas emissions; & to address environmental problems that disproportionately affect disadvantaged communities in the San Francisco Bay area.	
<b>National Wildlife Federation</b>	Campus Ecology Fellowships (Graduate & Undergraduate Students)	projects on a variety of sustainability practices that work to reduce schools' carbon footprint. Funds may be used for direct project expenses &/or to cover living expenses. Applicants need not be environmental studies majors	\$2,000 to undergraduate students and up to \$5,000 to graduate students
<b>National Fish and Wildlife Foundation</b>	Keystone Initiative Grants	Focus on conserve & restore fish, wildlife, plants, & the habitats on which they depend. Projects should involve other conservation/community interests	Provides from \$50,000 to \$300,000 in matching funds
<b>Kresge Foundation</b>	Green Bldg Initiative Planning Grants	Specifically includes College/Universities	\$50-100k
<b>McArthur Foundation</b>	Conservation and Sustainable Development	Examples of University Projects	\$10-500k plus
<b>National Association of Counties (NACo)</b>	Coastal Counties Restoration Initiative	Supports innovative, county-led or -supported wetland, riparian, & coastal habitat restoration projects. Awards range from \$50,000-\$100,000. Projects are community centered & work with NOAA's Community-based Restoration Program which provides technical assistance in all aspects	Approximately \$350,000 available for CCRI projects in 2009 that help counties
<b>Rockefeller Brothers Fund, Inc</b>	Sustainable Development	Strong interest in Marine Sciences- Could be potential for Moss Landing-lead initiative. Funded recently Joint Venture: Silicon Valley Network project	\$25,000 to \$300,000
<b>John Merck Fund</b>	Climate Change	To support the design of a regional climate prosperity project, which will mobilize regional leadership to conduct research and bring together alliances to be included in a strategic 'Greenprint' providing a roadmap for a regional climate prosperity.	\$10 to 250,000
<b>Wallace Global Fund</b>	Environmental Protection	Funding to support environmental education/reform measures/forums/ workshops, etc.	\$25 to 200,00 also multi year funding
<b>Environmental Defense Fund</b>	Community-based Green Projects	TBD	TBD



**Lindberg Foundation**

Balancing Nature/Technology through Research/Education

Funding research that creates a balance between technology & preservation of the natural environment. Interests: agriculture; aviation/aerospace; conservation of resources, including animals, plants, water, & general conservation; education, including humanities, the arts, & intercultural communication; exploration; health, including biomedical research, health & population sciences & adaptive technology; & waste minimization & management. S

\$10,000 annual grants