

UCSF Sustainability Action Plan:

Executive Summary

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An Introduction to the Sustainability Action Plan

The Sustainability Action Plan¹ at the University of California at San Francisco (UCSF) is the result of a deliberate effort that began in the fall of 2009, and an outgrowth of the sustainability efforts that have been in place at UCSF for nearly ten years. This document is intended to encapsulate a single cohesive approach to the challenges of implementing sustainability in the educational, healthcare, research and regulatory environment of UCSF.

There are many shared goals between sustainability and healthcare: the desire to provide for the future, an attention to the holistic body as well as the discrete injury, a general pledge to not make things worse. And just as there are shared goals, there are also many shared frustrations: imperfect knowledge of the forces in play, unforeseen consequences to decisions, and the loss of life. For the purposes of developing this Sustainability Action Plan for UCSF, the definition of sustainability has been adapted through the lens of advancing health worldwide. Each of the strategic objectives has been developed with the goals of preventing harm, preserving human health and safety, and ensuring that sustainability at UCSF takes responsibility for the related problems of public health and climate change. Finally, the development of not just a set of guidelines or recommendations but an actionable plan for treatment is based on the recognition that despite our inability to see the future, we must act - using the best information available. By taking this ambitious step forward in developing an action plan that unites the sustainability efforts of the educational, medical center, and research arms of the university, UCSF is once again providing clear leadership to the healthcare community.

The Sustainability Action Plan has been designed for the UCSF audience, including students, staff, faculty, managers, practitioners, researchers, patients, etc. Despite this institution-specific audience, UCSF also recognizes that other institutions have faced similar challenges, and there is a hope that this action plan might offer guidance on the best practices for sustainability at any academic healthcare research university. Every attempt has been made to present information that is well documented, rooted in evidence-based decision making, and reflective of stakeholder concerns. Complete supporting documentation is available through the UCSF Office of Sustainability for this action plan as well as the baseline assessment.

The intent of the plan is to be a document of engagement that clearly identifies the strategic objectives for UCSF, the measures that will be used to gauge progress, the considered reasoning behind each initiative, and the next steps that are needed to implement the initiative. As a document of engagement, there is also an assumption that the UCSF stakeholders will provide feedback, and participate in revising and updating the Sustainability Action Plan on a regular basis. The Sustainability Action Plan is only useful if it is relevant, and it is incumbent upon the stakeholders of the institution to take ownership of this action plan and the identified initiatives, and to revise it according to the demands of the institution and its users.

Baseline Assessment

The Baseline Assessment² is a comprehensive analysis of UCSF's current state of compliance (Spring 2010) with its sustainability goals, principally the University Office of the President's (UCOP) Policy on Sustainable Practices. This report was developed through a process of engagement with the working groups that make up the UCSF Sustainable Steering Committee. The findings of the baseline assessment served as a launching pad for identifying the comprehensive set of goals and strategies that comprise the Sustainability Action Plan for UCSF's future.

¹ The complete Sustainable Action Plan is available at the UCSF Office of Sustainability website.

² The complete Baseline Assessment is available at the UCSF Office of Sustainability website.

Significant Findings

The Baseline Assessment yields several key findings:

1. The sustainability initiatives at UCSF are on par with other UC campuses, and in the lead among UC Medical Centers. The Medical Center is in a leadership position primarily because the efforts undertaken across all departments at UCSF directly benefit the Medical Center.
2. The sustainability efforts at UCSF are disconnected from one another, and are not consistently implemented across the institution.
3. The continued success of sustainability at UCSF will depend on the successful alignment of sustainability initiatives with the strategic mission of advancing health worldwide.
4. The greatest opportunities for improving the sustainability of UCSF lie in improved communications, education, data tracking, and continued funding of conservation efforts.

Additional Studies

Following the completion of the interview based portion of the Baseline Assessment, the Davis Langdon team prepared three additional studies to inform the Sustainability Action Plan: a review of the Climate Action Plan, study of relevant ratings systems, and an evaluation of the existing administrative framework at UCSF.

The first was an evaluation of the Climate Action Plan (CAP), a document first drafted by UCSF in 2008, and significantly updated in 2009/10³. This review of the climate action plan confirmed the findings put forth by UCSF, identified areas of the CAP that demand greater detail, and provided comparative data on the GHG emissions of peer

³ The full text of this document is available at the UCSF Office of Sustainability website
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institutions. This evaluation of the CAP provided background information and a basis of analysis for the initiatives considered under the Carbon Neutral strategic objective included in the Sustainability Action Plan.

Key findings from the evaluation of the Climate Action Plan include:

1. At the time of the study, the submission of verified emissions inventory to the Climate Registry was past due.
2. UCSF must develop internal drivers to achieve Medical Center GHG emissions reductions
3. The current CAP (12/2009) does not include a clear action plan for achieving the 2014 and 2020 targets.
4. Many "Future Reduction Measures" appear to already be accounted for.
5. If the CAP incorporated implementation of the entire list of SEP projects (including full potential PV use) the campus would meet its 2014 target.
6. The CAP year 2000 Scope 2 GHG emissions baseline (94,419 MTCO_{2e}) and the SEP year 2000 emissions baseline (54,863 MTCO_{2e}) are significantly different.
7. The SEP and the CAP appear to use different emissions factors.

The second study was a comparison of the multiple ratings systems that are available for healthcare, green building, and universities. This survey included LEED BD+C, LEED ID+C, LEED EBOM, Green Guide for Healthcare (GGHC)-New Construction, GGHC- Operations and Maintenance, and AASHE STARS. As no single rating system encompasses sustainability at UCSF, the credit alignment study served as a basis for developing the individual initiatives for each of the strategic objectives, and ensuring that the sustainability action plan is compliant with UCOP guidelines for LEED BD+C, ID+C and GBOM. The results of the rating assessment were presented via slide shows to the SSC and CACS, with the final analysis serving as the basis of the initiatives considered for the Sustainability Action Plan.

The third study was a critical evaluation of the existing administrative structural support for sustainability at UCSF, examining the institutional support for sustainability at UCSF, including the structure of the Sustainable Steering Committee and informal communication about Sustainability.⁴

Key Findings of the Organizational Structure Evaluation include,

1. For those aspects of sustainability at UCSF that are not specifically addressed by the UCOP policy, the CACS and SSC will need to clarify specific tasks and expectations.
2. The formal structure has, to date, assumed that CACS and SSC were primarily review bodies rather than direction setting or policy making bodies. As UCOP compliance increases, a formal structure for refining the UCSF sustainability vision will need to be established.
3. There are currently a number of existing long-term relationships among staff members or within departments that used to "get things done" in a direct way, that occur outside of the formal structure. To improve the effectiveness of the formal structure over time, the goal should be to build on and learn from the informal structure vs. eliminating or supplanting it.
4. The alignment of individuals and the tasks expected is adequate for most of the Work Groups. More definition is needed for the Communications, Budget, and Health Care Work Groups. Those departments that have a direct correlation to the UCOP Policy, the staff members are sufficiently skilled, but most experience a shortage of resources that results in the sustainability issues becoming lower priority than more immediate regulatory compliance issues.

⁴ This full text of this document is available on the UCSF Office of Sustainability website.

Action Plan Development

The findings of the Baseline Assessment, along with these three additional studies, have combined to serve as a foundation of sustainable practice for the development of the Sustainability Action Plan.

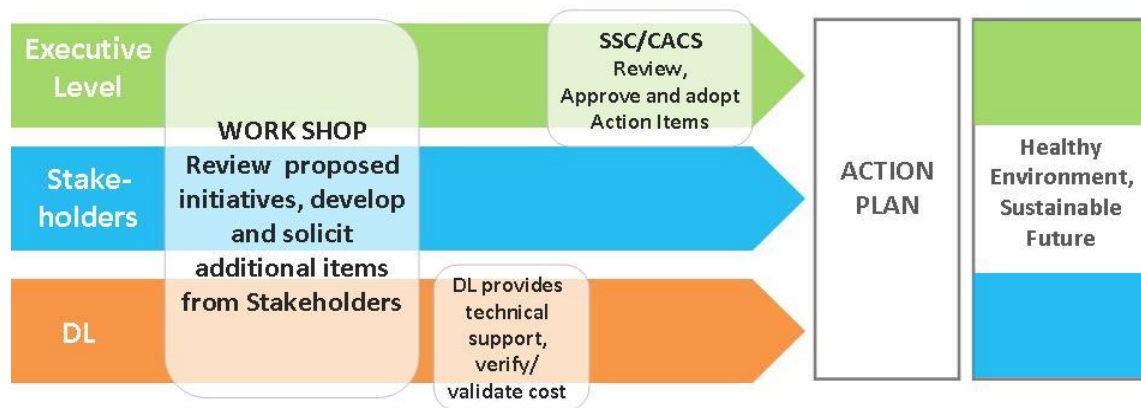
Existing Strategic Best Practices

In addition to the sustainable best practices, existing UCSF strategic best practices were reviewed and incorporated into the action plan development process. Examples of the existing strategic best practices included the Balanced Scorecard used frequently by Campus Life Services, as well as the Operational Excellence effort that is currently underway. The key findings for strategic best practices included the presentation of a value proposition for each item, broad stakeholder participation, and clear short/medium/long term goals with associated performance measures.

Workshop Process

The launching of the action plan development process featured a pilot workshop concentrating only on the zero waste strategic objective in September 2010, followed by a standalone workshop on the sustainable food strategic objective in September 2010, and finally a comprehensive workshop in November 2010 that addressed the carbon neutral, toxics reduction, water reduction, and culture shift towards sustainability strategic objectives.

UCSF Sustainability Action Plan Development



Sustainable Food

In parallel to the Davis Langdon facilitated workshops, UCSF internally facilitated a workshop on the Sustainable Food strategic objective and developed an action plan in compliance with the UCOP guidelines on sustainability. While Sustainable Food remains an important strategic objective for sustainability at UCSF, the specific initiatives targeted for adoption are discussed in the document entitled; “Sustainable FoodService Baseline Assessment and Action Plan” issued May 2010 which can be found as an appendix to this document. **Summary of Goals and Initiatives**

The following two charts include details of the final initiatives selected for inclusion in the Sustainability Action Plan. The first chart outlines the major short, medium and long term goals that have been identified for each strategic objective.

| HEALTHY ENVIRONMENT | | SUSTAINABLE FUTURE | |
|----------------------------------------|-------------------------------------------------------------------------------------------|-------------------------|-----------------------------------------------------------|
| Culture Shift to Sustainability | | Zero Waste | |
| Short Term Goal (2015) | Basic environmental literacy for 100% of students, staff, etc... | Short Term Goal (2012) | 75% Diversion from Landfill |
| Medium Term Goal (2020) | Integration of sustainability in the core curriculum of all schools | Medium Term Goal (2020) | Zero Landfill Waste |
| Long Term Goal (2030) | UCSF as a research and practice leader in sustainable healthcare | Long Term Goal (2030) | Reduction in Total Waste |
| Sustainable Food | | Carbon Neutral | |
| Short Term Goal | | Short Term Goal (2014) | Reduce total greenhouse gas emissions to year 2000 levels |
| Medium Term Goal | | Medium Term Goal (2020) | Reduce total greenhouse gas emissions to year 1990 levels |
| Long Term Goal | Procure Sustainable Foods for 20% of all food purchases | Long Term Goal (2030) | Achieve carbon neutrality |
| Toxics Reduction | | Water Reduction | |
| Short Term Goal (2015) | 100% adoption of green cleaning & low VOC materials | Short Term Goal (2015) | 20% Reduction from baseline |
| Medium Term Goal (2020) | Elimination of persistent bio-accumulative toxins, reduction of hazardous chemical usage. | Medium Term Goal (2020) | 30% Reduction from baseline |
| Long Term Goal (2030) | Ventilation/Controllability in all spaces, elimination of toxic materials & consumables. | Long Term Goal (2030) | 50% Reduction from baseline |

The second set of tables detail the individual initiatives that were selected for inclusion in the Sustainability Action Plan. This includes a brief description of each initiative and its impact towards meeting the goal. Detailed descriptions of each initiative with more complete information on the value proposition and business case can be found in the Sustainability Action Plan.⁵

| STRATEGIC OBJECTIVE: ZERO WASTE | Short Term Goal – 75% Diversion of all waste by 2012 Applies to all landfill waste (class 2/3/4), recyclables & compost. Excludes Regulated Medical & Hazardous Waste (class 1). | 2010 Diversion Level (lbs) | 12,562,584 |
|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|----------------------------------------|
| | | 2012 Target Diversion Level (lbs) | 18,763,713 |
| | | Target Diversion (2010-2012): | 6,201,129 |
| | Initiative number and title | First Cost Efficiency (first cost divided by diverted waste) \$/lb diverted waste | Estimated Total Diversion (lbs) |
| | Short Term Initiative 1 – Clear waste targets and handling expectations for all departments. | \$0.22/lb | 622,785 |
| | Short Term Initiative 2 – Replace disposable autoclave bags with re-useable bags. | \$19.00/lb | 1200 |
| | Short Term Initiative 3 – Establish a guideline for all equipment, furniture, etc. to be offered for reuse, recycle or donation. | \$13.00/lb | 124,557 |
| Short Term Initiative 4: Provide Access to Waste Management Plan and Educate Staff | \$0.12/lb | 6,227,000 | |
| Short term Initiative 5: Complete Audit of all “garbage” waste streams | \$0/lb | 0 | |

⁵ The back-up information used to derive the business case of most initiatives can be found in detailed excel files that are available for reference from the UCSF Office of Sustainability.

**STRATEGIC OBJECTIVE:
CULTURE SHIFT TOWARDS SUSTAINABILITY**

Short Term Goal: Basic environmental literacy for 100% of students, staff, patients, educators etc. by 2015

| Initiative number and title | First Cost | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------|
| | \$ Low | \$ High |
| Short Term Initiative 1 – Identify and reward department-level representatives for Sustainability. | | \$10,000 |
| Short Term Initiative 2: Develop survey to determine current level of eco-literacy at UCSF | \$10,000 | |
| Short Term Initiative 3: Conduct regular anonymous survey of workplace satisfaction. | \$0 | |
| Short Term Initiative 4: Sustainability Orientation. Provide new hires and incoming students with a basic introduction to sustainability at UCSF | \$10,000 | |
| Short Term Initiative 5: Develop and track sustainability related operations and maintenance costs. | \$10,000 | |
| Short Term Initiative 6: High level support of Sustainability. Provide semi-annual progress reports from the Chancellor, Deans, and Medical Center CEO on the strategic objectives | \$0 | |

Medium Term Goal – Integration of sustainability in the core curriculum of all schools by 2020

| Initiative number and title | First Cost |
|-----------------------------|------------|
|-----------------------------|------------|

| | | | |
|--|-----------------------------------------------------------------------------|---------------|----------------|
| | | \$ Low | \$ High |
| | Medium Term Initiative 1: Participation in external Sustainability efforts. | \$0 | |

| | | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|----------------|
| STRATEGIC OBJECTIVE: TOXICS REDUCTIONS | Short Term Goal - 100% adoption of green cleaning, Low VOC materials by 2015 | | |
| | Initiative number and title | First Cost | |
| | | \$ Low | \$ High |
| | Short Term Initiative 1: Institution-wide adoption of green cleaning standards | \$0 | |
| | Short Term Initiative 2: Education and Outreach. Education on alternatives for reducing the use of toxics in all labs and departments will allow individual staff members to take on widespread reductions in toxics. | | \$100,000 |
| | Short Term Initiative 3: Integrated Pest Management Policy | \$0 | |
| | Short Term Item 4: Reduced Toxics in Building Materials | \$0 | |
| | Medium Term Goal – Eliminate all PBTs & reduction in hazardous chemical usage by 2020 | | |
| | Initiative number and title | First Cost | |
| | | \$ Low | \$ High |
| Medium Term Initiative 1 - Elimination of Toxic Materials. A purchasing and implementation plan for the elimination of DEHP, PVC, PBTs, BpA, Carcinogens, Mutagens, Reproductive | \$10,000 | | |

| | | | |
|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|----------------|
| | Toxicants, Halogenated Fire Retardants and Phthalates. | | |
| | Long Term Goal – Provide high air quality (indoor and outdoor), including ventilation & controllability in all spaces. Elimination of toxic materials & consumables by 2030. | | |
| | Initiative number and title | First Cost Efficiency | |
| | | \$ Low | \$ High |
| Long Term Initiative 1 – Zero Emission Vehicles | Awaiting Innovation | | |

| | | | | |
|-------------------------------------------------|--------------------------------------------------------------|--------------------------------------------------------------------------------------------------|--------------------------------------------|------------------|
| STRATEGIC OBJECTIVE: WATER REDUCTION | Short Term Goal – 20% Reduction from baseline by 2015 | 2010 Projected Water Usage Levels (gallons) | 180,240,242 | |
| | | 2015 Target Water Usage Levels (gallons) | 144,192,194 | |
| | | Target Water Usage Reduction (2010-2015): | 36,048,048 | |
| | Initiative number and title | First Cost Efficiency (first cost divided by avoided gallons of water used) \$/gallon avoided | Estimated Total Reduction (gallons) | |
| | | \$ Low | \$ High | |
| | Prerequisite Initiative 1: Comprehensive Water Audit | \$0 | | |
| | Short Term Initiative 1: Smart Irrigation Controllers | \$0.50/SF | | |
| | Short Term Initiative 2: Water Conservation Education | \$0.01/gal | | 9,012,012 |
| Short Term Initiative 3: Water Fixture | | \$0.04/gal | | |

| | | | |
|---------------------------------------------------------------|--------------------------------------------------------------------------------------------------|----------------|---------------------------------------------------|
| Retrofit | | | |
| Short Term Initiative 4: Leak Identification and Maintenance | \$0.00 | | |
| | | | |
| Medium Term Goal – 30% Reduction from baseline by 2015 | 2010 Projected Water Usage Levels (gallons) | | 180,240,242 |
| | 2020 Target Water Usage Levels (gallons) | | 126,168,170 |
| | Target Water Usage Reduction (2010-2020): | | 54,072,072 |
| Initiative number and title | First Cost Efficiency (first cost divided by avoided gallons of water used) \$/gallon avoided | | Estimated Total Reduction (gallons) |
| | \$ Low | \$ High | |
| Medium Term Initiative 1 – Cooling Tower Retrofit | \$500/ton | | |
| | | | |
| Long Term Goal – 50% Reduction from baseline by 2030 | 2010 Projected Water Usage Levels (gallons) | | 180,240,242 |
| | 2030 Target Water Usage Levels (gallons) | | 90,120,121 |
| | Target Water Usage Reduction (2010-2030): | | 90,120,121 |
| Initiative number and title | First Cost Efficiency (first cost divided by avoided gallons of water used) \$/gallon avoided | | Estimated Total Reduction (gallons) |
| | \$ Low | \$ High | |

| | | | | |
|--|---------------------------------------------------------|-----|--|--|
| | Long Term Initiative 1 – Localized Water Accountability | \$0 | | |
|--|---------------------------------------------------------|-----|--|--|

| | | | | |
|-------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------------------|------------------------------------------------------|
| STRATEGIC OBJECTIVE: CARBON NEUTRAL | Short Term Goal – Reduce emissions to 2000 levels by 2014 | 2009 MTCO₂e Emissions Levels | | 162,713 |
| | | 2014 Target MTCO₂e Emissions Levels | | 142,616 |
| | | Target MTCO₂e Reduction (2010-2014): | | 20,097 |
| | Initiative number and title | First Cost Efficiency (first cost divided by avoided emissions) \$/MTCO ₂ e avoided | | Estimated Total Reduction (MTCO₂e) |
| | | \$ Low | \$ High | |
| | Short Term Initiative 1 – Expansion of Conservation is Contagious campaign to all buildings | \$65/MTCO ₂ e | \$225/MTCO ₂ e | 4,995 |
| | Short Term Initiative 2 - Regular maintenance and upkeep of HVAC systems within a building, including filter replacement, cleaning of cooling coils, etc. | \$100/MTCO ₂ e | \$100/MTCO ₂ e | 2,731 |
| | Short Term Initiative 3 – Monitoring Based Commissioning for four projects identified in the Strategic Energy Plan and fully funded. | \$900/MTCO ₂ e | \$3,500/MTCO ₂ e | 3,324 |
| | | | | |
| | Medium Term Goal – Reduce emissions to 1990 levels by 2020 | 2009 MTCO₂e Emissions Levels | | 162,713 |
| 2020 Target MTCO₂e Emissions Levels | | 81,950 | | |

| | | |
|------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------------------------------------------------|
| | Target MTCO₂e Reduction (2010-2020, less short term savings): | 69,713 |
| Initiative number and title | First Cost Efficiency (first cost divided by avoided emissions) \$/MTCO ₂ e avoided | Estimated Reduction Total (MTCO ₂ e) |
| | \$ Low \$ High | |
| Medium Term Initiative 1 - Monitoring Based Commissioning for the remaining projects identified in the Strategic Energy Plan | \$3,400/MTCO ₂ e \$4,400/MTCO ₂ e | 7,262 |
| Medium Term Initiative 2 – High Performance New Construction projects, 30-50% more efficient than current benchmarks. | \$11,000/MTCO ₂ e | 19,367 |
| | | |
| Long Term Goal – Carbon Neutral by 2030 | 2009 MTCO₂e Emissions Levels | 162,713 |
| | 2030 Target MTCO₂e Emissions Levels | 0 |
| | Target MTCO₂e Reduction (2010-2030, less short and medium term savings): | 163,768 |
| Initiative number and title | First Cost Efficiency (first cost divided by avoided emissions) \$/MTCO ₂ e avoided | Estimated Reduction Total (MTCO ₂ e) |
| | \$ Low \$ High | |
| Long Term Initiative 1 – High Performance Building Retrofit of 15-30% energy savings. | variable | 23,863 |

Next Steps

Now that the final action plan has been developed, the remaining challenge is to transform the good intent of the action plan and implement it across all departments at UCSF. As is often seen with any effort that is difficult and complex, there can be a desire to wait for more information, greater detail in the confirmation that the strategic objectives and initiatives detailed in the action plan are truly demanded. However, the evidence of the UCOP guidelines on sustainability, the work of the SSC, State of California studies on climate change, and the nearly two years of development of this action plan clearly indicate that UCSF must act. This demand for action rests on UCSF's obligations to strategically manage not only their future financial and liability obligations, but also to support the mission of advancing health worldwide by acting as a responsible steward of natural and human resources.

The next six months are a critical period for publicizing the sustainability action plan among the different audiences of UCSF and launching the first round of short term initiatives. The public offering of the sustainability action plan will provide an opportunity for stakeholder buy-in of the 20,000+ UCSF audience beyond the less than 500 people who have been involved to date. The funding and implementation of the identified short term initiatives will provide evidence of a clear commitment by UCSF to utilize the sustainability action plan, and will begin to net the financial and environmental gains identified in the value proposition.

In the next year, the implementation of the short term initiatives will be expanded to reach all corners of UCSF, and will begin to reinforce one another as individuals see and respond to the sustainability initiatives. It is critical that these gains be measured to the fullest extent possible, and that the gains (or losses) are clearly and publicly reported. UCSF is an evidence-based institution, and the sustainability efforts must hold themselves accountable if continued support is to be given. In addition, the first year of adoption holds a great opportunity to solicit feedback from the 20,000+ individuals working and studying at UCSF, either through facilitated conversation or through web-based feedback forms.

The development of a sustainability action plan for UCSF, rather than a research paper or scholarly article, was quite deliberate. The intent is to adopt the action plan as a living document, which both reflects the realities of the institution, and inspires the UCSF community. In the next 5-20 years, the sustainability action plan is designed to be revisited on a regular basis, no more often than every year, and no less than every three years. This revisiting effort is to re-evaluate and re-prioritize individual initiatives towards the consistent goals of the strategic objectives. As time passes and the institution changes, different initiatives will become more or less feasible and impactful, new technologies will become available, and the sustainability action plan should be revised accordingly.

Appendix I: Additional Notes on Stakeholder Process

Development Process Criteria

In designing the action plan development process, there were three key development criteria: stakeholder involvement, detailed analysis, and replicability.

The goal in recruiting a wide range of stakeholders to participate in the workshops was not only to ensure that sustainability reflected the local demands of each department, but also to carry the message that sustainability is not limited to the sustainability manager, and is in fact everyone's responsibility. In addition to the participation of existing sustainability advocates (SSC, CACS), there was extensive recruitment of stakeholders from the Medical Center and campus, with particular attention to including the research labs as they represent a large but highly variable user group at UCSF.

Throughout the baseline assessment, additional studies, and workshop process, there has been a consistent demand for the best available analysis from the Davis Langdon team. As a medical research facility, UCSF is committed to evidence-based decision making, and the action plan development process was designed to allow time for thorough analysis.

Finally, the third key structural concern for the action plan development process was that it be capable of replication in future years. The strategic objectives and UCOP guidelines identify goals as far out as 2030, and UCSF recognizes that the targeting of specific initiatives, coordination of large scale sustainability efforts, and stakeholder empowerment will rest on development of a review and decision making process being held on a regular basis.

With this understanding, the Davis Langdon team developed a transparent and fully documented workshop process that can be readily transferred to the UCSF sustainability team for future facilitation. The process outlined below features stakeholder evaluation of initiatives that have been pre-qualified for consideration, followed by a detailed outside analysis of those initiatives selected for implementation. This three part process of pre-qualification > stakeholder consideration > validation was selected as the best option due to its targeted consideration of stakeholder time, and extensive outside analysis.

Workshop Process

The pilot launch of the zero waste workshop allowed the Davis Langdon and UCSF teams to make minor modifications to the workshop process prior to the larger November workshop. Although the November workshop's inclusion of four strategic objectives provided a great deal of complexity to schedule, it had the advantage of allowing for cross-pollination between experts in different stakeholder groups, and greatly increased the recognition of the workshop as an important event worthy of dedicated time.

The September and November workshops introduced the audience to background information on each of the strategic objectives including current practices at UCSF and presentation of the short, medium and long term goals. Stakeholders were then divided into smaller groups to consider each strategic objective individually, and to focus on discussion and selection of those initiatives that should be pursued in achieving the short, medium and long term goals. The initiatives offered for consideration had previously been assembled and selected by the Davis Langdon team, in consultation with UCSF. They were based on the results of the Baseline Assessment and the additional studies. Based on the results of the pilot workshop, the initiatives offered for consideration in the November workshop were limited to only those which held the most promise for UCSF, and could be directly adopted at the

institution. Each stakeholder group was then responsible for reviewing each initiative, and scoring it based on the value proposition for that strategic objective. This included assigning a value between -3 and 3 in four categories:

- *Environmental / Strategic Impact* - Detail of the environmental gain of a specific strategic objective, or the contribution of a specific initiative to the goals of the strategic objective.
- *UCSF Mission Impact* - Contribution of the strategic objective or initiative towards the overall mission of UCSF as identified in the Chancellor's stated priorities.
- *Financial Impact* - Description of the financial impact of the strategic objective or initiative. This includes potential savings as well as costs.
- *Feasibility Impact* - Description of the feasibility challenges facing the adoption of a strategic objective or specific initiative.

In addition to scoring based on the value proposition of the initiative, the stakeholder groups were responsible for identifying the timeline that should be associated with each of the initiatives. A particular challenge that emerged from all of the workshops was the difficulty of identifying initiatives in support of the long term goals. Part of this difficulty can be attributed to the impossibility of knowing what the future will look like in twenty years, but more often there was a demand from the stakeholders that those initiatives which were important should be acted upon in the near term, despite financial or feasibility challenges.

The final activity of each workshop was a large group effort to re-focus on the initiatives which demanded immediate attention and action. During the pilot workshop, this conversation was facilitated by the Davis Langdon team and pivoted on the consideration of the current levels of waste diversion alongside the 2012 goal of 75% waste diversion. During the November workshop, this added emphasis was achieved through the use of individual sticker based voting. Each participant was given one sticker for each of the strategic objectives, and asked to vote for the initiative that they felt was most important. A surprising level of consensus emerged from this stickering effort, and has served to reinforce the ratings made within each of the stakeholder groups and endorse the immediate pursuits of the UCSF Office of Sustainability. Full details of the stickering results are available in the final Sustainability Action Plan presentation file, represented in the diameter of each initiative point on the "Bang for Buck" graphics.

Finally, each of the stakeholders was asked to take a short survey in the days following the workshop, and share their views on the success of the effort. The survey results of the September 2010 workshop were consulted in making revisions to the agenda of the November 2010 workshop, and similarly the survey results of the November 2010 workshop will contribute improvements to future iterations of the workshop process. Complete survey results are available through the UCSF Office of Sustainability.

Analysis of Target Initiatives

A key portion of the development of the Sustainability Action Plan for UCSF has been the use of economic and environmental impact analyses to validate and quantify the initiatives recommended for adoption. At the close of each workshop, a select number of initiatives were identified as the key ones to further investigate and pursue. Using the best available information provided by UCSF, the Davis Langdon team prepared cost and quantity impact estimates for each of these initiatives. The evaluation of the environmental impact of each of the initiatives was based wherever possible on information available from UCSF, occasionally using the measured results of one effort, such as "Conservation is Contagious" to gauge the potential impact of a new initiative, such as expanding education on waste targets. For other items, such as the carbon neutral initiatives, benchmarking data from outside sources (Labs21, etc) was used to target the potential results of best practice implementation at UCSF. Costing information

was developed by Davis Langdon, drawing on precedent information of similar projects where available, and through solicitation of vendor information as needed. These costs are necessarily conservative, and do not include potential incentives or utility cost savings due to the unpredictability of utility rates. Where initiatives demanded detailed knowledge of institutional practices, such as the Sustainable Food or Culture Shift strategic objectives, the UCSF Office of Sustainability developed information on the cost and other impacts of each initiative.

The intent of these analyses was to provide sufficient information for the CACS/SSC and UCSF office of sustainability to make an informed decision on whether or not to pursue the initiative. The complete implementation of any of these initiatives at an institution-wide scale will require significant additional development by the UCSF Office of Sustainability. Detailed information on the analysis of each initiative is available through the UCSF Office of Sustainability. The development of the Baseline Assessment, additional studies, strategic objectives, and final sustainability action plan have all been thoroughly reviewed and approved by the Sustainable Steering Committee and Chancellor's Advisory Committee on Sustainability at every step of development. This review process has been a critical part of the entire development process, including distribution of all text and powerpoint files, collection of comments, and incorporation of all edits as feasible.

Appendix II: Workshop Participants

| Name | Title | Department |
|-----------------------|-------------------------------------------------|------------------------------------------------------|
| Aguinaldo, Marcial | Assistant Supervisor, HMM | Environmental Health & Safety |
| Bacchetti, Peter | Professor in Residence | School of Medicine - Epidemiology |
| Bade, Michael | Interim Asst Vice Chancellor & Campus Architect | Capital Projects & Facilities Management |
| Beauchamp, Kevin | Director of Physical Planning | Campus Planning |
| Belluomini, Pamela | Student Services Coordinator | Student Academic Affairs |
| Bergquist, Sharon | Graduate Student | Biochemistry |
| Bird, Andrew | Project Manager | Real Estate Services |
| Bluestone, Susan | Recycling Coordinator | CPFM - FAC MAINT |
| Bruzgul, Jean | Patient Care Manager An IV | Dialysis - Chronic Care MZ |
| Burgel, Barbara | Clinical Professor | Community Health Systems |
| Chan, Dick | Director - Facilities & Support | Facilities & Support Services |
| Chan, Gilbert | Assistant Clinical Professor - VOL | School of Pharmacy - Dept Clinical Pharmacy |
| Christiano, Joey | Student Services Coordinator | Presidio Graduate School |
| Clift O' Grady, Lois | Director of Space & Planning | QB3 Institute |
| Cox, Kevin | Associate Director & Business Manager | Transportation Services |
| Crouse, Joanie | Superintendent Physical Plant | Capital Projects & Facilities Management |
| Dandekar, Deepak | Director | Design & Construction |
| Davis, Peter | Campus Fleet & Rideshare Manager | Transportation Services |
| DeGroot, Michael | Facilities Manager | Capital Projects & Facilities Management |
| Denoto-Reynolds, Fran | Specialist | Metabolic Research Unit |
| Diettinger, Don | Manager | HR - Development & Training |
| Dmitriew, Alex | Commercial Zero Waste Assistant Coordinator | San Francisco Department of the Environment |
| Dow, Adele | Facilities/Admin Support Manager | Helen Diller Family CCC |
| Doyle, Allen | UCD Sustainability Manager | Office of Environmental Stewardship & Sustainability |
| Draper, Jolene | SRA II (J. Lavail Laboratory) | Anatomy |
| Engel, Brad | Assistant Energy Engineer | Capital Programs & Facilities Management |
| Fitzhenry, Kristen | Analyst III | School of Medicine - Dean's Office UME |

| Name | Title | Department |
|--------------------|------------------------------------------------------------|----------------------------------|
| Foushee, Christina | Hospital Transition Manager | SFGH |
| Giovannini, Dave | Manager | Environmental Services |
| Guerra , Maria | Manager | Dental Clinics |
| Steve Guttman | Engineer | Guttman & Bloevett |
| Harris, Sheri | Specialist | Physiology |
| Henroid, Dan | Director | Nutrition & Food Services |
| Hernandez, Daniela | student | Presidio Graduate School |
| Hodges, Shirley | Director, Human Resources | School of Dentistry |
| Hyde, Kathryn | Recycling Coordinator | CPFM - FAC MAINT |
| Janssen, Sarah | School of Medicine - Urology | Assistant Adjunct Professor - FY |
| Kehoe, Paula | Co-Coordinator (Bureau of Environmental Regulation & Mgmt) | SF Environment |
| Koenig, Eric | Director | Office of Student Life |
| Koras, Peter | MGR - CLS Distribution & Storage | Distribution & Storage |
| Lamberto, Luistro | Program Manager, HMM | Office of Research - EH&S |
| Levin, Judy | Program Manager | Center for Environmental Health |
| Macleod, Karen | Specialist | Neuroscience |
| Macrae, Madhu | Specialist | Helen Diller Family CCC |
| Madriz, Linda | Student | Presidio Graduate School |
| Mapa, Monica | Analyst V | CLS - Marketing & Planning |
| Marietta, Peter | Facilities Manager | Galdstone Institutes |
| Miguelgorry, Piper | | |
| Miller, Caroline | Associate Specialist | Pathology |
| Miller, Stephen | Green Campus Program Manager | Green Campus Program |
| Miller, Steven | Account Manager | Real Estate Services |
| Milliken, Nancy | Vice Dean SOM/Prof - Clinical OB/GYN | OB/GYN Center of Excellence |
| Moeller, Teresa | Analyst III | Global Health Sciences |
| Munn, Maric | Director - Facilities Management | Facilities Management |
| Nacario, Joyce | Clinical Nurse IV | Moffitt Operation Room |
| Newman, Thomas | Professor (Epidemiology) | Epi/Biostat and Pediatrics |
| Nock, Silke | Employee of Affiliated Org | Howard Hughes Medical Institute |
| Obot, Mary | Account Manager | Stericycle |
| Odato, David | Chief Admin & HR Officer | Medical Center Administration |
| Orozco, Tim | Technical Operations Supervisor | Environmental Health & Safety |
| Ortiz, Julie | program manager | SF PUC |
| Patel, Shilpa | Analyst IV | Academic Senate |
| Pizzi, Bob | Space Management Supervisor | Capital Programs |
| Plotts, John | Senior Vice Chancellor | Finance & Administration |

| Name | Title | Department |
|--------------------|------------------------------------|------------------------------------------|
| Powell, Amy | Production Coordinator | Vendor Administration |
| Raphael, Debbie | Director, Env Programs | SF Environment |
| Rassner, Mitch | Analyst III | Prevention Sciences Group |
| Reilly, Linda | Professor in Residence | Surgery |
| Robelo, Oswaldo | Facilities Operations Manager | CLS MB FAC MGMT |
| Roberts, Cliff | Interim, Associate Vice Chancellor | Executive Vice Chancellor |
| Smith, Dana | Specialist | Biochemistry & Biophysics |
| Smith, Kathleen | Consultant | Davis Langdon |
| Solomon, Carl | Director | Environmental Services |
| St. Clair, Matthew | Sustainability Manager | UCOP |
| Stoll, Kira | Sustainability Specialist | UCB |
| Stout, Jason | Manager, Human Resources | FAS HR Service Center |
| Suarez, Mario K. | Campus Program Manager | Environmental Health & Safety |
| Szeto, Don | Project Manager | Capital Programs |
| Sutton, Julie | Landscaping & Grounds Supervisor | Capital Programs & Facilities Management |
| Thompson, Kirsten | | |
| Tzeto, Steven | Student | SFSU |
| Van Riper, Greg | Manager | Purchasing |
| Vargas, Melissa | Program Manager | CIWMD |
| Walker Wells | consultant | Global Green |
| Yamauchi, Lori | Assistant Vice Chancellor | Campus Planning |
| Yoshihara, Hikari | Associate Specialist | Radiology |

Appendix III: Complete List of Initiatives

Appendix IV: Sustainable Food Report