2014-2020 UCSF Sustainability Action Plan 2.0

LED lighting in operating rooms increases energy efficiency
Executive summary

The University of California at San Francisco (UCSF) is part of the ten-campus and two national laboratory system which is administered by the UC Office of the President (UCOP). The university system collectively recognizes that climate change is the biggest challenge of our time, and that aggressive action and leadership are needed to address this and other sustainability issues.

To this end, the UCOP requested periodic Sustainability Action Plans from each campus. The UCSF Chancellor’s Advisory Committee on Sustainability (CACS) charged the Sustainability Steering Committee (SSC) and its ten workgroups to develop an update to the 2010 Sustainability Action Plan (SAP1.0). The SAP1.0 focused on short-term tactics, most of which have been completed. The SAP2.0 attempts to prioritize remaining tactics from SAP1.0 and offers additional tactics to achieve our 2020 goals which are informed either by the UC Sustainable Practices Policy or UCSF internal goals. The SAP2.0 is intended to be a living document subject to changes that may occur due to the university environment, new technologies or new opportunities.

This document explains the development of a robust framework in which UCSF will evaluate and prioritize new tactics to ensure that funds are used for the most impactful tactics. The tactics of highest benefit were identified in the topic areas of each of the work groups: climate neutrality, water conservation, zero waste, sustainable food, culture shift, green buildings, toxics reduction, sustainable operations, and green procurement.

The attachment contains the graphical and tabular summary of the strategies and tactic selection and prioritization based upon the evaluation tool, and the selection of the highest priority tactics to be put forth for implementation and funding.
I. Sustainability, a strategic direction for UCSF

1. UCSF, a leading university dedicated to health

UC San Francisco (UCSF) is part of the University of California (UC), a public university system regrouping 10 campuses across the U.S. state of California. UCSF is the only UC campus exclusively dedicated to the graduate health sciences.

UCSF’s mission aims at promoting health worldwide through (i) advanced biomedical research, (ii) education in the life sciences and health professions (graduate level) and (iii) patient care. It is recognized for its faculty and professional schools in medical sciences and healthcare. Five researchers have received the Nobel Prize for their discoveries at UCSF. And all four professional schools (medicine, dentistry, nursing and pharmacy), as well as UCSF Medical Center and UCSF Benioff Children’s Hospital consistently rank among the U.S.A. top ten schools and hospitals respectively, according to US News & World Report. UCSF is a major healthcare provider in the San Francisco Bay Area.

UCSF is located on multiple sites throughout San Francisco with three major, multi-building campuses at Parnassus Heights, Mission Bay and Mount Zion. In addition, major programs and departments are located at 17 other sites owned or leased by UCSF throughout the city (Figure 1). The construction of a hospital complex (UCSF Medical Center at Mission Bay), is scheduled to open in 2015 to serve children, women, and cancer patients.

1 Parnassus Heights: Schools, UCSF Medical Center, Benioff Children Hospital, administration
2 Mission Bay: research laboratories, new UCSF Medical Center, administration
3 Mount Zion: UCSF Medical Center
4 Laurel Heights: research, administration, child care center
5 Buchanan Dental Clinic
6 Mission Center Building; administration

Figure 1 – Map of UCSF locations.
UCSF is bringing significant resources to advance biomedical research and provide quality healthcare to its patients. UCSF is facing two main issues that have a direct impact on its operations: (i) it is under continuous pressure to reduce costs while fuelling research discoveries and improving patient care, and (ii) its operations have a significant environmental footprint with substantial repercussions on public health. UCSF is thus facing a great sustainability challenge and has to continuously work on improving the management of its triple bottom line (social, environmental, financial).

2. The sustainability challenges faced by healthcare institutions and higher education

UCSF explicitly states that its mission “advancing health worldwide” is demonstrated through three channels: healthcare, research and education. We will discuss how the notion of “sustainable health” can lead to credible alternatives and continuous improvement by articulating healthcare quality, environmental impacts and cost management.

a. Healthcare, environment and paradoxes

Healthcare organizations make significant contributions to their communities by providing a wide variety of services and are thus considered healers rather than “polluters”. However, the healthcare sector is a resource-intensive industry with significant inputs of materials, water, and energy that result in output of waste, effluents, and emission pollution.

• Healthcare facilities are the second most energy-intensive facility type in the U.S. (EIA, 2004) and the healthcare industry accounts for about 8% of the American greenhouse gases emissions (Chung & Meltzer, 2009).
• This sector creates about 2.5 million tons of waste per year, much of which is transported and then either buried in landfills or incinerated (Kaplan, et al., 2012).

• Toxic chemicals are virtually ubiquitous in healthcare and laboratory environments, ranging from cleaning agents to medicines and reagents. Many of them are tracked by Environment, Health and Safety (EH&S) but a large panel of chemicals of particular concern for human health are not yet regulated. These have been identified by EPA as a “chemical of concern” which includes bisphenol A, flameretardants, phthalates and others. Significant amounts of persistent bio-accumulative and toxic (PBT) chemicals are also released through medical waste incineration, which has been shown to be a major source of dioxins and mercury emissions, both listed as the U.S. Environment Protection Agency’s (EPA) Top 12 Priority PBT Pollutants.

By looking at operational inefficiencies typically found in healthcare and healthcare research, we will see that there are clear opportunities to bring these challenges together and that strategic improvements could be made to reduce undesirable environmental and health impacts.

b. Making the business case for sustainability programs

Healthcare institutions are facing important intrinsic constraints: regulations related to infection control and security associated with a strong single-use culture, high financial constraints, 24/7 operations and a large diversity of services (some directly related to healthcare, and many others related to operations: janitorial services, purchasing departments, etc.). Healthcare research is a significant portion of the UCSF enterprise that also faces similar constraints.

UCSF recognizes that healthcare and healthcare research is especially resource intensive, implying both high operation expenses and costly environmental footprints. Thus, cost-saving motivations and pollution reduction measures can often be aligned.

Managing utility costs are a crucial challenge for the healthcare sector as well as for higher education. Their high energy and water requirements make them particularly vulnerable to cost fluctuations. Thus, UCSF’s utility expenses have constantly increased for the past four years (Figure 2) and UCSF projects an annual price escalation of 2-6% for the foreseeable future. (internal sources, February 2013 utilities budget projection) This is consistent with the results of a survey for which 91% of hospitals surveyed reported higher energy costs over the previous year (ASHE, 2007).
Figure 2 – UCSF’s utilities cost evolution (left graph: energy cost, right graph: water cost). Utility costs have globally increased for the past four years. Energy expenses have risen by 17% between 2010-2011. Water expenses have continuously increased by 6 to 10% each year.

The U.S. EPA estimates that 30% of the healthcare sector's current energy use could be reduced without sacrificing quality of care through a shift toward energy efficiency – representing a savings of about $2 billion a year nationwide.

Moreover, waste management initiatives offer tremendous opportunities for UCSF to reduce both its environmental footprint and its supply chain and waste disposal expenses. Improved segregation of medical waste and solid waste by fostering reuse, composting and recycling by making it simple, and by educating people, are key elements to divert waste from landfill. Diverting organic materials (composting) has a particularly positive impact on climate change since it avoids methane gas emissions (a powerful greenhouse gas) due to anaerobic decomposition in landfills.

Supply chain expenses represent the second largest expense line, following labor, on UCSF's results of operation, at a cost of $495 million in 2012 (UCSF, 2012). A large part of these supplies are consumables that ultimately become waste, hence the importance to implement a smart source reduction plan. This does not include the energy used and the waste generated during the manufacturing process of unnecessary materials. There is thus the need to integrate a lean culture, especially in hospitals and laboratories that are both resource-intensive facilities.

Consequently, there are clear opportunities to bridge the gap between promoting health, reducing costs and operating in a sustainable manner by focusing on synergies between these three interdependent challenges. By integrating environmental and public health impacts as core components of the decision-making process at an organizational level, UCSF would greatly consolidate and expand the scope of its “Advancing health worldwide” mission.

c. The role of higher education in promoting sustainability
Universities and colleges have historically played a critical role in transforming societies through scientific discoveries and through the education of leaders, intellectuals, and future-makers (Cortese, 2003; Elton, 2003; Lozano, 2006). The role of higher education is crucial to foster an ongoing global transition toward sustainability. Because it combines such a large and unique range of missions and activities – education, research, outreach to communities and complex operations – higher education has the potential to greatly impact the society as a whole.

Universities that make the decision to demonstrate stewardship and model sustainable operations by retrofitting their buildings, promoting green initiatives and purchasing sustainably preferable products and services, can have a tremendous economic leverage (Cortese, 2003).

d. Advancing towards “sustainable healthcare” and “healthy universities”

Because higher education and the healthcare industry have both intrinsic specificities, some of these programs are focusing on what sustainability means to these sectors.

Among the programs that are dedicated to higher education and especially relevant to UCSF, we can cite the Association for the Advancement of Sustainability in Higher Education (AASHE, http://www.aashe.org/), the California Higher Education Sustainability Conference (CHESC, http://cahigheredusustainability.org/) and the American College & University Presidents’ Climate Commitment (ACUPCC, http://www.presidentsclimatecommitment.org/).


Other programs that are not specific to these sectors are highly relevant to UCSF because they target areas that are strategic to UC. Leadership in Energy & Environmental Design (LEED, http://www.usgbc.org/leed), which is the most widely recognized green building certification, provides standards established by the US Green Building Council. Energy efficiency is greatly supported by the US Environmental Protection Agency programs, Energy Star (http://www.energystar.gov/) and EPEAT (http://www.epa.gov/epat/). The International Institute for Sustainable Laboratories (www.i2sl.org/) is another excellent resource for the research enterprise. Other associations focus on environmentally preferable purchasing (EPP).

In order to motivate institutions, systems showing progress such as ratings, benchmarking to peer-institutions and awards have been developed. They aim at both recognizing the efforts completed and highlighting which improvements are still needed. UCSF Medical Center received the Practice GreenHealth Partner for Change Award each year for the past four years. In 2014, the medical center received the Emerald
Award which recognizes healthcare facilities that have well-established environmental programs and continuously improve and expand these programs on the path to sustainable development. UCSF Medical Center also received two Circle of Excellence awards in the areas of Climate and Green Building through publically reporting emissions and seeking LEED gold certification for the Medical Center at Mission Bay to open in 2015. UCSF Medical Center is proud of these recognitions that serve as an effective motivation to continuously improve our sustainability efforts.

Conscious of its current footprint and its potential leverage, UCSF has built a solid sustainability program covering strategic environmental health areas across the entire campus and medical center with ambitious objectives.

3. Integrating sustainability at UCSF

   a. Motivations

UCSF is a multi-site institution housing a large diversity of services that directly impact the environmental and health footprints of the university. As its primary dedication to promoting health, UCSF recognizes that integrating the principle “first, do no harm” is part of its responsibility. In addition to the fact that it is right thing to do, UCSF has several motivations to move toward becoming more sustainable.

Primarily, the University of California Office of the President (UCOP) has set specific objectives for all ten UC campuses to reduce their environmental impact. One goal is to achieve 1990 CO₂ emission levels by 2020, a challenging goal because of the considerable expansion of the institution.

Additionally, UCSF has economical motivations to implement green tactics that would save costs and improve operations. Previous audits have clearly identified opportunities to reduce utility expenses (internal documents: UC Strategic Energy Plan, 2008; UCSF Climate Action Plan, 2009), and develop an effective tracking system of waste generation, energy and water use.

UCSF is furthermore committed to support healthy lifestyles and well-being. Sustainability programs such as toxics reduction are thus key components to promote a healthy workplace.

Finally, demonstrating social and environmental responsibility and communicating is an effective strategy to build reputation. UCSF publishes an annual sustainability report summarizing the most important achievements of the year and displaying the evolution of key performance indicators for sustainability. The sustainability website has received more and more visitors each year, with the number of visits roughly doubling each year and exceeding more than 84,000 visits in the past two years.

UCSF has thus developed a comprehensive and solid organization to support its commitment to sustainability and ensure quantifiable progress. This resulted in
recognition and visits from several international visitors from South America, Europe and Asia.

b. Vision

The sustainability vision of UCSF “Healthy environment, Sustainable future” (Figure 3) articulates its health mission, its commitment to reduce its environmental footprint and the need to operate efficiently, without compromising the health of future generations. To address the particular demands of sustainability within healthcare, research and education, UCSF has been building a comprehensive and integrated sustainability program based on six major topics. The table below summarizes how these six main areas contribute to the realization of the dual objective.

Table 1 – The six overarching strategic objectives of the UCSF’s sustainability plan.

<table>
<thead>
<tr>
<th>Healthy Environment</th>
<th>Sustainable Future</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxics Reduction</td>
<td>Carbon Neutrality</td>
</tr>
<tr>
<td>Sustainable Food</td>
<td>Water Conservation</td>
</tr>
<tr>
<td>Culture Shift</td>
<td>Zero Waste</td>
</tr>
</tbody>
</table>

Other topics addressed in the plan are green buildings, sustainable operations, and green procurement.

c. Organization

In most universities, sustainability projects are either “top-down” processes led by university administrators who create policies, or “grassroots” initiatives involving student groups lobbying for environmental reforms on campus. UCSF has developed a different governance model that promotes faculty- and staff-led sustainability projects through “Work Groups”. Some studies have demonstrated the great potential of this intermediate model for long-term positive change, since faculty and staff often have a better understanding of how the university works and stay typically for longer periods of time (University of Guelph, Institute for Community Engaged Scholarship, 2012).

Sustainability at UCSF is thus mainly driven by three structures: The Chancellor’s Advisory Committee on Sustainability, the Office of Sustainability and ten “Work Groups”.
The Office of Sustainability is led by Gail Lee, who is the only full-time agent dedicated to sustainability. The office plans, supports and coordinates the initiatives across the whole campus and UCSF Medical Center.

The Work Groups are panels of content experts and managers (mainly UCSF’s faculty and staff) who have various positions related to some sustainability issues and who have personal interests in sustainable development. In order to coordinate and communicate their work through UCSF’s hierarchy, each Work Group is co-chaired by a member from the medical center and another one from the campus. The co-chairs supervise the Work Groups organization, and report progress/issues to the Sustainability Steering Committee (SSC) at monthly meetings. (Figure 4). The SSC reports progress and makes recommendations to the Chancellors Advisory Committee on Sustainability to ensure support from UCSF leadership.

![Organizational chart of sustainability at UCSF.](image)

Figure 4 - Organizational chart of sustainability at UCSF. Each of the ten WGs has representatives that interact with the Office of Sustainability (co-chairs) and the UCSF Chancellor Advisory Committee (CACS members). UCOP coordinates the UC system-wide sustainability initiatives and set objectives.

The structure of these Work Groups (WGs) can be considered as semi-divisional. Many WGs are especially dedicated to one of the six areas targeted by UCSF (e.g. the Climate Change WG) while others work with and support the other workgroups (e.g. the Procurement WG is working on environmentally preferable purchasing practices that are related to toxics reduction and waste minimization) or correspond to support functions (e.g. the Culture Shift WG offers help in communication for the other WGs).

While each WG is working toward fulfilling the objectives set by UCOP or UCSF that are relevant for its own team, the Office of Sustainability has a central role in their
coordination, the promotion of the efforts, and the development of an integrated sustainability action plan.

d. Sustainability Action Plan

In 2008, UCOP has set qualitative and quantitative long-term objectives to UCSF with directions and expectations for the 2008-2014 and the 2014-2020 time periods (policy guidelines available at http://sustainability.universityofcalifornia.edu/documents/policy_sustain_prac.pdf). In order to achieve these goals, UCSF has to embrace a long-term agenda of sustainability with regular milestones to ensure constant progress.

Several action plans have been developed previously, some internally (Climate Action Plan, 2009) and with the collaboration of consulting firms (Strategic Energy Plan, 2008; Sustainability Action Plan 1.0, 2010). The Sustainability Action Plan (SAP) is a central document because it articulates all the topics targeted by UCSF. Its structured is based on the WGs’ organization and presents the strategies identified to fulfill their missions.

The Sustainability Action Plan 2.0 (SAP 2.0) presents an integrated scheme for 2014-2020. It features a set of top best practices selected through a comprehensive evaluation process and proposes a timeline for their implementation. It aims at planning the successive steps that have to be taken in order to eventually achieve the 2020 goals. Both the WGs and the Office of Sustainability have the responsibility of its development.

Since this public document will have a considerable impact on UCSF’s strategy for the future, the process underlying its development must be as transparent and objective as possible. Several principles have thus been set in order to give a framework to this process:

- The projects identification phase will be as open as possible and will not restrict any idea based on feasibility or economic issues at this step.
- The evaluation process of these potential projects will be consistent with the Sustainability Action Plan 1.0 and will consequently rely on four criteria: environmental impact, alignment with UCSF’s mission (health), economic impact, and feasibility within the UCSF culture.
- Decisions regarding the projects’ prioritization will be explicitly justified by the WGs.
- The SAP2.0 is a living document and will be revisited annually.

The development of the SAP2.0 is a considerable contributive work resulting from the participation of several dozens of managers, faculty, content experts, and staff. The members of the WGs have largely supported the elaboration of this document by sharing their vision and expertise.
II. Methodology and resources

Stakeholders demand greater transparency, consciousness, responsibility and accountability from corporate and public decision makers. Therefore the development of evaluation criteria and methodology that reliably represent sustainable outcomes is a prerequisite for selecting the best projects and monitoring environmental, environmental and health impacts.

To this end, this document will share the progress made by each WG showing thoughtful and considered processes and prioritization of tactics.

1. Overview of the process

WGs are responsible for planning, coordinating and driving work supported by the Sustainability Steering Committee (SSC). They are led by campus and medical center representatives who sit on the SSC and co-chair each WG. (See Figure 4).

In the development of SAP1.0, one entire day facilitated by a consulting firm was dedicated to scoring and prioritizing the various tactics of each strategic objective. These tactics were identified after a review of existing best practices by leading institutions. Subsequently, WG met regularly to report on the implementation of the SAP1.0.

In the development of the SAP 2.0, WGs recognized that they were better positioned as content experts to identify the strategies and tactics. It was determined that the entire following year would be used to brainstorm, score and prioritize strategies and tactics to develop a more realistic action plan for goals leading to 2020. WGs continued to meet monthly to develop the plan.

2. Vision and Objectives definition

A visioning session was held at the outset so that each WG member could establish an endpoint vision of their efforts by 2025. The results are below.

- Zero Waste, less hazardous waste, $2^\circ \uparrow$ regs
- LEED platinum & Net Zero buildings
- Environmental Stewardship is embedded, sustainable practices used by all, consumers $\Delta$ the market
- Green products are mainstream
- Innovations make ROI (return on investment) better to retrofit old buildings
- Preventive medicine = healthier communities
- Good environmental practice is good business practice
- Position UCSF as leader in Environmental Health/Preventative Medicine
- Water conservation, reuse and efficient equip becomes standard practice

Each WG name was essentially their goal. WGs then determined the specification of strategies needed to achieve their goals in alignment with UCSF’s mission and in alignment with UCOP-mandated goals. The intent was to time their work to brainstorm,
evaluate, and prioritize strategies and tactics in time for inclusion in the Finance and Administrative Services (FAS) budget approval process for FY14-15 which is needed by March of each year.

Short, medium, and long-time horizons were considered in the strategies and tactics. Multiple strategies were encouraged for each WG, which provided a platform to generate new ideas for tactics.

3. Potential tactics identification

WGs began monthly meetings in January 2013. Best practices from other institutions were briefly discussed to stimulate the brainstorming activities to identify additional tactics to meet the WG objectives. Their membership in the systemwide WGs of the same name provide more input into this exercise.

The initial step was to brainstorm all possible tactics that would help towards each WG’s goals. Members were reminded not to filter ideas so that it would not inhibit the free-flowing thought process. Posters of previously identified strategies were provided on the walls and work group participants were give sticky notes to quickly jot down all possible ideas. New strategies were also considered. Members placed the notes on the appropriate strategy posters. A review of all the ideas as a group allowed a clarification of each tactic to ensure group understanding of each.

In some cases, several meetings were needed to complete the brainstorming process, where additional strategies of tactics were created. Sorting of the tactics was done later.

Some WGs found that the larger the number of potential alternatives identified was due to the increased tactic complexity. Ten to 70 different tactics were identified depending on each WG.

4. Multiple criteria decision tool development

Criteria selection and criteria weighting is an important function for ensuring sound decision making. The use of four filters for tactics evaluation were used:

Four filters: Environmental impact, financial impact, feasibility within UCSF culture, and alignment with UCSF’s mission of Advancing Health Worldwide were selected for this purpose. This is consistent with SAP 1.0. (developed by Davis Langdon)

In particular these criteria were selected based on their reliability, materiality and practicality (Wang, Jing, Zhang, & Zhao, 2009)

Intangibles were also included in this evaluation, including complex variables such as employee job descriptions, time and effort constraints, and incentives that contribute to the level of interest and commitment to implementation.

WGs met in early Spring 2013 to use the evaluation tools exhibited in the slide presentation appendix.
For this effort a secondary “graphing mechanism” was embedded to ensure that each tactic’s score from -5 to 5, for each of the four filters, was depicted graphically in the workgroup spreadsheets as well as in the table. This visual depiction quickly and easily identified the tactics with the highest estimated impact after the filters were applied. The tactics in the top right of the graph were the most worthy of consideration for implementation, while those in the lower left corner of the graph were lowest priority, but were retained for future consideration.

Strategies and tactics were sorted and placed into the evaluation tool template for each WG. In cases where a large number of strategies and tactics were identified, multiple templates were needed for each strategy. Monthly meetings were scheduled with varying degree of attendees but co-chairs were consistently present. The initial learning curve of the framework was quickly overcome, and more timely evaluations and scoring proceeded over the next few months.

Once the scoring was complete, the top 10 highest scores were consolidated into one template. Outside advising and contractual support were used when necessary. In some cases, after a review of the relative weighting of tactics, rescoring was encouraged to ensure appropriate priorities were assigned.

5. Development of KPI for performance tracking

Performance Evaluation Metrics are a prerequisite for all evidence-based decision making. Key performance indicators (KPI) are being tracked for most work groups. Examples include tracking total GHG emissions in MTCO2e; water usage in CCF; percent of waste diverted, number of LEED projects completed, percent spend on sustainable food, and website hits per month. Not all work groups have developed KPIS to track.

Actual WG worksheets are available in the SAP2.0 Results presentation (attached), that illustrate the results of brainstorming, evaluation and prioritization of the top ten tactics relevant to the WG goals and strategies. In some cases, selections of the top tactics in multiple strategies were combined into a top ten table. These worksheets show the progression from filter evaluation, to prioritization, to selection of appropriate tactics to put forth for funding.

III. SAP project cost-benefit analysis

Several more in-depth analyses were performed for a handful of projects that were already supported by UCSF management and represented significant up-front costs. The main objectives were to determine what would be the back of the envelope evaluation to see if they would be financially viable and their expected environmental outcomes (with a specific focus on the carbon footprint).

Table 1 compiles the results of the cost-benefit analyses example for five projects considered for implementation. The scalability is defined as the number of replicable
projects that could be implemented based on these results. For instance, more than one solar power project could be developed – several sites have been identified as potential candidates – however, these results may not be directly transferable to other solar projects, the analysis would have to be revisited for each site to adapt the assumptions.

Table 1 – Summary of the cost-benefit analysis for five different projects considering a full-scale implementation. Data in bold points out which elements support the implementation of the projects. a labor cost that will be supported by UCSF to build the project; b net annual savings based on 2013 utility prices.

<table>
<thead>
<tr>
<th>Projects</th>
<th>Scalability (# of replicable projects)</th>
<th>Investment ($)</th>
<th>Net annual savings ($)</th>
<th>Pay-back</th>
<th>Project lifetime</th>
<th>Total net savings over project lifetime</th>
<th>GHG avoided annually (tCO₂e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solar PPA</td>
<td>1</td>
<td>$28,000 a</td>
<td>$11,000 – $15,000 b</td>
<td>2 years</td>
<td>25 years</td>
<td>Projections too uncertain</td>
<td>18.5</td>
</tr>
<tr>
<td>Wind power</td>
<td>1</td>
<td>$7,000– $10,000</td>
<td>$330-690</td>
<td>&gt; 18 years</td>
<td>20 years</td>
<td>$(6,800)–$ 1,000</td>
<td>0.5</td>
</tr>
<tr>
<td>Hand dryer</td>
<td>4</td>
<td>$68,000</td>
<td>$23,200</td>
<td>3 years</td>
<td>5 years</td>
<td>$32,000</td>
<td>2</td>
</tr>
<tr>
<td>Occupancy sensor</td>
<td>20</td>
<td>$5,000</td>
<td>$1,300</td>
<td>5 years</td>
<td>5 years</td>
<td>$740</td>
<td>8</td>
</tr>
<tr>
<td>Manual treadmill</td>
<td>15</td>
<td>$7,500</td>
<td>$6,750 – $7,500</td>
<td>1 year</td>
<td>6 years</td>
<td>$27,000</td>
<td>10.5</td>
</tr>
</tbody>
</table>

Based on this example analysis, we would recommend focusing primarily on the Solar PPA, Occupancy sensors in closets and Manual treadmill projects.

By the fall of 2013, the WGs were asked to put forth two tactics to fund for the next FY in preparation for a budget request. In the case of tactics that needed no funding, WGs were encouraged to begin implementation. For those with funding requirements, WG members either did their own cost analysis, or lacking these skills, the consulting group Strategic Energy Innovations, Inc. (SEI) was retained to help develop the budget for up to two tactics for each WG.

By December of 2013, SEI had met with the WGs at least twice and obtained UCSF specific data to make the necessary calculations to estimate a relative cost for their respective tactics. The tactics were also graphed over time frames to depict short, medium and long term activities between 2014 and 2020. These were presented at the Sustainability Steering Committee meeting where recommendations were made to the Chancellor’s Advisory Committee on Sustainability (CACS) for approval in January. The CACS approved the tactic recommendations for budget submittal.

After approval, the budget was submitted to the Budget Office and to the Senior Vice Chancellor John Plotts for funding approval. Two tactics were eliminated based upon the SVC Plotts determination of relative value for the funding.

After the cost-benefit analyses were completed, the projects were submitted to the scrutiny of the UCSF budget process. As part of the process, it was requested that an estimate of cost savings be provided.

A summary of all the approved budgets for FY 2014-15 can be viewed on slide 109 of the attached SAP2.0 Results presentation. All the tactics funded totaled $45,296 for an
estimated annual savings of $48,665. Some of the projects approved included signage to instruct LEED certified building occupants; purchasing guidelines for energy and water consuming equipment; reduction in waste, technology to reduce lighting costs in closets; education to help new parents avoid toxins; and on-line recycling and safety training.

**Conclusion**

The strategy and tactic selection and prioritization process appeared to be working well to select top tactics of relative value as compared to other tactics across all ten workgroups. There appeared to be some bias toward the selection of projects that may be less labor-intensive than others where no funding is required but significant investment in time would be needed to implement. Conceivably, these tactics could be fulfilled by outside contractors, labor redirected, or become MBA graduate school projects.

As we continue to use these tools, the process will continue to be refined by co-chairs and their members so their use will become more familiar, easily adopted, and results achieved. We envision to use the SAP2.0 to be a living document that will continue to be revisited annually.

Additional tools will be continue to be sought so that specific metrics can be used to track our progress over time to ensure we meet our established goals.
Bibliography


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Webography


Sustainability Roadmap for Hospitals. A guide to achieving your sustainability goals. Accessed July 8, 2013 from http://www.sustainabilityroadmap.org/resources/#.Udr6t3csjTo


### Attachment Contents: SAP2.0 Results Presentation Highlights

#### 1. Top Ten Tactics lists

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#### 2. Other Highlights

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<td>14-15 Budget Approved Tactics</td>
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