



**Green Buildings  
Final Report  
Spring 2014**

Claire Hirashiki  
Danh Lai  
Justin Brandt  
Elizabeth Roswell  
Alexandra Stream

Todd Lynch  
Principal Project Planner, Capital Programs



**UCLA**  
Institute of the Environment and Sustainability

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## **Executive Summary**

In an unprecedented project, the Green Buildings Team focused on achieving LEED, Leadership in Energy and Environmental Design, certification of the residential buildings on campus. By analyzing existing documentation, researching data gaps, and collaborating with other ART teams and the facilities administration, our team has streamlined the accreditation process, in hopes of driving future initiatives in sustainable architecture and management.

Unlike the previous Green Buildings Team, our group tackled an agenda that was much broader and more directed in scope due to the complex procedure of obtaining LEED certification of the dormitories on the Hill. In order to carry out this process, we had the assistance of returning stakeholder Todd Lynch, an architect and the current Principal Project Planner of UCLA Capital Programs who also acts as the advisor of the U.S. Green Building Council student chapter at UCLA. Throughout the duration of winter quarter, our team evaluated and collected existing documentation that Todd had in his possession that pertained to particular credits. As the program began to wrap up in spring quarter, our team members began to conduct research in our respective areas to obtain the necessary data from facilities management and other resources.

Fortunately, the journey has not been limited to the online and administrative realm -- our team has engaged in many opportunities to understand sustainable architecture through an alternate lens, by participating in a tour of a LEED-certified building, attending UCLA's Green Building Symposium, and enjoying many team-building social outings. In addition, our members proved their dedication by regularly attending stakeholder meetings. Overall, our team received a holistic, real-world experience that allowed us all to learn more about green architectural design while promoting sustainability on campus.

## **Significance/Background**

In recent years, UCLA as well as many other campuses have become more interested in sustainability, especially in the sphere of green buildings. In order to demonstrate this dedication to sustainable architecture, a large portion of our interest is directed into LEED certification. This year marked the return of the Green Buildings Team after two years as being formerly recognized as the Space Utilization team. The most recent Green Buildings team before ours had focused on outreach efforts by distributing informational materials and educating students about the sustainable architecture and LEED-certified features of the Court of Sciences Student Center.

Developed by the United States Green Building Council (USGBC) in 1998, Leadership in Energy and Environmental Design, abbreviated LEED, is a third-party rating system established to design, construct, and maintain existing or new buildings with the concept of sustainability and resource efficiency in mind. With a mission statement of, “LEED is transforming the way we think about how buildings and communities are designed, constructed, maintained and operated across the globe,” the program is essentially composed of five main groups of credits to pursue that goal, through monitoring of categories including sustainable sites, water efficiency, energy and atmosphere, materials and resources, and indoor environmental quality. The sustainable sites credits focus on lessening buildings’ impact on surrounding ecosystems. The water efficiency credits emphasizes enterprise by reducing water consumption and allowing for a more resourceful use of water. The energy and atmosphere credits address environmental concerns by increasing the efficiency of daily building activities in order to reduce the use of energy. The materials and resources credits relate mainly to activities involving sustainable materials and waste management. Lastly, the indoor environmental quality

credits encourage a higher quality of air and access to daylight, while the green cleaning credits award points for "green approved" cleaning products that consist of ingredients having negligible to no harm upon exposure to the environment.

There are four tiers of LEED certifications consisting of certified, silver, gold, and platinum. To receive one of these LEED ratings, a building must meet a certain number of points based on the aforementioned credits. For the certified, silver, gold, and platinum levels, 40-49 points, 50-59 points, 60-79 points, and 80+ points are required, respectively. Each credit does not necessarily have a point count associated with it since they can range from anywhere from one to fifteen, but they typically are worth around two to three.

UCLA holds a high standard in regard to sustainability and environmental consciousness. UCLA already has thirteen LEED-certified buildings and renovations including five silver, seven gold, and one platinum. These buildings include La Kretz, Public Affairs, Young Research Library and the South Campus Student Center. The UCLA campus has many more anticipated projects that will be LEED-certified in years to come, with already four projects awaiting certification, fifteen in the construction phase, and four in the design phase. Since 2006, in accordance with the UC System policy, LEED certification will act as the standard for all future construction at UCLA, in which all new buildings meet LEED Silver certification and exceed California's Energy Code, Title 24, Part 6 Requirements by twenty percent. UCLA aims to achieve beyond the UC standard for new buildings by achieving LEED Gold certification, recycling seventy-five percent of waste generated during demolition and construction, reducing water usage in buildings by thirty percent below code, reducing carbon emissions, and utilizing the best technologies to optimize energy use. Although UCLA has accumulated less LEED certifications than some of the other UCs such as UC Davis, our very own Public Affairs

building has the highest LEED score for any existing building at a University of California campus. Indeed, considering that UCLA's eco-friendly construction practices will continue to flourish with continuing renovations and new additions to campus, our team realizes that a necessary component to encouraging this progress is through recognition of previous sustainable architectural achievements that live up to the Bruin standard.

### **Objective/Project Goals (1-2)**

This year, our Green Buildings team collaborated with Todd Lynch, Principal Project Planner at UCLA Capital Programs to achieve LEED certification for many of the dormitories and buildings in the UCLA Housing area known as the Hill, including Bradley, Canyon Point, Courtside, Covell, and De Neve with the exception of Gardenia and Holly. As a team, it was important to organize a timeline that would earn credits in a manageable and timely manner. In doing so, we would understand how to connect with key contacts who could provide the necessary documentation and information for the applications. Due to the large volume of documentation and data that must be attached to each credit, our team divided into three subgroups that each had their own individual set of goals: Water and Energy, Purchasing and Waste, and Indoor Air Quality and Green Cleaning. By making use of resources like LEEDuser and the Existing Buildings Operation and Maintenance (EBOM) reference manual, all of our team members were able to understand the forms appropriate to their subgroup and recognize the needed documentation in preparation for submission to USGBC. Todd held almost half of the required material; however, it was very scattered, so we had to collect and organize that existing data into a presentable form. For areas of housing that Todd did not have access to, we needed to consult major staff at UCLA Housing, including Aliana Lugo-Shapiro and Hank Knapp.

Upon completion, we compiled all the static forms and their respective documents into a single PDF to be submitted to Todd.

In addition, as a continuation of the last Space Utilization Team's work, we attempted to engage in campus outreach at Earth Day Fair, while also conducting a survey to understand the student populace's knowledge of LEED certification and their opinions of future LEED endeavors. It is also After consulting Todd, we created a survey using a rating scale and multiple choice answers that measured the student awareness of LEED and what projects students would like to see from Capital Programs.

The Water and Energy subgroup aimed to understand and document the buildings' water and energy efficiency efforts. The entire system is largely complex and so it was important that the members in this group spend time fully understanding it through discussion with Todd and Aliana. We were informed that there was a lack of submetering for water and energy amongst the buildings, so we would have to formulate an alternative method of recording the data for each building on their individual applications. The Purchasing and Waste subgroup had a decently large size of credits. Many of the credits required a lengthy trial period, which could not be achieved in the time given. However, some existing data, like the annual State of the Commute report and the Zero Waste Policy helped provide general information that demonstrated the campus' commitment to sustainability. Some of the credits proved to be unrealistic, like the Habitat Restoration one, which couldn't be provided for in such an urban environment. However, ones like the Stormwater Management can be fulfilled in the future, as evidenced by our collaboration with the ART Water Team, which has been currently developing a stormwater policy. Still, contact with facilities management was imperative to understanding the extent and applicability of our credits. The Indoor Air Quality and Green Cleaning subgroup

is the smallest of the three and dealt with credits that covered features for environmental health, sustainable cleaning, and miscellaneous credits that did not fit well in the other subgroups. Our top priority was to obtain various environmental health plans, excluding green cleaning, which include hardscape, environmental tobacco control, indoor pest management, and ergonomic furniture plan as these were the bulk of this section of the application.

A major component of this project was to fully understand the LEED process and how it applies to our individual sections. Each subgroup had a large range of tasks that they must delve into, all to complete the overarching goal to promote sustainability through these buildings and their operations. Though work is extensive and there may not be adequate data available to reach certification and would be needed to extend into the summer for Todd, we aim to complete all credits that we have documentation for to hasten the application process. With effective planning and consistent follow through, a great majority of the objectives will be met.

## **Research Methodology**

Our team's project was inherently different from the other ART initiatives because of the structure that LEED EBOM provided. Research generally includes a data gathering component followed by analysis; however, the streamlined process of LEED removes the need for further analysis of construction qualities on sustainability. Our method was entirely focused on obtaining credit specific data for individual buildings and organizing this in a way to facilitate future certifications.

Our first priority when starting the Green Buildings ART initiative was to individually develop an in-depth understanding of the LEED EBOM certification process. At our disposal were innumerable websites maintained by the U.S. Green Buildings Council explaining the LEED process, promoting its benefits, and showcasing a credit library detailing individual



requirements. Furthermore, the LEEDuser forum provided invaluable information from professionals' experiences with the LEED program. Our primary human resources included our stakeholder Todd Lynch, Principal Project Planner for UCLA Capital Programs, and Aliana Lungo-Shapiro, Sustainability Manager for UCLA Housing and Hospitality Services. By understanding the basics of certification, we were able to efficiently proceed with gathering building specific data. As we moved forward, each credit required an additional investment in researching which certification route would be most effective and how to complete specific forms and documentation.

After developing a basic foundation for the certification process, our team decided it could be most effective by subdividing into focus groups that would concentrate on clusters of related credits. Thus, we split the team into three groups: (1) Alexandra Stream and Justin Brandt on Water and Energy, (2) Claire Hirashiki and Elizabeth Roswell on Sites, Waste, and Purchasing, and (3) Danh Lai on Indoor Air Quality and Green Cleaning. The focus groups allowed for greater efficiency in obtaining information and permitted individual team members to become specialized in one area of certification. Additionally, the focus groups facilitated communication between our stakeholder and other human resources by reducing the number of contacts that each group had to work with — if a contact had information for one credit in a focus group, this contact could be a reference for the other related credits. The first task of each focus group was to create a “student survey” of each credit, outlining all the requirements and setting a deadline for completion. Using example static forms from the credit library, we were able to develop detailed checklists of the data we needed to locate. The surveys provided clarity in our data search, and the deadlines motivated progress. Finally, each focus group prioritized their credits based on ease of completion and campus-wide applicability. The most valuable

credits were ones that could be applied to the campus as a whole, because these credits would then automatically be awarded to any future building certifications—such credits included Environmental Tobacco Smoke Control (EQ PR2), Green Cleaning Policy (EQ PR3), Solid Waste Management Policy (MR PR2), Alternative Commuting Transportation (SS 4), Refrigerant Management (EA PR3), and Green Education (ID 1.1). Although our subgroups worked individually on their respective components, we would constantly collaborate and compile data during our team’s weekly meetings.

When it came down to actually obtaining credit specific information—refrigerant system operating plans, energy metering history, efficient water fixture usage, building occupancy, etc.—most of this material had been recorded and archived at one point or another. Most of this data required institutional monitoring and in some cases third party verification, so our team never had to collect the information ourselves; our task was to locate the data, organize it, and determine what information we lacked. Mostly, this was conducted via email between contacts with access to the appropriate archives. Unfortunately, this meant that progress was dictated by the speed of our contacts’ responses; nevertheless, as middlemen, we succeeded in organizing information from different departments that would have taken an individual much longer. In Google Drive, we made a folder for each of the 50 credits of focus which included our student survey checklist of required information to which we attached corresponding forms and received documents.

Several of the dorms such as Gardenia, Holly, Dykstra, Hedrick, Hitch, and Saxon had already been LEED certified or were pursuing an alternative certification route. Our team thus focused on Bradley, Canyon Point, Courtside, Covell, and De Neve. As an example of data collection, the Water and Energy group received access to the Energy Star Portfolio Tool during

Spring Quarter which allowed us to add manual entries of water and energy data for each of these buildings. Many of the credits for Water and Energy require a performance period which has yet to be started. In some cases, historical data can be accessed while in others we must start at ground zero. Furthermore, since no work has been done in this area before, limited information exists on the metering network (which meters serve each building or whether some buildings are linked). Data entry into the Portfolio Tool was thus a priority to create baseline data tracking for these buildings. Due to limited access or nonexistence of certain required data, much of our work this year merely set up the foundations of data collection so that next year's team can view this and summarize it in the credit proposal.

Collaborations with other ESLP action research teams were also a helpful part of our project. The Food Team's research and waste audits for the dining halls were applicable to our purchasing credits. Considering they are both planners for Capital Programs, our stakeholder and the Water Team's stakeholder Tracy Dudman were already in talks, especially due to the extensive data collection necessary for the Water and Energy component. Our collaboration with the Water Team to gather overlapping data had begun with Todd's meeting with their team. Any information collected were then transferred onto the template forms for consolidation before being sent to Todd to prepare for final submission.

In terms of the workspace environment, we placed particular emphasis on transparency and the equal distribution of work. When given assignments from the directors or our stakeholder, the leaders would divide the workload fairly amongst our team members, by taking into consideration our individual strengths and interests. Since a majority of our team attends stakeholder meetings, there are many opportunities for everyone to exchange information and ideas as well as clear up any confusion. By staying consistent with our scheduling during winter

quarter, the team held both team meetings and stakeholder meetings on a weekly basis in order to maintain a steady pace for the project.

Facebook has been the main avenue for announcements and group discussion; Google Drive has been useful for document sharing in regard to its convenience and easy communication options. Emails are used for purely administrative purposes in order for the team to schedule meeting times or correspond with the stakeholder, considering it is his preferred form of communication.

Although we familiarized ourselves with the LEED procedure to the best of our abilities with substantial amounts of literature during the early phases of winter quarter, we decided to supplement our understanding of our project in the context of real world applications with sustainable architecture. To mitigate to this deficiency in experience, we would attend relevant seminars and workshops, such as the Institute of the Environment and Sustainability's Green Building Symposium, that allowed for better understanding of green buildings and sustainable infrastructure as they are developed outside the UCLA bubble by having speakers like the KB Home CEO discuss their technical approaches.

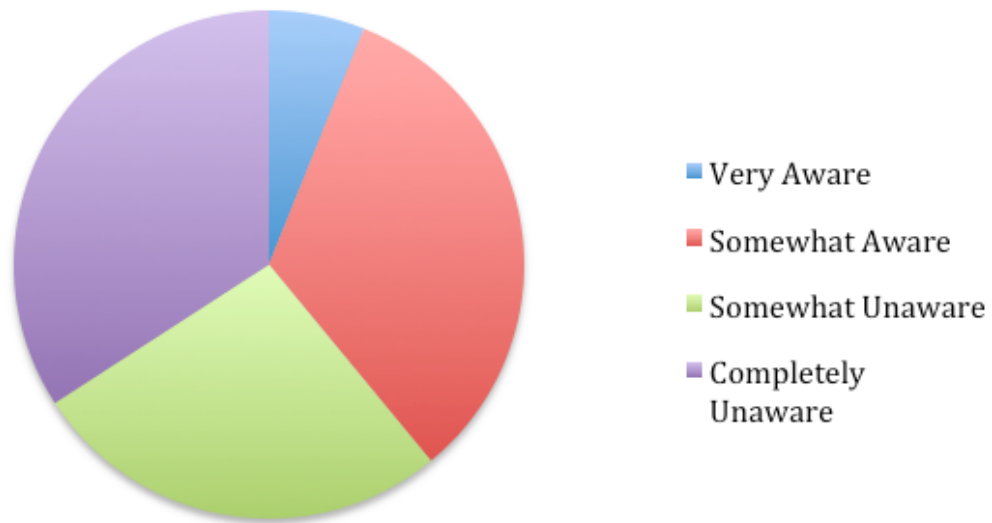
## **Results**

Over the course of our term, we were able to collect data by surveying knowledgeable professionals and other students on our campus. In order to facilitate the LEED certification process of the buildings that we were focusing on, we had to collect information to fill out the individual credit forms. The types of data each person on our team needed varied depending on which credit that individual was working on. The Water and Energy subgroup obtained water performance measurements, which gave us the monthly water use in hundreds of cubic feet for each building. We also needed fixture counts, which includes toilets, showers, and faucets, that

of which we were able to obtain along with the corresponding gallons per minute or gallons per flush. The Sites, Purchasing, and Waste Records subgroup collected waste diversion information that contains amount of waste in tons per month. We found more useful data in the UCLA Foodservice Sustainability Initiatives and Progress report for our purchasing credits. This allowed us to see UCLA's status in their sustainable food goals, such as the objective to increase sustainable food purchases yearly to 20% sustainable food by 2020. For our green cleaning credits, we have floor plans, a list of green products, and cleaning equipment details needed to fill out the corresponding credit forms.

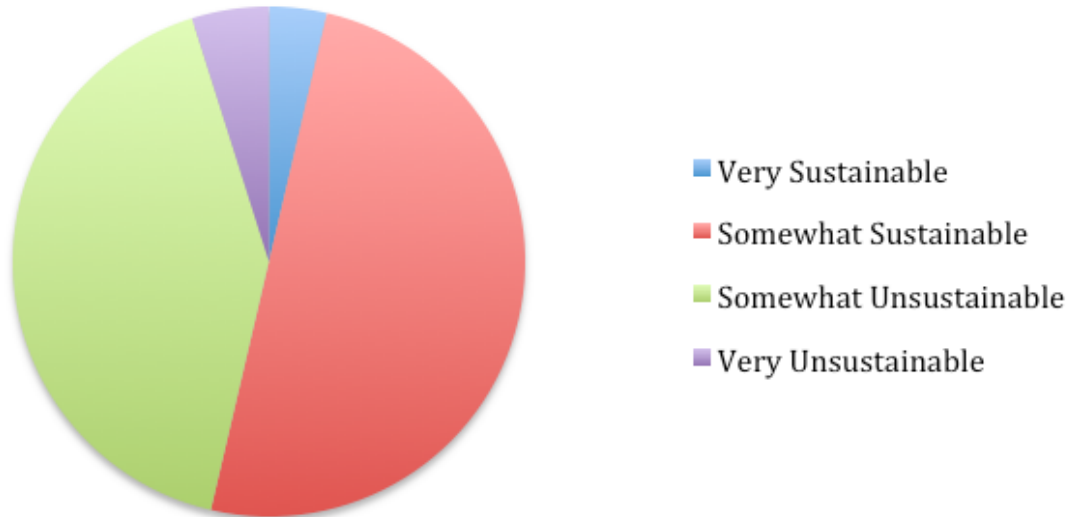
Of particular interest to us is the extent to which students know about LEED certification on our campus. This information not only gives us a good overview of student awareness of LEED certification, but it also provides us information on an Innovation in Design credit for education. During the Earth Day Fair this year, we surveyed eighty-two people and asked them a number of questions including, "How aware are you of LEED-certification on campus?" The most common response to this question was "completely unaware," with twenty-eight responses. A close second answer was "somewhat aware," with a total of twenty-seven responses.

### How aware of you of LEED-Certification on Campus?



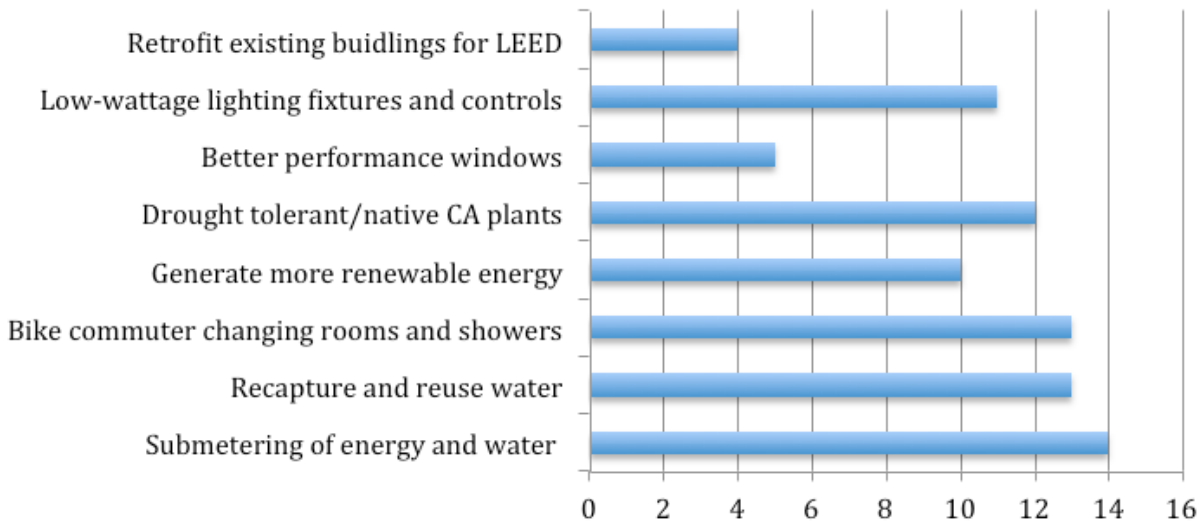
Another question we asked in our surveys was, “How sustainable do you think the buildings on the hill are?” This is especially relevant to our team because we are specifically focused on buildings on the hill. The majority of the people were split between deeming the buildings on the hill “somewhat sustainable” and “somewhat unsustainable.”

## How sustainable do you think the buildings on the hill are?



In our surveys, we were also interested in what particular aspects of LEED-certification students valued the most. In order to discover this, we asked, “Of the following initiatives relating to LEED, which would you prioritize?” We gave them the choice of answering one of our eight possibilities ranging from “Audit existing buildings and retrofit for LEED certification” to “Submetering of energy and water for better management of usage.” The graph below shows the number of students who chose each aspect.

## Of the following initiatives relating to LEED, which would you prioritize?



Overall, our team's endeavors were generally successful in finding the documentation and contacting the correct Housing staff members in regard to fulfilling LEED credits. Now that our data is compiled into an easily accessible Google Drive folder, Todd can apply for certification in an expedited process over the summer. Meanwhile, our survey findings exhibit the potential for sustainable architecture initiatives on campus, especially as fueled by student interest. The lack of knowledge of the LEED certification process and its existence on campus, however, suggest that outreach efforts are imperative to the program's success.

### Discussion

Throughout the past two quarters, we have received a plethora of data and documents from both Todd Lynch, our stakeholder and Aliana Lungo-Shapiro, Sustainability Manager at UCLA Housing & Hospitality Services. We were given a wide variety of documents for each of our credits ranging from green cleaning products to numbers about ongoing consumable waste.



However, it became clear as time progressed that even though both Todd and Aliana were great resources, they didn't have all the data we needed to fulfill the credits. Towards the end of this quarter, we began to contact some other people like Barbara Wilson, Associate Director Room Operations at UCLA Housing & Hospitality Services and Hank Knapp, physical plant manager for on-campus housing maintenance at UCLA. However, we have yet to get the needed documents from them. It has become apparent to us over the course of this program that data collection and contacting others takes a lot longer than one might think. We learned these things are never immediate and usually take a lot of persistence. This is one of the major problems we faced again and again over the duration of the program. While everyone we contacted was extremely helpful, regardless of whether they had the information we needed or not, it was just a long process of waiting for information and responses.

Our methodology consisted more of problem solving and asking for documents as we delved deeper into the specifics of our credits. Although this procedure worked for the most part, it also delayed the process. It would be more beneficial if we had established all the documentation and data we needed in the beginning and started to contact everyone rather than wait to see what Todd could give us then proceed to contact outside sources. It was also surprising to us that information on items like water usage and furniture purchasing was not very centralized and required us to reach out to many different contacts. It would seem that at a school as large as UCLA that these things would be monitored and logged into a master program but much of the information we accumulated was cultivated from spread out sources. For example, two credits, both alterations and additions credits, were impossible for us to do based on the fact that UCLA housing had no centralized bookkeeping for these details.

Although we have yet to receive all the data needed to finish all our credits, we do have enough to see some interesting trends. Many of UCLA's policies and practices were surprisingly already environmentally forward. Many people ranked the Hill's buildings as somewhat unsustainable when in reality, it is already rather sustainable and has many policies that ensure it will continue to become even more so.

We also had some interesting data from our survey at this year's Earth Day Fair. We developed a seven question survey in order to gauge people's general knowledge of LEED and awareness of LEED certification on the UCLA campus. The data indicated that most people are either completely unaware or mostly unaware of both what LEED is and its role on campus. This was surprising to us because of the large role LEED has on our campus. These results revealed that LEED awareness on campus is lacking especially among those who have enough interest in sustainability to attend an Earth Day Fair.

## **Recommendations**

Since our work as a team was unprecedented, the Green Buildings Team has many suggestions for a future follow-up team. However, after a discussion with Todd at one of our stakeholder meetings, we came to the conclusion that the focus of our particular project would no longer be rendered necessary – the majority of the work for LEED certification of the Hill is complete. Still, expansion of the Green Buildings Team's mission would be of great significance to sustainability efforts on campus.

Considering that the concept of "greening" buildings is all encompassing in scope due to the involvement of purchasing and resource management, next year's team can fulfill their tasks from various approaches. Our research of the campus suggests that there is much room for improvement on campus in terms of sustainable architecture. Little knowledge exists of the

LEED certification procedure among the students and public, so outreach could be a key point of emphasis as a continuation of the last Green Buildings team's prior work. This can be achieved through the production of distributable materials or through education efforts, especially through the involvement of Team Green on the Hill and the UCLA student chapter of the United States Green Buildings Council.

Collaboration with the student chapter of the USGBC could especially help shape a future project of the Green Buildings Team. Since the student organization has an ongoing agenda, their expertise could be used to help educate and train inexperienced Green Buildings members, so that their learning process is faster. Our members feel that by taking the USGBC-led tour of the Public Health Building and by attending the UCLA architecture conference, they better understood the motives underpinning our project. We suggest that a solid understanding of sustainable architecture is first achieved before attempting to choose a project.

Although the Hill's accreditation will be complete soon, certification processes will still be in need! In observance of the constant development of UCLA's campus, new building certification can be awarded through the LEED program as well. Also, different regions of the campus can be examined for their applicability to existing building certification. Efforts to certify buildings can be supplemented by interacting with facilities management to implement the best green technologies or develop purchasing policies.

If a similar project were to be undertaken by the future Green Buildings team, we would suggest the future stakeholder to examine some of the more intensive credits we were unable to follow through with due to limitations in our time frame. Some of the credits require trial periods to measure the energy and water expenses and outputs that exceeded our given time. Also, it would be beneficial to have a spreadsheet of contacts in the facilities and departments in order to

expedite the process and maximize efficiency in finding the best people to contact on campus in regard to specific utilities. A lot of time was not maximized in terms of efficiency, since we were often searching for unknown contacts or waiting on email replies. If a follow-up team does take up the certification process, we recommend that they frame their methodology on the UC Davis' LEED team's approach, considering that they are a professional group of graduate students and interns. We also recommend that the Green Buildings team tracks other ART teams as well, since a lot of the work is overlapping and would be better managed if contacts within ART were utilized.

In addition, rather than gather existing documentation and understand the certification procedure, a future team can drive future initiatives related to LEED. Such projects include creating bike commuter changing rooms and showers, replacing existing windows for better performance, and auditing existing buildings for retrofitting – all of which are ideas that our stakeholder recommended and were well received by the student community in our survey that we distributed at the Earth Day Fair. In light of this broad range of possible endeavors, a Green Buildings Team, if they come into formation, will have plenty of work ahead of them.

## **Conclusion**

Considering the team's relative unfamiliarity with the LEED certification process and the concept of green buildings, this was a great learning experience for the members, especially when facilitated by an expert such as Todd Lynch. Although initiating the project came with a sharp learning curve, our team eventually established a procedure to analyzing and assessing the applicability of the LEED credits to our campus. The process provided us an understanding of the successes and shortcomings of the Housing's sustainability efforts, which we have previously addressed in our recommendations section with the aspiration that they will provide guidance

and potential ideas for future improvements. We hope that the major issues with the infrastructure could be dealt with in the near future, so that sustainability efforts are more efficient and streamlined in procedure, without creating such a toll on the facilities management.

In regard to the team's initiative for the past two quarters, we adopted an efficient plan to collect data for the LEED credits that could potentially be used by possible future teams, so that they will better understand the general process. We found that the key to our success was to centralize our data into an organized folder and stay in sync with our individual timelines to keep each other accountable. The future of this team seems bright and full of opportunities, considering Todd's residency as a stakeholder, as he continues to involve himself in a plethora of Capital Programs projects that students would could facilitate. Although the concept of environmentally minded architecture remains relatively unknown amongst Bruins, the continuation of a Green Buildings Action Research Team could prove to be invaluable in campus outreach efforts, when driven by internal program enthusiasm and external student feedback for a greener UCLA.

## Reference

“Buildings and Landscaping.” *UCLA Sustainability*. N.p., n.d. Web.

“Capital Programs and Sustainability.” *UCLA Capital Programs*. N.p., n.d. Web.

"Leed Credit Library." *United States Green Building Council*. N.p., n.d. Web.

# Appendices

## LEED EBOM Timeline (created by Todd Lynch)

UCLA LEED EBOM		Campus	Student Survey	Project	Excellence
<b>Sustainable Sites</b>					
SS 1	LEED Certified Design and Construction		4		
SS 2	Building Exterior and Hardscape Management Plan	1			
SS 3	Integrated Pest Management, Erosion Control, Landscape	1			
SS 4	Alt Commuting Transportation	11			4
SS 5	Site Disturbance - Protect or Restore Open Habitat	1			
SS 6	Stormwater Quality Control	1			
SS 7.1	Heat Island Effect-Non Roof	1			
SS 7.2	Heat Island Effect-Roof			1	
SS 8	Light Pollution Reduction	1			
<b>Water Efficiency</b>					
WE PR1	Minimum Plumbing Fixture and Fitting Efficiency		0		
WE 1	Water Performance Measurement		1	1	
WE 2	Additional Indoor Plumbing Fixture and Fitting Efficiency		2	3	
WE 3	Water Efficient Landscaping	2			3
WE 4	Cooling Tower Water Measurement		2		
<b>Energy &amp; Atmosphere</b>					
EA PR1	Energy Efficiency Best Mgmt Practice -Plan Documt Assess	0			
EA PR2	Minimum Energy Efficiency Performance		0		
EA PR3	Fundamental Refrigerant Management	0			
EA 1	Optimize Energy Performance - Energy Star 63-99		6	4	8
EA 2.1	Existing Building Commissioning - Investigation and Analysis			2	
EA 2.2	Existing Building Commissioning - Implementation			2	
EA 2.3	Existing Building Commissioning - Ongoing Commissioning			2	
EA 3.1	Performance Measurement - Building Automation System			1	
EA 3.2	Performance Measurement - System Level Metering			2	
EA 4	Renewable Energy On Site 3-12% / Off Site 15-60%		1	3	2
EA 5	Enhanced Refrigerant Management				1
EA 6	Emissions Reduction Reporting	1			
<b>Materials &amp; Resources</b>					
MR PR1	Sustainable Purchasing Policy	0			
MR PR2	Solid Waste Management Policy	0			
MR 1	Sustainable Purchasing-Ongoing Consumables		1		
MR 2	Sustainable Purchasing-Durable Goods		2		
MR 3	Sustainable Purchasing-Facility Alterations and Additions		1		
MR 4	Sustainable Purchasing-Reduced Mercury in Lamps		1		
MR 5	Sustainable Purchasing-Food		1		
MR 6	Solid Waste Management-Waste Stream Audit			1	
MR 7	Solid Waste Management-Ongoing Consumables		1		
MR 8	Solid Waste Management-Durable Goods		1		
MR 9	Solid Waste Management-Facility Alterations and Additions		1		
<b>Indoor Environmental Quality</b>					
EQ PR1	Minimum Indoor Air Quality Performance		0		
EQ PR2	Environmental Tobacco Smoke Control	0			
EQ PR3	Green Cleaning Policy	0			
EQ 1.1	IAQ BMPs - IAQ Management Program			1	
EQ 1.2	IAQ BMPs - Outdoor Air Delivery Monitoring			1	
EQ 1.3	IAQ BMPs - Increased Ventilation			1	
EQ 1.4	IAQ BMPs - Reduce Particulates in Air Distribution			1	
EQ 1.5	IAQ BMPs - IAQ for Facility Alterations and Additions			1	
EQ 2.1	Occupant Comfort - Occupant Survey		1		
EQ 2.2	Controllability of Systems - Lighting		1		
EQ 2.3	Occupant Comfort - Thermal Comfort Monitoring			1	
EQ 2.4	Daylight & Views		1		
EQ 3.1	Green Cleaning - High Performance Cleaning Program	1			
EQ 3.2	Green Cleaning - Custodial Effectiveness Assessment		1		
EQ 3.3	Green Cleaning - Purchase of Sust Cleaning Products & Materials		1		
EQ 3.4	Green Cleaning - Sustainable Cleaning Equipment		1		
EQ 3.5	Green Cleaning - Indoor Chemical and Pollutant Source Control		1		
EQ 3.6	Green Cleaning - Indoor Integrated Pest Management	1			
<b>Innovation &amp; Design Process</b>					
ID 1.1	Innovation in Design - Green Education	1			
ID 1.2	Innovation in Design - Ergonomic Furniture Program	1			
ID 1.3	Innovation in Design - Space Optimization	1			
ID 1.4	Innovation in Design - Zero Waste	1			
ID 2	LEED Accredited Professional		1		
ID 3	Documenting Sustainable Building Cost Impacts		1		
<b>Regional Priority - (Bold above)</b>					
SSc4	75% - Transportation	1			
WEc2	30% Plumbing and Fixture Efficiency		1		
EQc2.4	Daylight & Views		1		
EAc1	85 Rating 35 Percentile				1
EAc4	7.5%/62.5%				1
MRC7	Solid Waste Consumables				1
<b>110</b>		<b>27</b>	<b>36</b>	<b>29</b>	<b>18</b>
			<b>63</b>	<b>92</b>	
			Gold	Platinum	

## Earth Day Fair LEED Awareness and Future Implications Assessment

Google Survey Form:

### LEED Assessment Survey

**\* Required**

Do you know what LEED certification is? \*

- Yes
- No

How aware are you of LEED certification on campus? \*

- Completely unaware
- Somewhat unaware
- Somewhat aware
- Very aware

How sustainable do you think the buildings on the Hill are? \*

- Very unsustainable
- Somewhat unsustainable
- Somewhat sustainable
- Very sustainable

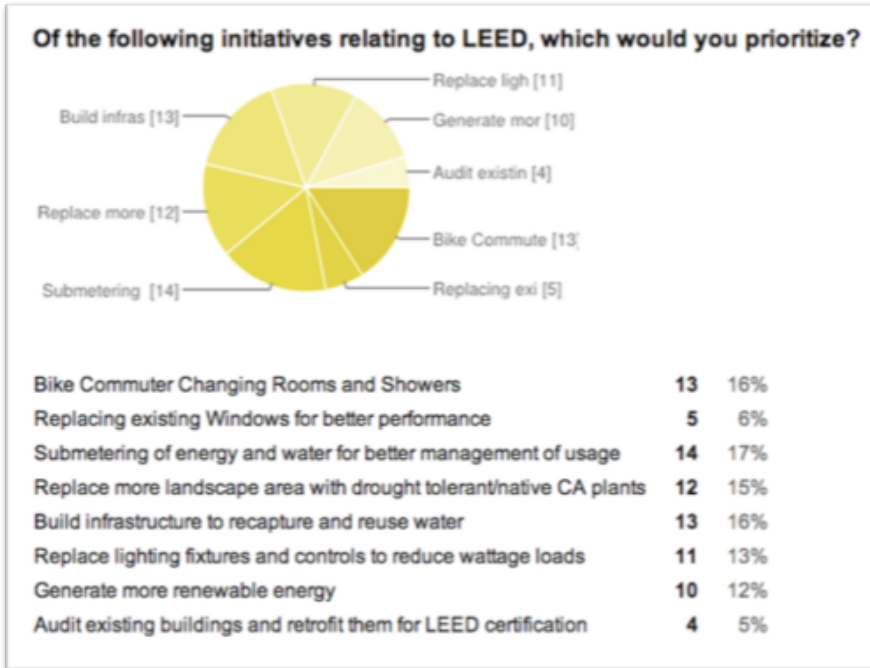
What Building on campus do you think is most sustainable?

Google Survey Responses:



Timestamp	Do you know what LEE	How aware are you of L	What existing building w	How sustainable do you thi	What Building on campu	Of the following initiatives relating to LEED,	Are you interested in be	Your Email Address
4/23/2014 10:20:20	Yes	Somewhat aware	Rieber Hall	Somewhat sustainable	Ackerman	Replace lighting fixtures and controls to red	No	
4/23/2014 10:26:12	Yes	Very aware	John John Wooden Cent	Somewhat sustainable	Biomed	Submetering of energy and water for better	No	
4/23/2014 10:44:56	Yes	Somewhat aware	Royce Hall	Somewhat unsustainable		Build infrastructure to recapture and reuse	No	
4/23/2014 10:46:26	No	Somewhat unaware	Hammer Museum	Somewhat unsustainable		Bike Commuter Changing Rooms and Sho	No	
4/23/2014 10:54:19	No	Completely unaware	MS	Somewhat unsustainable	PAB	Generate more renewable energy	No	
4/23/2014 10:56:52	No	Very aware	De Neve	Somewhat unsustainable	Sproul	Submetering of energy and water for better	No	
4/23/2014 10:58:01	Yes	Somewhat aware	Powell	Very sustainable	Ackerman	Bike Commuter Changing Rooms and Sho	No	
4/23/2014 10:59:09	Yes	Somewhat unaware	Powell	Somewhat sustainable	PAB	Replace more landscape area with drought	No	
4/23/2014 11:02:02	Yes	Somewhat aware	Ackerman	Somewhat sustainable	Dining Halls	Generate more renewable energy	Yes	mholser23@yahoo.com
4/23/2014 11:08:42	Yes	Somewhat unaware	Ackerman	Somewhat unsustainable	De Neve	Generate more renewable energy	No	
4/23/2014 11:10:39	No	Completely unaware	Sproul Cove	Somewhat sustainable		Bike Commuter Changing Rooms and Sho	No	
4/23/2014 11:18:20	Yes	Somewhat aware	Powell	Somewhat unsustainable	Ackerman	Replace more landscape area with drought	No	
4/23/2014 11:20:57	No	Somewhat aware	Humanities	Somewhat sustainable	Royce	Replacing existing Windows for better perfo	No	
4/23/2014 11:23:12	Yes	Somewhat unaware	Bruin Plate or MS	Somewhat unsustainable	somewhere near the cou	Replace lighting fixtures and controls to red	No	
4/23/2014 11:27:42	Yes	Somewhat unaware	Courtside	Somewhat sustainable	Holly	Replace lighting fixtures and controls to red	Yes	
4/23/2014 11:33:21	Yes	Completely unaware	Bunche	Somewhat unsustainable		Replacing existing Windows for better perfo	No	
4/23/2014 11:35:43	Yes	Somewhat unaware	Covel	Very unsustainable	Dorms	Submetering of energy and water for better	No	
4/23/2014 11:38:50	Yes	Somewhat aware	Courtside	Somewhat unsustainable	Dykstra	Bike Commuter Changing Rooms and Sho	No	
4/23/2014 11:42:58	Yes	Completely unaware		Somewhat unsustainable	weyburn	Submetering of energy and water for better	Yes	dave24@ucla.edu
4/23/2014 11:45:35	No	Completely unaware	Ackerman	Somewhat sustainable	Sproul	Replace more landscape area with drought	No	
4/23/2014 11:47:06	Yes	Somewhat aware	lecture halls	Somewhat sustainable	dorms	Bike Commuter Changing Rooms and Sho	No	stevanatikbak@ucla.edu
4/23/2014 11:54:32	No	Somewhat unaware	Hedrick Summit	Somewhat sustainable	Sproul Landing (the new	Replace lighting fixtures and controls to red	No	
4/23/2014 11:59:43	Yes	Somewhat aware	Resident Halls	Somewhat unsustainable	Powell	Replace lighting fixtures and controls to red	Yes	nhuyen03@gmail.com
4/23/2014 12:02:35	Yes	Somewhat aware	Boelter Hall	Somewhat unsustainable	Bombshelter	Replace more landscape area with drought	Yes	ly.ellejoo@gmail.com
4/23/2014 12:06:09	No	Somewhat unaware	Powell	Very sustainable		Submetering of energy and water for better	No	mholser23@yahoo.com
4/23/2014 12:07:45	Yes	Somewhat aware	Pauley Pavilion	Somewhat unsustainable	PAB	Replace lighting fixtures and controls to red	No	
4/23/2014 12:12:11	Yes	Somewhat unaware	Boelter Hall	Somewhat sustainable	Geology	Generate more renewable energy	Yes	garurv_thayil@hotmail.com
4/23/2014 12:13:55	No	Completely unaware	Engineering	Somewhat sustainable	Bombshelter	Submetering of energy and water for better	No	
4/23/2014 12:16:38	No	Completely unaware	Rieber terrace	Somewhat unsustainable		Generate more renewable energy	No	
4/23/2014 12:18:25	No	Completely unaware	John Wooden	Somewhat unsustainable	Sunset Recreation	Replace more landscape area with drought	No	
4/23/2014 12:18:34	Yes	Somewhat aware	Boelter Hall	Somewhat sustainable	Gardenia	Build infrastructure to recapture and reuse	Yes	already on it!
4/23/2014 12:18:49	Yes	Somewhat aware	Boelter Hall	Somewhat sustainable	Gardenia	Build infrastructure to recapture and reuse	Yes	already on it!
4/23/2014 12:18:55	Yes	Somewhat aware	Boelter Hall	Somewhat sustainable	Gardenia	Build infrastructure to recapture and reuse	Yes	already on it!
4/23/2014 12:20:30	Yes	Very aware		Somewhat sustainable		Replace lighting fixtures and controls to red	No	
4/23/2014 12:20:34	Yes	Somewhat aware	Hitch	Somewhat sustainable	Hedrick Summit	Generate more renewable energy	Yes	katherinesheu@ucla.edu
4/23/2014 12:22:46	Yes	Somewhat aware	stuff in south campus	Somewhat unsustainable	Bruin Plate	Generate more renewable energy	No	
4/23/2014 12:25:22	Yes	Very aware	Powell	Very unsustainable	Holly and Gardenia	Build infrastructure to recapture and reuse	No	
4/23/2014 12:27:43	No	Completely unaware		Somewhat unsustainable		Bike Commuter Changing Rooms and Sho	No	
4/23/2014 12:29:00	No	Completely unaware	Ackerman	Somewhat unsustainable		Replace lighting fixtures and controls to red	No	emoonie@hotmail.com
4/23/2014 12:31:05	Yes	Very aware	Ackerman	Somewhat unsustainable	YRL	Build infrastructure to recapture and reuse	Yes	dustynjamesfoster@gmail.com
4/23/2014 12:31:16	Yes	Somewhat aware	Murphy	Somewhat sustainable	Pauly Pavilion	Audit existing buildings and retrofit them for	No	
4/23/2014 12:32:32	No	Completely unaware	Ackerman	Somewhat sustainable		Submetering of energy and water for better	No	
4/23/2014 12:32:32	No	Completely unaware	Ackerman	Somewhat sustainable		Submetering of energy and water for better	No	
4/23/2014 12:39:18	No	Completely unaware	De Neve	Somewhat unsustainable	Sproul Landing (the new	Submetering of energy and water for better	No	
4/23/2014 12:42:28	Yes	Somewhat unaware	stuff in south campus	Somewhat unsustainable	Pauly Pavilion	Bike Commuter Changing Rooms and Sho	No	
4/23/2014 12:43:48	No	Somewhat unaware	all	Very unsustainable	Teaching and Learning	Submetering of energy and water for better	No	
4/23/2014 12:47:44	No	Somewhat aware		Somewhat sustainable	Gardenia	Replacing existing Windows for better perfo	No	
4/23/2014 12:50:41	Yes	Somewhat aware	Royce	Very sustainable	Hedrick Summit	Bike Commuter Changing Rooms and Sho	No	
4/23/2014 12:50:52	No	Completely unaware	Ackerman	Somewhat unsustainable		Bike Commuter Changing Rooms and Sho	No	
4/23/2014 12:52:27	No	Completely unaware	De Neve	Somewhat unsustainable	Sproul Landing (the new	Build infrastructure to recapture and reuse	Yes	jazmin.samano@yahoo.com
4/23/2014 12:52:35	No	Completely unaware	Pauley Pavilion	Somewhat sustainable	Sproul	Replacing existing Windows for better perfo	No	
4/23/2014 13:00:51	Yes	Somewhat unaware	Powell	Somewhat sustainable	Sproul Landing (the new	Replace more landscape area with drought	Yes	callanrose@yahoo.com
4/23/2014 13:04:44	Yes	Somewhat unaware	Hedrick Hall	Somewhat sustainable	Sproul Landing (the new	Replace lighting fixtures and controls to red	Yes	anelpezner@ucla.edu
4/23/2014 13:05:03	Yes	Somewhat aware	Hedrick Hall	Somewhat sustainable	La Kretz	Build infrastructure to recapture and reuse	No	
4/23/2014 13:10:16	No	Completely unaware	CHS building	Somewhat unsustainable		Replace more landscape area with drought	No	ppardack@mednet.ucla.edu
4/23/2014 13:16:47	Yes	Somewhat unaware	Broad	Somewhat unsustainable	powell	Submetering of energy and water for better	No	
4/23/2014 13:17:26	Yes	Completely unaware	Dorms	Somewhat sustainable	Bruin Plate	Replacing existing Windows for better perfo	No	
4/23/2014 13:19:45	Yes	Somewhat unaware	Powell	Somewhat sustainable	Bombshelter	Build infrastructure to recapture and reuse	No	
4/23/2014 13:23:12	No	Completely unaware	Royce	Somewhat sustainable	Melnitz	Audit existing buildings and retrofit them for	No	
4/23/2014 13:24:19	No	Completely unaware	CHS building	Somewhat sustainable	Pauley Pavilion	Submetering of energy and water for better	Yes	fgermain@mednet.ucla.edu
4/23/2014 13:24:31	Yes	Somewhat unaware	Ackerman	Somewhat unsustainable	Sproul Cove	Replace more landscape area with drought	Yes	kayleenolle77@yahoo.com
4/23/2014 13:25:33	Yes	Somewhat unaware	Shoenberg	Somewhat sustainable	Public Affairs	Generate more renewable energy	No	
4/23/2014 13:26:47	No	Somewhat unaware	Saxon	Somewhat unsustainable	Rieber	Submetering of energy and water for better	No	
4/23/2014 13:27:20	Yes	Somewhat aware	Pauley Pavilion	Somewhat sustainable	La Kretz	Audit existing buildings and retrofit them for	No	
4/23/2014 13:29:02	No	Somewhat unaware	Saxon	Somewhat sustainable	Rieber Terrace	Submetering of energy and water for better	Yes	brenda.shva@gmail.com
4/23/2014 13:29:31	No	Completely unaware	Rieber Terrace	Somewhat sustainable	Bruin Plate	Generate more renewable energy	Yes	helenlu04@gmail.com
4/23/2014 13:30:43	Yes	Somewhat aware	Delta Terrace	Somewhat sustainable	Sproul Landing	Replace more landscape area with drought	No	
4/23/2014 13:32:01	No	Completely unaware	IM Field	Somewhat sustainable	Pauley Pavilion	Bike Commuter Changing Rooms and Sho	No	
4/23/2014 13:32:49	No	Somewhat aware	haines	Somewhat sustainable	Campbell	Build infrastructure to recapture and reuse	No	evargasonet.ucla.edu
4/23/2014 13:34:11	Yes	Somewhat aware	Powell	Very unsustainable	YRL	Bike Commuter Changing Rooms and Sho	No	
4/23/2014 13:34:51	No	Completely unaware	Moore Hall	Somewhat unsustainable	Powell	Generate more renewable energy	No	
4/23/2014 13:36:41	No	Completely unaware	Royce	Somewhat unsustainable	Pauley Pavilion	Replace more landscape area with drought	No	
4/23/2014 13:39:10	No	Completely unaware	Dining Halls	Somewhat sustainable	Sproul Landing/Cove	Replace more landscape area with drought	No	
4/23/2014 13:42:47	Yes	Somewhat aware	Ackerman	Somewhat sustainable	Camelsale	Audit existing buildings and retrofit them for	No	
4/23/2014 13:44:07	Yes	Somewhat unaware	all of them!	Somewhat unsustainable	B Plate?	Build infrastructure to recapture and reuse	No	
4/23/2014 13:44:52	Yes	Somewhat unaware	Boelter	Somewhat unsustainable	Boelter	Bike Commuter Changing Rooms and Sho	No	
4/23/2014 13:46:07	Yes	Somewhat aware	Boelter	Somewhat sustainable	PAB	Replace more landscape area with drought	Yes	meeram2008@gmail.com
4/23/2014 13:47:53	Yes	Somewhat unaware	John John Wooden Cent	Somewhat sustainable	new dorms, IoES, Paule	Build infrastructure to recapture and reuse	No	
4/23/2014 13:48:03	No	Completely unaware	Molecular Sciences	Somewhat unsustainable	PAB	Replace lighting fixtures and controls to red	No	
4/23/2014 13:53:33	Yes	Completely unaware	Ackerman	Somewhat sustainable	the newest one	Bike Commuter Changing Rooms and Sho	Yes	lkhamoushian@ucla.edu
4/23/2014 13:54:32	Yes	Somewhat aware	Terasaki	Somewhat unsustainable	IOES	Build infrastructure to recapture and reuse	No	
4/23/2014 13:56:17	No	Completely unaware	Saxon	Somewhat unsustainable	Rieber Hall	Replace lighting fixtures and controls to red	No	

Another visualization of our findings:



Final Presentation Poster

June 2014

# GREEN BUILDINGS ACTION RESEARCH TEAM

Co-Leaders: Claire Hirashiki & Danh Lai  
 Members: Justin Brandt, Elizabeth Roswell, & Alexandra Stream  
 Stakeholder: Todd Lynch  
 Principal Project Planner at UCLA Capital Programs

**UCLA LEED ERM**

Initiative	Category	Priority	Score
<b>Category 1: Leadership in Energy and Environmental Design (LEED) Green Building</b>			
1.1.1.1.1.1.1.1	High	High	10
1.1.1.1.1.1.1.2	High	High	10
1.1.1.1.1.1.1.3	High	High	10
1.1.1.1.1.1.1.4	High	High	10
1.1.1.1.1.1.1.5	High	High	10
1.1.1.1.1.1.1.6	High	High	10
1.1.1.1.1.1.1.7	High	High	10
1.1.1.1.1.1.1.8	High	High	10
1.1.1.1.1.1.1.9	High	High	10
1.1.1.1.1.1.1.10	High	High	10
1.1.1.1.1.1.1.11	High	High	10
1.1.1.1.1.1.1.12	High	High	10
1.1.1.1.1.1.1.13	High	High	10
1.1.1.1.1.1.1.14	High	High	10
1.1.1.1.1.1.1.15	High	High	10
1.1.1.1.1.1.1.16	High	High	10
1.1.1.1.1.1.1.17	High	High	10
1.1.1.1.1.1.1.18	High	High	10
1.1.1.1.1.1.1.19	High	High	10
1.1.1.1.1.1.1.20	High	High	10
1.1.1.1.1.1.1.21	High	High	10
1.1.1.1.1.1.1.22	High	High	10
1.1.1.1.1.1.1.23	High	High	10
1.1.1.1.1.1.1.24	High	High	10
1.1.1.1.1.1.1.25	High	High	10
1.1.1.1.1.1.1.26	High	High	10
1.1.1.1.1.1.1.27	High	High	10
1.1.1.1.1.1.1.28	High	High	10
1.1.1.1.1.1.1.29	High	High	10
1.1.1.1.1.1.1.30	High	High	10
1.1.1.1.1.1.1.31	High	High	10
1.1.1.1.1.1.1.32	High	High	10
1.1.1.1.1.1.1.33	High	High	10
1.1.1.1.1.1.1.34	High	High	10
1.1.1.1.1.1.1.35	High	High	10
1.1.1.1.1.1.1.36	High	High	10
1.1.1.1.1.1.1.37	High	High	10
1.1.1.1.1.1.1.38	High	High	10
1.1.1.1.1.1.1.39	High	High	10
1.1.1.1.1.1.1.40	High	High	10
1.1.1.1.1.1.1.41	High	High	10
1.1.1.1.1.1.1.42	High	High	10
1.1.1.1.1.1.1.43	High	High	10
1.1.1.1.1.1.1.44	High	High	10
1.1.1.1.1.1.1.45	High	High	10
1.1.1.1.1.1.1.46	High	High	10
1.1.1.1.1.1.1.47	High	High	10
1.1.1.1.1.1.1.48	High	High	10
1.1.1.1.1.1.1.49	High	High	10
1.1.1.1.1.1.1.50	High	High	10
1.1.1.1.1.1.1.51	High	High	10
1.1.1.1.1.1.1.52	High	High	10
1.1.1.1.1.1.1.53	High	High	10
1.1.1.1.1.1.1.54	High	High	10
1.1.1.1.1.1.1.55	High	High	10
1.1.1.1.1.1.1.56	High	High	10
1.1.1.1.1.1.1.57	High	High	10
1.1.1.1.1.1.1.58	High	High	10
1.1.1.1.1.1.1.59	High	High	10
1.1.1.1.1.1.1.60	High	High	10
1.1.1.1.1.1.1.61	High	High	10
1.1.1.1.1.1.1.62	High	High	10
1.1.1.1.1.1.1.63	High	High	10
1.1.1.1.1.1.1.64	High	High	10
1.1.1.1.1.1.1.65	High	High	10
1.1.1.1.1.1.1.66	High	High	10
1.1.1.1.1.1.1.67	High	High	10
1.1.1.1.1.1.1.68	High	High	10
1.1.1.1.1.1.1.69	High	High	10
1.1.1.1.1.1.1.70	High	High	10
1.1.1.1.1.1.1.71	High	High	10
1.1.1.1.1.1.1.72	High	High	10
1.1.1.1.1.1.1.73	High	High	10
1.1.1.1.1.1.1.74	High	High	10
1.1.1.1.1.1.1.75	High	High	10
1.1.1.1.1.1.1.76	High	High	10
1.1.1.1.1.1.1.77	High	High	10
1.1.1.1.1.1.1.78	High	High	10
1.1.1.1.1.1.1.79	High	High	10
1.1.1.1.1.1.1.80	High	High	10
1.1.1.1.1.1.1.81	High	High	10
1.1.1.1.1.1.1.82	High	High	10
1.1.1.1.1.1.1.83	High	High	10
1.1.1.1.1.1.1.84	High	High	10
1.1.1.1.1.1.1.85	High	High	10
1.1.1.1.1.1.1.86	High	High	10
1.1.1.1.1.1.1.87	High	High	10
1.1.1.1.1.1.1.88	High	High	10
1.1.1.1.1.1.1.89	High	High	10
1.1.1.1.1.1.1.90	High	High	10
1.1.1.1.1.1.1.91	High	High	10
1.1.1.1.1.1.1.92	High	High	10
1.1.1.1.1.1.1.93	High	High	10
1.1.1.1.1.1.1.94	High	High	10
1.1.1.1.1.1.1.95	High	High	10
1.1.1.1.1.1.1.96	High	High	10
1.1.1.1.1.1.1.97	High	High	10
1.1.1.1.1.1.1.98	High	High	10
1.1.1.1.1.1.1.99	High	High	10
1.1.1.1.1.1.1.100	High	High	10



Of the following initiatives relating to LEED, which would you prioritize?



- Bike Commuter Changing Rooms and Showers: 13 16%
- Replacing existing Windows for better performance: 5 6%
- Submetering of energy and water for better management of usage: 14 17%
- Replace more landscape area with drought tolerant/native CA plants: 12 15%
- Build infrastructure to recapture and reuse water: 13 16%
- Replace lighting fixtures and controls to reduce wattage loads: 11 13%
- Generate more renewable energy: 10 12%
- Audit existing buildings and retrofit them for LEED certification: 4 5%



**MISSION STATEMENT:** In an unprecedented project, the Green Buildings Team has been focused on achieving LEED (Leadership in Energy and Environmental Design) certification of the residential buildings on campus. By analyzing existing documentation, researching data gaps, and collaborating with other ART teams and the facilities administration, the Green Buildings Team has streamlined the accreditation process, in hopes of driving future initiatives in sustainable architecture and management.