

LEED Assessment

Action Research Team

Final Report

Education for Sustainable Living Program, Spring 2012

Stakeholder: Todd Lynch, AIA, LEED AP BD+C Principal
Project Planner, UCLA Capital Programs

Co-Leaders: Jasneet Bains & Claire Josephson

Members: Edgar Vargas, Tiffany Tran, Amy Sen, Melissa
Grace Klose

Table of Contents

Title Page & Table of Contents	1-2
Executive Summary	3-4
Overview, Objectives, & Project Goals.....	5-6
Significance & Background.....	7-8
Initial Conditions.....	9-11
Research Methodology.....	12 -13
Data Analysis.....	14- 16
Key Findings.....	17
Recommendations.....	18- 20
Conclusion.....	21
References.....	22
Appendices.....	23

Executive Summary

As a brand new group to the Action Research Team component of ESLP, our work has developed from the support and guidance of our stakeholder Todd Lynch, Principal Project Manager of UCLA's Capitol Programs. Charged with improving campus literacy and awareness of LEED and green building practices, our team has set out to research and devise a communication strategy to effectively reach students and visitors alike. This work has involved meeting with UCLA Housing, contractors, consultants, architects, and other crucial professionals who have been closely involved with the LEED certification process for new construction and renovations on campus. Per our original instructions from Todd, our team began by developing panels to be placed within LEED-certified buildings on campus. For our pilot program, we focused on the newly constructed Court of Sciences Student Center and the new residential dormitories in De Neve. We researched the most effective methods to communicate to the campus community what LEED accreditation is and how each individual building achieved its certification. As an overall vision for our project, we wished to highlight the University of California's noteworthy dedication to sustainability and to stress how LEED certified projects align themselves with UCLA's goal to become a nationwide leader in sustainability. We chose to use educational panels as the best method to execute this and these panels were also used to satisfy the education component of the LEED certification process of dorms in De Neve. We hope our educational panels will serve as examples for future signage about LEED certification and buildings at UCLA.

As large component of our team project was outreach and helping to spread awareness as well. At UCLA's Annual Earth Day Fair, we conducted a survey asking over ____ students about LEED certification and its foundation on the UCLA campus. Our results showed most students prior to the survey did not know about LEED certification nor did they know that some of UCLA buildings were LEED certified or are in the process of being certified. We then felt it was to important to increase awareness and education. We assembled table tents for the Court of Sciences Student Center and put them on display for both weeks 9 & 10. These included information about LEED in general, the specific features that made the building LEED certified, and about the ESLP program and how to become involved. We hope this increased awareness and interest in LEED certification. Lastly, we have been working with another Action Research Team on the UCLA's interactive campus map, which will feature a LEED/Green Building layer that will highlight both LEED certified and other green buildings on campus.

After these past two quarters, our team strongly encourages that future LEED Assessment Action Research Teams or even campus organizations like the UCLA Chapter of the U.S. Green Building Council increase awareness and education through more signage and guest lectures. There does seem to be a lack of this on the UCLA Campus. UCLA has taken numerous steps to become a leader in sustainability, including green building, so it is important that the UCLA community and others are aware of these accomplishments.

Overview, Objectives, & Project Goals

The University of California, Los Angeles has become greener and more environmentally friendlier by the years. Although recycling has been the catalyst for the push of the sustainability trend at UCLA, buildings themselves have also become more energy efficient to do their part in the trend. UCLA has tremendously transformed into the green campus it was meant to be by keeping up with the University of California Policy on Sustainable Practices. The Policy calls for all new buildings and major retrofits to outperform the energy efficiency standards in Title 24 of the CA Code of Regulations by 20 percent.

UCLA now has many LEED certified buildings across the campus as all new buildings and major retrofits have targeted green building certification of LEED Silver or higher. LEED (Leadership in Energy and Environmental Design) is an internationally recognized green building certification system developed by the U.S. Green Building Council in March of 2000. LEED provides building owners and operators with a framework for identifying and implementing practical and measurable green building design, construction, operations and maintenance solutions. La Kretz Hall became UCLA's first building to receive a new construction LEED rating of Silver, while Public Affairs is the first campus building to obtain Silver certification under the Existing Buildings process.

As a brand new group to the Action Research Team component of ESLP, our work as the LEED Action Research Team has developed from the support and

guidance of our stakeholder Todd Lynch, Principal Project Manager of UCLA's Capitol Programs. Charged with improving campus literacy and awareness of LEED and green building practices, our team objective has been to research and devise a communication strategy to effectively reach students and visitors alike. This work has involved meeting with UCLA Housing, contractors, consultants, architects, and other crucial professionals who have been closely involved with the LEED certification process for new construction and renovations on campus.

As instructed by Todd, our focus was to develop panels that are to be placed within LEED-certified buildings on campus. Our pilot program consisted of panels for the new South Campus Student Center and the new dorms (Holly and Gardenia) located on Gayley Ave. The panels are aimed to communicate to the campus community what LEED accreditation is and how each individual building achieved its certification. As an overall vision for our project, we wish to highlight the University of California's noteworthy dedication to sustainability and to stress how LEED certified projects align themselves with UCLA's goal to become a nationwide leader in sustainability.

Significance & Background

Our team worked on promoting LEED and gaining student awareness.

LEED (Leadership in Energy and Environmental Design), is a rating system that rates buildings and construction projects to verify if that structure falls within the qualification to be considered an environmentally friendly building. LEED buildings contribute to structures that create less emissions, pollution, energy consumptions, material and resources and promote water efficiency to create an environmental friendly area.

In its efforts to become a nationwide leader in sustainability, the University of California has dedicated itself to achieving a minimum Silver rating under the US Green Building Council's LEED accreditation for all new buildings and major renovations. LEED (Leadership in Energy and Environmental Design) certification recognizes that a building, home, or community was designed and built to achieve high performance in five key areas of human and environmental health: sustainable site development, water efficiency, energy and atmosphere, materials and resources, and indoor environmental quality.

Our group focused on the 5 different categories of LEED. First off, sustainable sites are not just buildings, they are sites promotes the use of less energy, water and resources. Next, water efficiency was used to promote using less water, water as a source of energy and promote water conserving structures. Next is energy and atmosphere. Energy and Atmosphere promote using energy efficient light bulbs and other structures. These energy sources would be friendlier to the

environment with less emission output and a cleaner atmosphere. Also is materials and resources. This categories promotes using material that was previous recycled and also using glass that could maintain the building temperature to promote using less air condition systems. Lastly, is the indoor environmental quality which establish minimum indoor air quality (IAQ) performance to prevent the development of indoor air quality problems in buildings, thus contributing to the comfort and well-being of the occupants.

UCLA in its effort to become a more "green" campus has several LEED buildings on campus. These building exemplify the importance of sustainability to the campus and the ongoing efforts to have less of an environmental impact. In attempt to promote sustainable campuses all newly built buildings of the University of California Campuses are required to be LEED certified. UCLA is committed to promote sustainability by having at least a silver LEED rating in all of the new building on campus. Our team promoted the newly renovated South Campus Center and the new housing in De Neve.

Initial Conditions

Our team is the first generation of the Action Research Team to have this project to promote LEED buildings. Since we were just the first team to have this project we didn't know where to start. During the first week, we didn't have much to work with since we didn't contact our stakeholder Todd. However, after Claire and Jasneet were able to contact Todd and get the gist of what we needed to work on we had had other complications. Todd wasn't much familiarized with ART and he didn't know what to expect from us. He assumed that we were able to do everything he asked us for in a short amount of time. At first he asked if we could make six panels in two weeks. That was an impossible task to do, since we are students in school and we wouldn't be able to donate our full time to the project. We were also going to interview the building managers to see what qualities the buildings possessed that qualifies it to be LEED certified. This was going to be used when we make the panels so that each panel for each building would be unique to that particular building.

We later than had another meeting with Todd and several faculties that dealt with LEED buildings. We suggested having a learning group for staff that worked in the buildings so that they would be more knowledgeable about how to use the resources of LEED building more efficiently so that each building is getting the optimal savings. However, after having the meeting with the faculty staff, we were told to make panels for the new dorm buildings. Luckily since they provided us with the information about each dorm, we didn't need to interview the building managers anymore and that we only needed to only focus on 1 panel instead of all the buildings that were LEED certified in the campus.

Our first approach is to become familiarized with what LEED was. During our first two weeks of spring quarter we did research on LEED. When then broke up the different categories of LEED to an individual group member. We further then researched on just those sub-categories. We then generalized ideas to into what we expect our info-graphic to look like. Our next approach was to find a template so that all our panels would have a unified theme. We each generated our own-info graphic to share to the group. After many different drafts and ideas, we became solid with a simple info-graphic that Claire found.

We were also asked to make a one sentence description about each LEED building on campus. These were going to be used in the interactive campus map. When a person scrolls there cursor over an area the sentence would come up and have a one sentence explanation about what makes the building LEED certified. Unfortunately, Todd still hasn't provided us with the information, and it might not be possible for us to do that project anymore.

The beginning of winter quarter we had our goals changed. Since we had a hard time to contact the managers we were changed our directions to just doing the south campus center. We successfully made the panel for the south campus center. Todd loved the panel so much, that we wanted us to make another one for the Gardenia dorm. We were able to construct a panel for that dorm in just a week since we used the south campus center as our template. They wanted these panels so that the buildings could receive educational credits for the certification. Todd later than asked for one more panel, but unfortunately we had to decline the suggestion since it was too far into the quarter.

During winter quarter we also had set up a table for earth day to get students to do a survey. It was extremely successful and we were able to get a huge turn out and we were able to construct tables and graphs with the information that we received.

Our last project was to have an event to promote LEED. Our idea was to have table tents that to put up in the south campus center and it will be held on tenth week if everything goes according to plan. Our team LEEDers was able to accomplish a great deal of progress this year and we anticipate that the next generation would be able to further promote LEED.

Research Methodology

Our LEED Action Research Team was not so much research based although we did have to do some research in order to compile data for our panels. The first thing we did as a team was to learn as much as we could about the U.S. Green Building Council and its LEED (Leadership in Energy and Environmental Design) Certification process for buildings, homes, and neighborhoods. We knew that we needed to establish an understanding of the LEED certification process, the requirements of the various project stakeholders, the building being certified, and the U.S. Green Building Council.

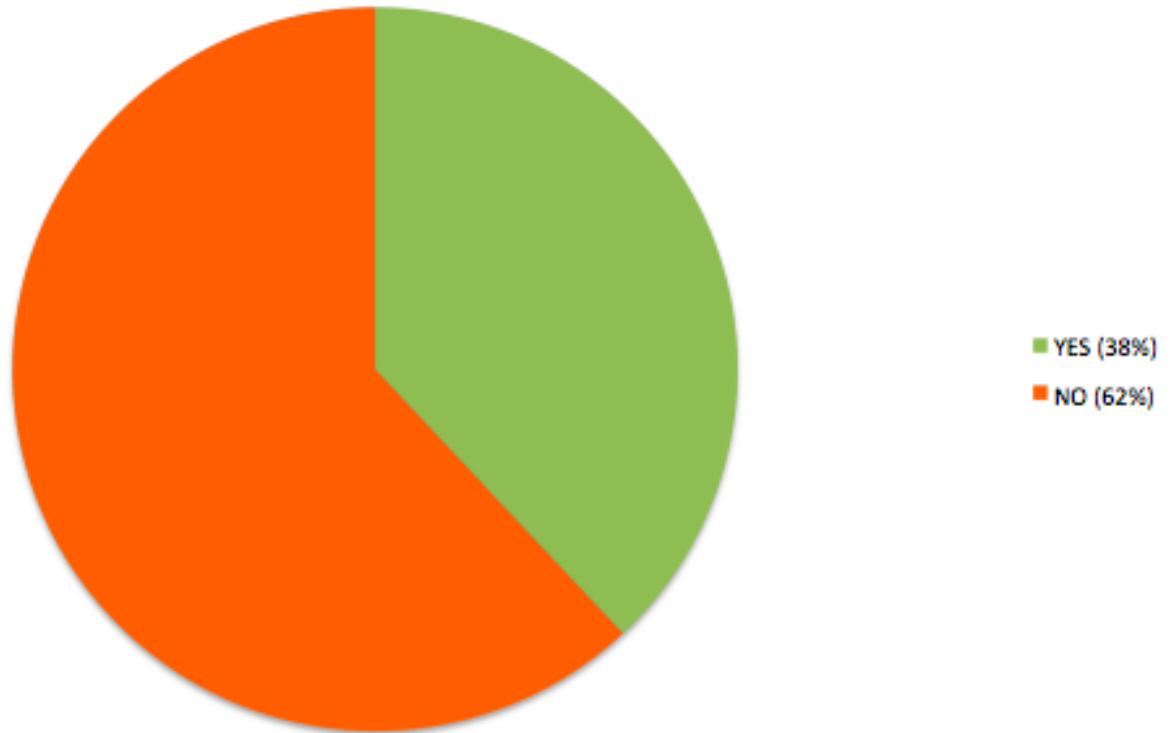
While we were working on the panels for Hedrick Hall one of the project managers invited our team to the project's online LEED certification process profile so that we could see how Hedrick Hall achieved its individual LEED credits to become certified. Each team member was assigned a specific category within the LEED certification process and therefore was responsible to research that category, whether it was sustainable sites, water efficiency, energy and atmosphere, materials and resources, or indoor environmental air quality. Specific information on each category had to be gathered in order to create our panel displays.

As our focus was on Hedrick Hall, Todd advised us to instead begin focusing on the South Campus Student Center and we were able to turn corners quickly as we already had panel templates and we also knew the information that needed to be gathered. Some of the information that we were able to put forth on our panels was from our surveys that we conducted at the UCLA Green Fair that took place on the

IM fields. As a team we thought out and created a survey composed of LEED questions in order to better understand the average student acknowledgement of LEED and LEED certified buildings on campus. From our surveys we concluded that the average UCLA student hasn't heard or know about LEED nor LEED buildings and our panels are a great way of informing students and visitors about our green campus and its green buildings.

Data Analysis

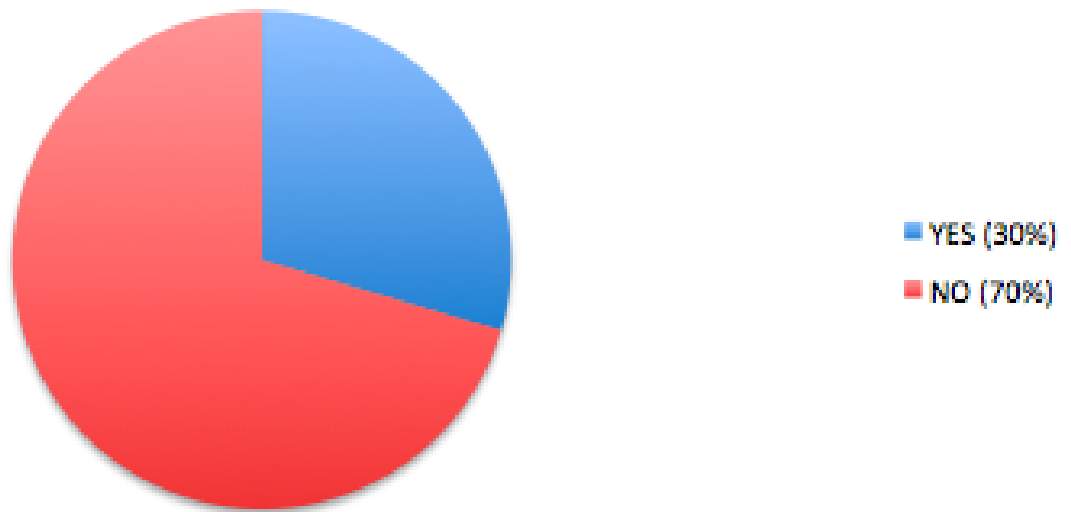
Are you familiar with LEED (Leadership in Energy and Environmental Design) certification?



Our results show that **62%** of the surveyors were not familiar with LEED certification.

It is important that we increase education and awareness on campus through signage and lectures because much of the UCLA Community is unaware.

Prior to this survey, did you know that the University of California has committed itself to seeking at least a LEED Silver rating for all new building construction and renovations?

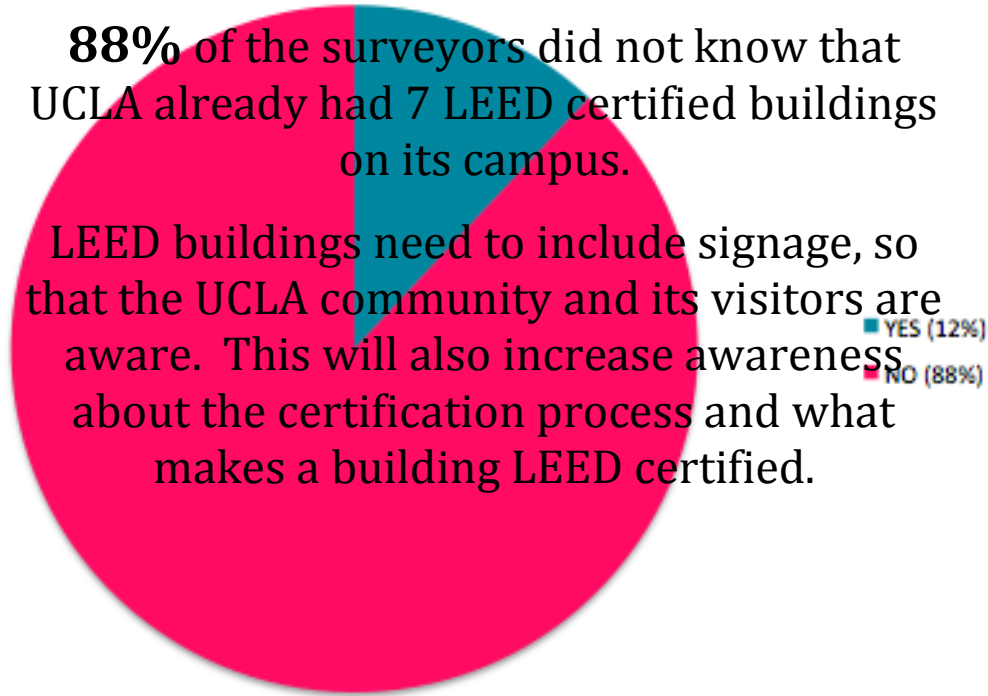


Prior to this survey, only **30%** of the surveyors knew about the commitment University of California has made to seek at least a LEED Silver rating on all new building construction and renovations. This means **70%** did not know this.

Prior to this survey, did you know that UCLA has 7 LEED certified buildings on its campus?

88% of the surveyors did not know that UCLA already had 7 LEED certified buildings on its campus.

LEED buildings need to include signage, so that the UCLA community and its visitors are aware. This will also increase awareness about the certification process and what makes a building LEED certified.



Key Findings

We discovered that many people did not know about LEED Certification or the significance of green buildings and their impact on the environment. Most people, who were UCLA students, answered that they had not even heard of LEED or the USGBC, or that there were several buildings on campus that were LEED Certified, were seeking LEED Certification, or that there is a rule that all new buildings and renovations done on campus must reach a LEED Silver certification or higher. However, after learning about the program and the different qualification, students seemed interested in the subject and were starting to realize the importance of having green buildings on campus. At the end of the survey, students generally agreed that it was important to have sustainable buildings on campus, and that the significance and different innovations in the building should be communicated to the public more clearly. In this way, students and visitors could learn more about the importance of making even buildings green and what they could do to keep these buildings operating at their full capacity. As a team, we learned about which specific buildings were LEED certified, such as the new South Campus Student Center and the new De Neve residential halls: Holly and Gardenia. We learned the general process to become LEED certified and that UCLA is trying to switch from a University of California Green Building standard to a more recognized way of identifying green buildings and its rating. Specifically with the South Campus Student Center and the De Neve Residential Halls, we learned about different green building methods that each building uses, such as low-flow faucets, reused and local materials and furniture, and innovative ways of ventilation and air flow.

Recommendations

While other Action Research Teams had recommendations from previous teams to guide their project, our team had to dive into our project not knowing what to expect since we were the first generation LEED team. For next year's team, we have a few recommendations that we hope they will consider and adopt.

First, future LEED teams should create panels for the other LEED certified buildings on campus: Hilgard Graduate Housing, La Kretz Hall, Hedrick Hall, Rieber Hall, Public Affairs Building and Young Research Library. The general LEED panel – which briefly explains the fundamentals and components of LEED certification – should be used for the other buildings. Using the general LEED panel would be a great piece that unifies the different panels. As for the panel that is specific for each building, it should also have info graphics incorporated into the design since people are more inclined to read posters that have pictures than one that is full of text.

Secondly, campus tours should be utilized to increase the awareness of the presence of LEED certification on the UCLA campus. Brief descriptions and statistics for each building should be written for each building. That way, tour guides would be prepared with specific and interesting information that pertain to each building. It would also be great for the LEED team to partner with other Action Research Teams to create their own campus tour focused on UCLA's mission to become a more sustainable and greener institution.

A third suggestion is to create a game that would serve as a fun activity to teach others about LEED. A possible game can be modeled after the Wedge Game in which the goal is to choose different strategies in order to reduce current carbon

emissions. In this LEED game, participants should be given a current building on campus that has not been LEED certified. They must then work individually or in a team to make improvements upon the building in order to achieve LEED certification within a specific budget. To win this game, individuals or teams must have obtained the highest certification level.

Another recommendation is for future LEED teams to invite LEED certifiers as guest speakers or even incorporate LEED education in lectures like the Enviro 185A Lecture Series. It would be a great opportunity for students and faculties to understand how buildings are certified by those who are in the profession. Furthermore, they would be able to answer specific questions that we students may not have the experience, qualifications and credentials to answer. Future LEED teams should also ask guest speakers if they are willing to provide brief sample questions that are similar as the ones asked on the LEED Professional Exam. This would be a great opportunity for individuals to get a glimpse of the requirements and qualifications needed in the field.

Since the majority of UCLA's undergraduate dorms are LEED certified, it is imperative to increase their awareness of LEED. Students should know what type of building they are living in and the special features that are responsible for the building's energy efficiency, water savings, sustainability, and indoor environmental quality. An easy way to teach others about LEED on the Hill is to create signage that can be displayed near the feature that is responsible for decreasing the negative impacts on the environment. For instance, a small sign that addresses the water savings should be placed in the restrooms. These signs should contain brief

information and statistics and should be designed in a way that captivates the viewer's attention. These small signage spread about the dorm building is a great way to teach others about LEED without overbearing them.

Conclusion

The LEEDers Action Research Team has learned an immense amount about LEED certification and the major components of the process. We engaged in what steps UCLA has already taken and will continue to take with LEED. We first started with just learning about what qualifications a building has to achieve before it can become LEED certified. Then, we researched into specific buildings on the campus and what specifically made them LEED certified. This led us to our educational panels where we highlighted specific features of the LEED certified building. We then focused on outreach and spreading awareness/education about LEED certification and its presence on UCLA's campus. Our survey results showed us that there is a lack of knowledge about LEED certification and its connection to UCLA throughout the UCLA community. Therefore, we think increasing awareness and education about LEED at UCLA is extremely important. We have some suggestions of possible ways and hope that UCLA adopts some of them in the future. The University of California has made a commitment to achieve at least a Silver LEED rating for all new construction and renovation. UCLA is on its way of becoming a leader in sustainability and the community should be aware of its accomplishments.

References

This will be a works cited for all of the outside research that you did. Include anything that you think is relevant or anything that helped you along the way. If you want you can even make it more of an annotated works cited by describing how each reference assisted you in your project. --Leaders

surveys, designs you have made, flyers from events, additional graphs or charts, pictures you have taken

Appendices

LEED certification

In its efforts to become a nationwide leader in sustainability, the UC system has dedicated itself to achieving a minimum Silver rating under the US Green Building Council's LEED accreditation for all new buildings and major renovations. LEED (Leadership in Energy and Environmental Design) certification recognizes that a building, home, or community was designed and built to achieve high performance in five key areas of human and environmental health:



Sustainable Sites

Site selection and development are the foundations of a building's sustainability. The Sustainable Sites category recognizes buildings that promote the reduction of light pollution, the urban heat island effect, stormwater runoff, and transportation demands.



Water Efficiency

In the US, buildings account for 14% of all potable water usage. The Water Efficiency category encourages smarter water use by rewarding projects that use more efficient fixtures and water-conscious landscaping.



Energy & Atmosphere

The Energy & Atmosphere category encourages a wide variety of energy-wise strategies that work to reduce energy demand and promote better ongoing energy performance.



Materials & Resources

The Materials & Resources category encourages the selection of sustainably grown, harvested, produced and transported products and materials and promotes waste reduction, reuse, and recycling.



Indoor Environmental Quality

The U.S. Environmental Protection Agency estimates that Americans spend about 90% of their day indoors, where the air quality can actually be much worse than it is outside. The Indoor Environmental Quality category promotes strategies that improve the quality of a building's indoor air to protect the health of its occupants.

Court of Sciences Student Center



Sustainable Sites



Water Efficiency



Energy & Atmosphere



Materials & Resources



Indoor Environmental Quality

Green buildings can reduce . . .

maintenance costs by **13%**

water usage by up to **40%**

energy usage by up to **50%**

solid waste by up to **70%**

carbon dioxide emissions by up to **39%**

Landscaping

- Pervious paving allows for groundwater recharge
- Relocation of existing plant material from campus
- Use of drought tolerant plant species

Bathrooms:

- Low flush toilets and urinals with ECO powered sensors
- 0.5 gallons per minute sensor operated lavatory faucets

Green Roof:

- Naturally heats and cools the building
- Provides additional outdoor space for faculty, staff and students
- Lasts longer than normal roofing materials

Recycled Materials:

- Locally sourced materials (harvested within 500 miles of the site)
- Reused materials from the previous site including tables, chairs, bricks, bicycle racks, lighting, and newspaper kiosk

Ventilation:

- Operable windows available to occupants in the indoor seating area
- Mixed mode HVAC system that uses natural ventilation



Brought to you by the Education for Sustainable Living Program and Capital Programs.

De Neve Residential Halls



Sustainable Sites



Water Efficiency



Energy & Atmosphere



Materials & Resources



Indoor Environmental Quality

Green buildings can reduce . . .

maintenance costs by **13%**

water usage by up to **40%**

energy usage by up to **50%**

solid waste by up to **70%**

carbon dioxide emissions by up to **39%**

Exterior Features:

- Minimized heat island effect with light-colored paving and roofing
- Reduces carbon emissions by enabling more students to live on campus
- No passenger vehicle parking area, which stimulates the use of alternative transportation

Bathrooms:

- Low flush toilets and urinals with ECO powered sensors
- Lavatory faucets only use 0.5 gallons per minute

Solar Energy:

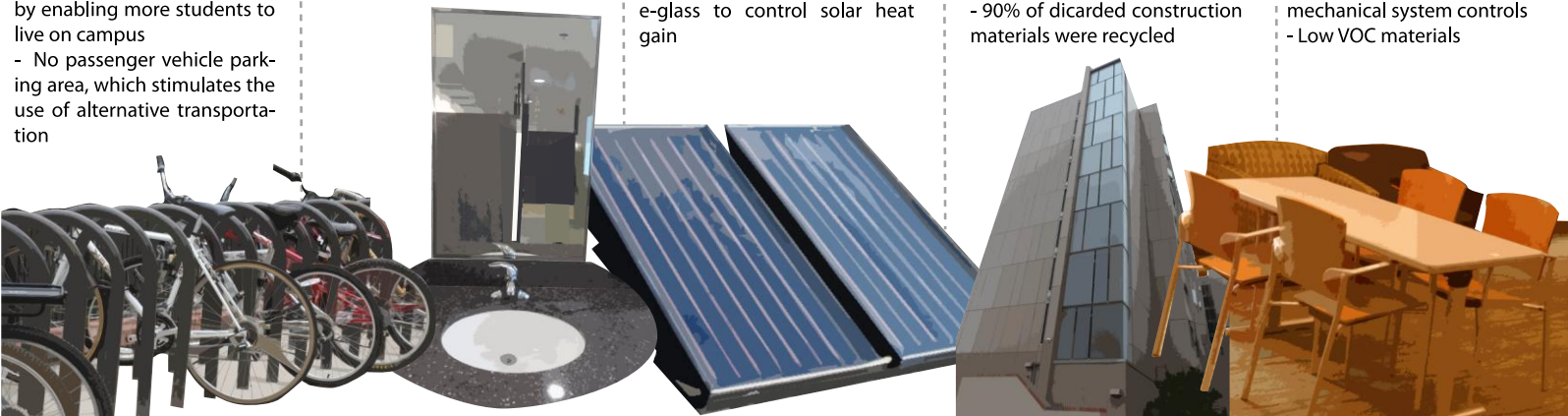
- Water is heated by solar hot water collectors
- South facing orientation with exterior shading and low e-glass to control solar heat gain

Sustainable Materials:

- Recycled and locally sourced materials
- Wood products are sustainably harvested
- 90% of discarded construction materials were recycled

Air Quality:

- Walk off mats used to keep dirt and particles out of the building
- High efficiency filters
- Operable windows and mechanical system controls
- Low VOC materials



Brought to you by the Education for Sustainable Living Program and Capital Programs.



Earth Day Fair
2012, where
we asked over
***** students
about LEED
and filling out
our survey.

Place sample survey here

Table Tent Sides:

Green Building at UCLA:

The LEED® Certification Program



Side 1

The Education For Sustainable Living Program

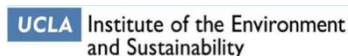
LEED® (Leadership in Energy and Environmental Design) awareness is brought to you by the Education for Sustainability Living Program (ESLP). ESLP is a student run course that aims to improve campus sustainability through student-driven research and engagement. As part of the program, students are organized into several Action Research Teams that give them the opportunity to work alongside campus stakeholders on projects relevant to their team's focus, be it transportation, energy efficiency, or waste stream management.



LEEDers Action Research Team

The LEEDers Action Research Team aims to promote LEED certification on campus through surveying student awareness and devising communicative strategies to make students more aware of UCLA's green building goals. Through our work, we hope to better familiarize students, faculty, and visitors on campus with UCLA's sustainability initiatives and the importance of green building.

Want to get involved? Check out the Institute of the Environment's website to learn more about enrollment: www.environment.ucla.edu



What is LEED®?

Developed by the U.S. Green Building Council, the LEED® green building certification program is the nationally accepted benchmark for the design, construction, and operation of green buildings. Certified buildings are designed and built using strategies aimed at achieving high performance in 5 areas of human and environmental health: sustainable site development, water efficiency, materials selection, energy efficiency, and indoor environmental quality.

To learn more about LEED® visit www.usgbc.org

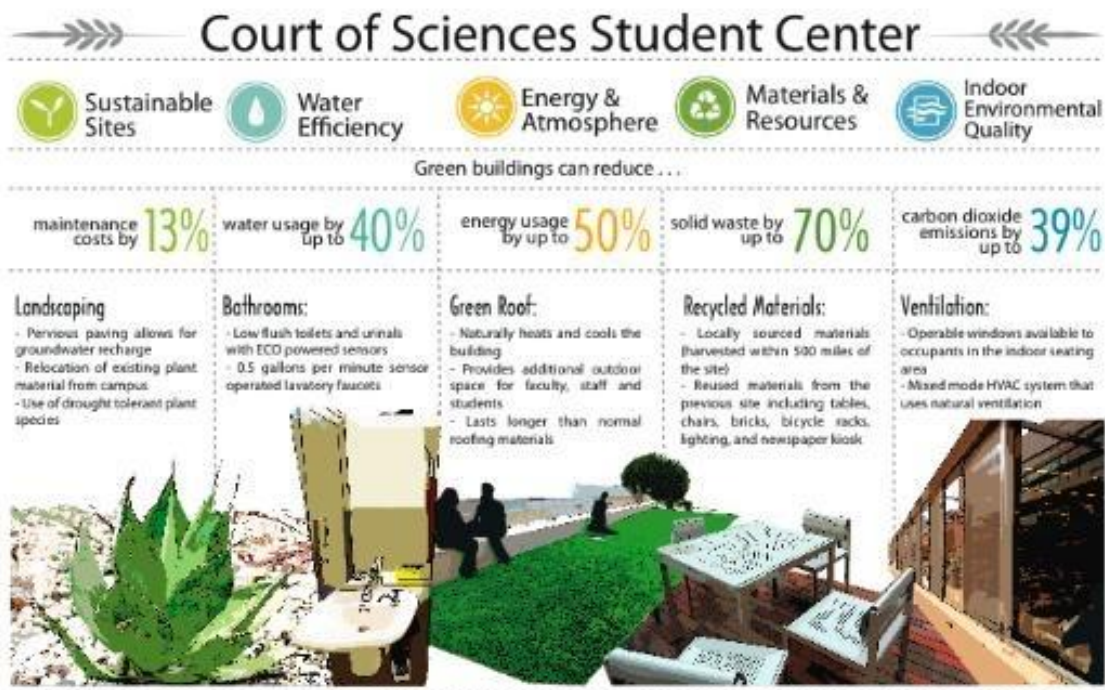


Table Tents on display at the Court of Sciences Student Center

