

Hill Energy Metering Project (HEMP) Action Research Team

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Final Report Spring 2011



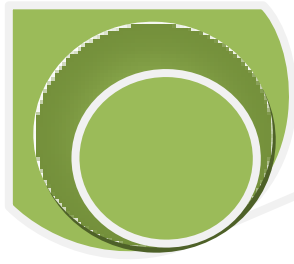


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Executive Summary

UCLA's On-campus Housing houses almost 10,000 students each school year with that number expected to grow in the future. With this in mind the Hill Energy Metering Project (HEMP) Action Research Team was formed to promote energy conservation and awareness in these residential communities. By focusing on UCLA's On-Campus Community known as the "Hill" HEMP will make great strides in promoting a reduction in the amount and percentage of total emissions of UCLA's campus.

Our key findings in this project were quite significant. Through the Engage Energy Metering Project, we found that public exposure of resident energy consumption can significantly reduce their usage and alter their behavior. In this experiment, rooms with publicly displayed information reduced their energy usage by 30%. Focus groups with the students involved confirmed that they did change their energy consumption behavior in response to the public display of results.

In addition to the Engage project we created educational videos on how to use the different thermostats and how to be more sustainable. These were highly effective in increasing awareness of those who participated, and we hope that similar informational videos continue to be provided for residents in the plazas.

We also placed reminder signs near light switches and thermostats in all the resident rooms in one building and recommend that these be implemented in all rooms on the Hill in the future. To assess thermostat behavior we issued a survey completed by 780 students which showed that most residents want informative signage near these areas. In its first year of research, the Hill Energy Metering Project Action Research Team has been largely successful in achieving its goals. However, we have merely laid the framework for more energy focused

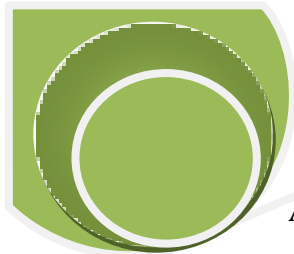


action research teams in the future. Our team and our stakeholders would highly recommend continuing to post the energy reminding stickers as well as find a way to access the attention of the residents and effective ways to tap into their motivation to conserve energy and live sustainably. The Engage Energy Metering Project has expressed interest in having ART assist them in metering the energy consumed in University Apartments.

Objectives and Project Goals

The goal of the Hill Energy Metering Project (HEMP) Action Research Team is to promote energy conservation and awareness in the residential communities. This is the first year that there has been an Action Research Team dedicated to reducing energy on the Hill and when starting to form our goals for the project we first started by looking at the Final Report from a similar team in a previous year. From that report we were able to understand that many students did not have a clear idea of how to be more sustainable in their rooms. So our first goal was to increase education about ways to be more sustainable. Our second goal was to determine what factors would motivate students to reduce the amount of energy they used while in their rooms.

Over the last two quarters we accomplished our goals through three projects. The first project was in collaboration with graduate student Neil Lessem and professor Magali Delmas and is known as the Engage Energy Stars Program. The second project put up energy conservation signs in one building, and our third project created videos on how to use the room thermostats and embedded it into a survey to assess thermostat usage. By working with our stakeholders, we were able to design effective measures to encourage students to reduce their energy consumption and help make these measures a permanent part of every resident's experience living on the Hill.




As winter quarter began and we brainstormed ideas and goals for the year, we were fortunate to be helping Lessem with his project to start us off. We began the quarter resetting routers that had crashed and updating the Energy Stars poster each week for the status treatment portion of the project. As a team, we made weekly trips to Rieber Vista and Terrace as well as Hedrick Summit, helping Lessem and his team focus on their study without the inconveniences of frequent trips to the Hill to reset routers. However, we wanted to pursue our own initiatives as well.

Lessem brought up an interesting point—that energy usage from lighting and electronics is small in comparison to the amount consumed when heating and cooling buildings. We also noted that a large portion of UCLA’s dormitories are plazas (rooms with their own personal thermostats). Many of our friends that lived in these rooms do not know how to operate their thermostats in a sustainable manner. With these observations in mind, we set out to educate the Hill as to how to set their thermostats sustainably. Our second goal was to conduct some research that would influence the energy usage of all Hill residents, not just plaza occupants. We wanted this education to continue for years to come, and to inform incoming freshman about energy usage.

Background and Significance

UCLA has committed to reducing campus emissions to 1990 levels by 2020 through the Climate Action Plan. In 2007, 83% of emissions were produced by energy consumption. Thus, an important component to helping UCLA reach its goals is through encouraging energy efficiency. The implications of this project are related to sustainability because the awareness generated by energy metering, informational signage, surveys, and educational videos all help to



decrease energy usage and encourage efficient behavior.


UCLA's Housing and Hospitality Services also has a Sustainability Strategic Plan, whose vision statement is "Hospitality first, sustainability forever." One of the main goals of this plan is to "create sustained behavior changes of H&HS team members and student-residents regarding resource consumption and waste generation through educational programming, incentives (recognition and awards), and volunteerism." Our team's objectives are directly in line with these goals. Some of the components of this portion of the Sustainability Strategic Plan include participating as a stakeholder for Action Research Teams, increasing sustainability signage and in-room materials, and maintaining and updating the Housing Sustainability website. Our projects directly contribute to these goals.

This project has significant implications for the entire UCLA community. Currently, Hill residents do not have access to their energy consumption data and they do not have an electric bill to pay monthly. With our project, we show that sustainability initiatives and education have a significant impact on student behavior and contribute to UCLA's goals.

Initial Conditions

Since this was the first year an ART team existed for energy metering on the Hill, we had very little pre-existing groundwork to build upon. In the beginning, it was unclear exactly what our focus and goals would be. Tackling the energy use of the thousands of people living on the Hill seemed like a daunting task – and at times it was. However, we did have one specific starting point: the Engage energy project.

The Engage Project was headed by a team of UCLA graduate students trying to determine how much energy students use and how their energy use is affected when they have




access to data about their energy consumption. The graduate student team built small energy meters that record the amount of energy students consume based on heating/air conditioning, lights, and plug load. This data was sent to routers and then became available on a website.

Sixty-six plaza rooms in Hedrick Summit, Rieber Terrace, and Rieber Vista, – with the consent of their inhabitants – had these energy meters installed since fall quarter. Some of the rooms could access their data on the website while others had no access to this information.

Since the energy meters were already installed before our ART project was initiated, we began by learning how to maintain and restart the routers. We all lived on the Hill and could easily check on the equipment, so we reset the routers and made sure the equipment was in working order whenever the server crashed or other problems arose. We then further contributed to the Engage energy metering project by encouraging a status group to install Facebook feed applications that would post their daily comparative energy usage for all of their friends to see. In addition, large posters with a weekly updated list of each room's comparative energy use hung in public view outside the elevators in these buildings. Our team was responsible for updating these posters every week.

Although it was extremely helpful to have the energy meters already installed and the Engage project already underway, we also wanted to initiate our own individual projects. One of these projects involved creating instructional videos on how to use the thermostats in the residential plazas, the nine buildings that had controllable air conditioning and heating.

Although there was some information for students on how to use their thermostat on the housing website, the large amounts of text and confusing instructions on the webpage made the instructions very unhelpful. Also the instructions that were currently on the webpage only addressed one of the three different thermostat types that students may have in their rooms.

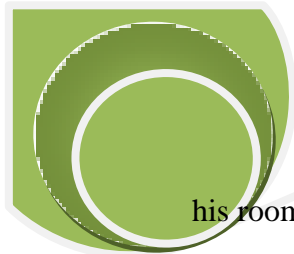


Taking this into consideration, we tried to make our own videos as simple and accessible as possible. We made short minute-long videos for each of the different types of thermostats in De Neve, Hedrick Summit, Rieber Terrace, Rieber Vista, and Sunset Village.

Our other project was posting reminder signs by the light switches and thermostats in each room in Rieber Vista. We had no pre-existing building blocks for this project and had to start entirely from scratch, designing the signs, printing them, and finally posting them in all of 355 rooms. Since something like this had never been done before, we sought guidance from our stakeholders in UCLA Housing and were able to develop and post all our own signs. Many students were surprised by our request to post signs in their rooms, since nothing like this had ever existed in Rieber Vista. At the same time, however, most students were very receptive to the idea and many showed great excitement towards it. In fact there have been no complaints from any of the 700 residents living in the building.

Research Methodology

Working with the Engage energy project gave us a valuable means of collecting data about energy consumption and hearing students' views on energy use. We spent numerous hours knocking on students' doors in order to maintenance their equipment, and in doing so we got to interact with students and hear their thoughts. Students told us what they were doing to cut back on their energy use, or how they felt about being a part of the project. Some students were more enthusiastic than others and often times it became the same rooms that we had to reset since they had not done it themselves. When we hung up the "Engage Energy Stars" posters by the elevators on each floor, we also got to see how some students reacted. For example, a certain Resident Assistant's room number was targeted on each poster – people wrote his name next to

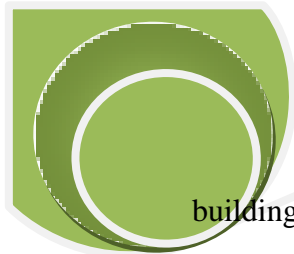


his room number and even drew pictures on the poster. Having the Resident Assistant on each floor put up the posters initially was helpful as they then knew what the project was about and could help inform others, however, it did provide some problem as one Resident Assistant lost the poster and required a new one.

Being involved with the Engage project also gave us access to more quantitative data about students' energy use. The software developed by the graduate students recorded data on energy consumption from student's use of lights, heating/air conditioning, and their plug load. However, the routers frequently went down and at one point the Engage server also crashed, so there is some missing data. We could also see how students' overall energy use changed over the course of winter and spring quarter. Having such concrete numbers for energy use has been an extremely useful component of our research.

We also got some specific feedback from student participants by conducting focus groups midway through spring quarter. We held two focus groups, one for the students who had their energy use displayed publicly on posters, and one for the students who only had access to the website. As an ART team, we took on the task of printing out and delivering invitations for all the participants, door-knocking to encourage attendance, and providing incentives (Pizookies and ice cream) for attendance. Some of our stakeholders also attended the focus group and were involved in the discussion. In this setting, we got to hear dialogue not only between students and stakeholders, but also between students. They shared and discussed common experiences and even some tips on how they saved energy (or did not).

For our individual project involving the light switch and thermostat reminder signs, we also wanted to see how energy use was affected. Since we installed the signs in Rieber Vista, we could not get data for each individual room, but instead recorded energy use for the entire

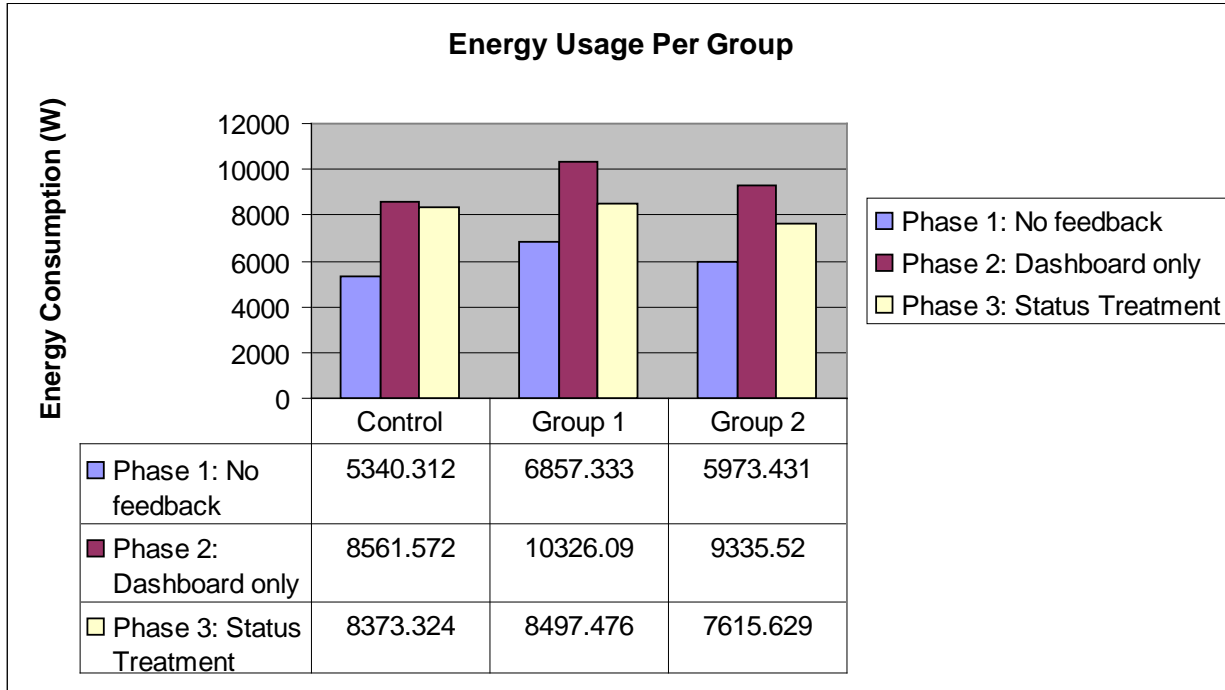


building. After we posted all 355 signs, our stakeholder Rebecca Miller helped us read the energy meter for Rieber Vista and compared them to Hedrick Summit for the month of April. These buildings were chosen because they are the most similar in design and they do not have other confounding operations such as dining affecting their energy readings. We also looked at energy use data from previous years for our data analysis.

In order to collect data regarding our thermostat videos, we created a survey using Qualtrics. We wanted to know how effective and useful our instructional videos were to students, and if any improvements should be made. We were also curious about students' current thermostat behavior and how knowledgeable they were about using their thermostats. We were able to embed our instructional videos in the survey, so different students viewed different videos depending on what building they lived in. Our survey included questions about thermostat competency and about how helpful the video was. Working with UCLA Housing, we were able to send out the survey link by email to all 5,292 plaza residents in De Neve, Rieber Terrace, Rieber Vista, Hedrick Summit, and Sunset Village. It was highly effective to send the survey to such a large portion of Hill residents because we received a large number of responses.

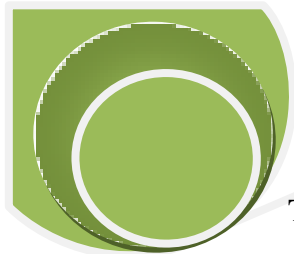
By the end of spring quarter, the combination of concrete energy use data, conversations with students, and our survey results gave us a comprehensive set of data for analysis.

Engage Metering Results



Phase 1 refers to the period in which all rooms with the meters had no access to their energy consumption data. In Phase 2, some rooms were given access to their online dashboard, displaying their energy use. In Phase 3, which occurred during winter quarter, some rooms had access to their dashboard as well as a status treatment, where their relative energy consumption was displayed on public posters.

The control group refers to rooms that had the energy meters, but the residents did not have access to their online dashboard displaying their energy consumption. Group 1 did have access to the online dashboard only throughout Phases 2 and 3. Group 3 had access to their dashboard during both Phases 2 and 3 as well, but in Phase 3 they were subject to the status treatment.



The results show that Group 2 had a noticeable decline in energy consumption during Phase 3, dropping below the energy consumption of the Control group for the first time throughout the experiment.

Light/Thermostat Reminder Sign Readings

Average Energy Use Per Student Per Day (2011)				
	<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>
Hedrick Summit	5.97	4.55	4.97	5.15
Rieber Vista	4.36	4.29	4.46	4.64

Monthly calculated average energy use per resident per day for both buildings. The reminder signs went up in the month of April. From this data alone, the impact of the signs is unknown.

Total kWh Consumption				
	<u>Mar-08</u>	<u>Apr-08</u>	<u>Mar-11</u>	<u>Apr-11</u>
Hedrick Summit	134,254	175,685	137,404	142,339
Rieber Vista	92,957	102,705	98,526	102,563


Comparison of total energy consumption by both buildings in the months of March and April from data in 2008 and 2011 (2009 and 2010 data currently unavailable). There appears to be a significantly lower increase this year between March and April compared to 2008, with the lowest increase in Rieber Vista for 2011.



Key Findings

From the results of the Engage Metering Project, Lessem and Delmas analyzed the change in energy usage and found that there was a 30% decrease in energy usage within the group with the status treatment. This decrease was the largest among each of the three groups, and it suggests that public display of energy use information has a great impact on resident energy consumption. When we helped conduct the focus groups, both groups generally felt that having access to their energy consumption information was beneficial. The focus group of students that had the status treatment also said that the posters were a strong motivator. They wanted to avoid getting a red sticker and would change their energy usage to achieve a green sticker. Some people even experimented turning off their heater or certain electronics to see if it made a noticeable impact on their energy consumption. From the data and the focus group responses, it is clear that publicly displayed information does have a significant impact on energy consumption behavior by residents living on the Hill.

The data from our reminder signs for the lights and thermostat were less conclusive. This could be due to various factors such as the higher proportion of residents in Summit involved in the Engage project and the impacts of the Hill Energy Competition held in February, where Summit had the greatest reduction in energy use. However, the energy consumption in Vista between the months of March and April were very close to one another, and it is not possible to find out if the reading for April would have been higher if the signs were not there. Comparing this year's data to 2008 data, the increase in energy use in Vista was significantly less than the increase in 2008. Studies have also shown that light switch reminders do have an effect on overall energy consumption and people are generally receptive to them (Rea). Another explanation could be that April 2011 was a hotter and drier month than is average for Los



Angeles according to the LA Almanac, which could contribute to increased thermostat usage.

Furthermore, the majority of respondents for our survey (66%) expressed that having an informational sign for their thermostat would be useful. Some of the individual responses include:

“There already is an informational/reminder sign near my thermostat. I have no idea what's on it from memory but I think it's been helpful when I'm actually looking at the thermostat.”

“It may be helpful to have a flyer at the beginning of the year when residents move in for their particular thermostat.”

Hence, we believe there is value to having informational reminder signs to encourage residents to practice sustainable behavior.

Based on our survey results, most people felt that the videos were helpful in explaining how the thermostat works and suggesting sustainable behavior and settings. This is validated by the high majority of respondents who correctly answered the questions testing their understanding of the video (90% or more for most of the questions). Comments from the video responses include:

“Thank you so much, I was so confused!”

“Taught me how to be more energy efficient.”

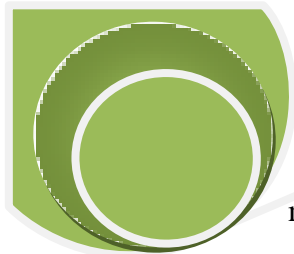
While there is plenty of room for improving the videos based on the feedback from the survey, these provide a good foundation to build from. Therefore, it would be valuable to have videos available as a resource for residents to learn how their thermostat functions and how they can save energy.



Recommendations

Although the HEMP action research team has achieved a lot, there is still plenty more that is left to work on regarding energy conservation on the Hill. Based on all of our research and conversations with our stakeholders we recommend the following actions:

1. After talking to our stakeholders, both Gilbert and Lessem expressed a great interest in having a follow-up team. Since conserving energy is a very important part of increasing campus sustainability, we recommend having at least one ART project dedicated to reducing energy consumption either on the Hill or on campus.
2. Although the reminder conservation signs we placed in Rieber Vista do not have conclusive evidence from our one month experiment studies show that reminder signs are very effective in promoting energy conservation and sustainable practice. We recommend that in order to further test this hypothesis and promote energy awareness these conservation signs be placed into every room on the Hill with the AC signs going up in every room with an air conditioning and heating unit.
3. Figuring out ways to positively impact students' sustainability habits is also a big part in promoting conservation. If a future team exists we recommend them to continue to find avenues to reach out to students such as Facebook, the use of incentives, and informational material.
4. We recommend that the thermostat videos that are now currently on the Housing Sustainability website be included in welcome material given to students in the Fall. By combining this information into welcome e-mails, introductory all-hall speeches, signs above the thermostat, or even Resident Assistant agenda items at the first meeting, the



message of energy conservation and correct AC and heating usage will become easier for students.

5. Although the videos have been very helpful for students, we recommend that if there is a team for next year, that they work with Housing to produce more professional videos that take into consideration the suggestions of our survey results. This will not only make the videos more educational but also encourage Housing to have a stake in the videos.
6. Lessem also expressed interest in having an ART potentially help out with the energy monitoring going to be conducted in the University Apartments next year. Although he will be graduating a post-doc will be taking over the project. The specific role of the ART is not clear yet but it is a potential to use the data and behavioral observations that our team found amongst participants on the Hill to compare with a different population: mostly graduate students and students with families.
7. Targeting specific groups of students can be very effective in increasing interest in sustainability as well as decreasing energy usage. From our survey data, almost half of the respondents were first-year students. Also the participants in the Engage energy experiment were also mostly first-year students. When doing some research, we even came upon first-year Internet threads expressing curiosity and interest in the notifications that had been sent to recruit participants of the Engage experiment. By targeting students as soon as they get to UCLA, or even before, they will be more likely to be interested and practice these practices for their remaining time on the Hill.



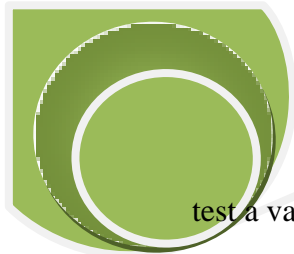
Conclusion

We were able to address all of our goals this quarter. Our team had access to concrete data as well as surveys, allowing us to accomplish our goals and provide UCLA Housing with useful information regarding sustainability on the Hill.

The Engage status treatment proved to be very effective, resulting in a 30% reduction of energy usage relative to the control group. Despite some problems with the routers, we were able to gather constructive feedback from some of the residents from the RSS Feedback and Energy Star status treatment groups. This experiment provided a solid foundation for continuing the Engage project next year in the University Apartments near campus. This new environment will offer a significantly different setting from the Hill. We look forward to potentially seeing a future ART team assist in this research as well.

Our efforts of increasing sustainable heating and cooling methods were also rewarded, with a total of 780 survey responses and views. We hope that the instructional videos will be adapted and displayed to incoming freshman, so that these new residents can be familiarized with UCLA's sustainability goals before they settle in.

We did not want to focus our time on plaza rooms alone, so we set out to design two different reminder stickers—one for light switches (for all residents) and one for the thermostat (for plaza residents). The stickers were informative, but in the end, did not result in a significant decrease in total energy usage in Rieber Vista. This may not be due to the concept of reminder stickers itself, because they have been proven to be an effective way to reduce energy consumption at other universities. This trial-run, although it did not deliver concrete results we were hoping for, was still instructive. Perhaps the success of a reminder sticker is dependent upon other traits that our design did not possess. Future Energy Metering Teams could possibly



test a variety of designs and gather feedback to construct a more effective reminder sticker.

During these past six months, we have contributed to an influential graduate study, produced customized instructional thermostat videos, and started the process of designing an all-Hill reminder sticker. Our team has come a long way to build a foundation for future Action Research Energy Metering Teams.

References

Rea, MS et al. “The effectiveness of light switch reminders in reducing light usage.” National Research Council of Canada, 1987.

<http://wattwatchers.org/Assets/lightswitchtemplates/lightswitchreminder%20study.pdf>

McKenzie-Mohr, David and Smith, William. Fostering Sustainable Behavior: An Introduction to Community-Based Social Marketing. New Society Publishers, 1999.

Rea, MS et al. “The effectiveness of light switch reminders in reducing light usage.” National Research Council of Canada, 1987.

<http://wattwatchers.org/Assets/lightswitchtemplates/lightswitchreminder%20study.pdf>

College Confidential Discussion Threads

<http://talk.collegeconfidential.com/university-california-los-angeles/975510-ucla-housing-cutting-edge-energy-usage-experiment.html>

<http://talk.collegeconfidential.com/uc-transfers/978576-ucla-residence-plaza-electricity-experiment.html>

UCLA Housing Sustainability Strategic Plan

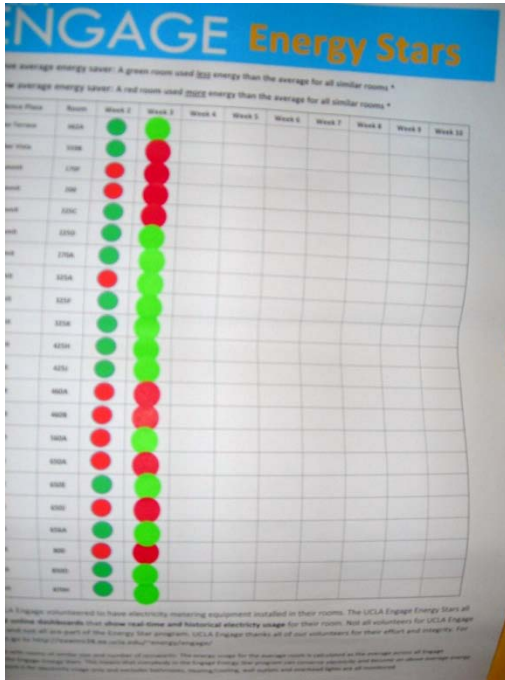
<http://issuu.com/ucla-housing-sustainability/docs/strategicplanhhs-2009-10?mode=embed&layout=http%3A%2F%2Fskin.issuu.com%2Fv%2Fcolor%2Flayout.xml&backgroundColor=2A5083&showFlipBtn=true>

2011 Long-Range Weather Forecast for Los Angeles, CA

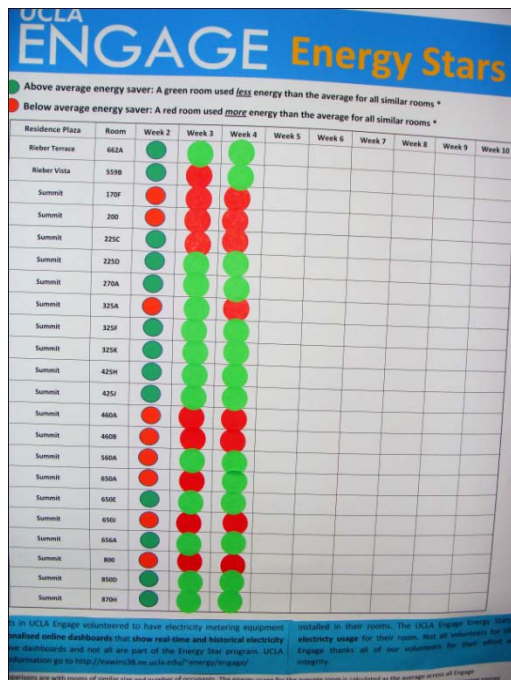
<http://www.almanac.com/weather/longrange/CA/Los%20Angeles>

Appendix

Engage Energy Stars Posters



Week 3



Week 4



Week 5



Week 6



Week 7



Week 8



Week 10

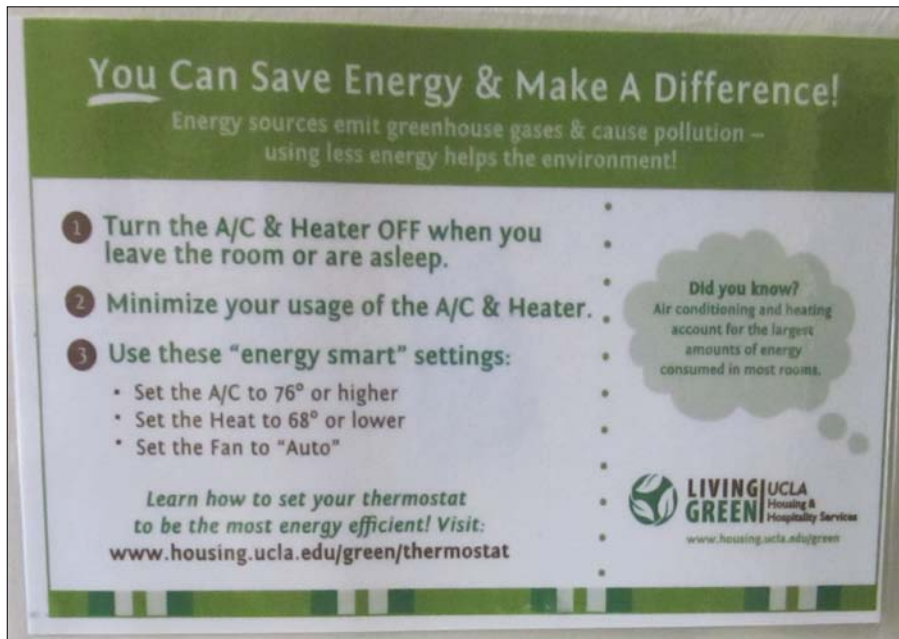


The Engage Energy Star Posters are displayed very visibly next to the elevators

Light Switch Reminder



A/C and Heater Reminder




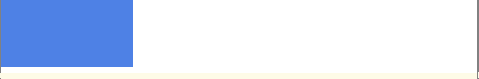

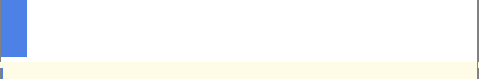



Key Survey Results

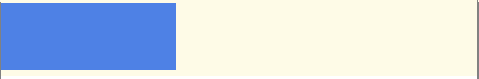

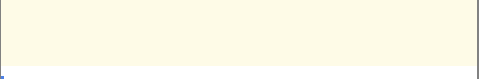

1. Which building do you live in?

#	Answer	Response	%
1	Courtside	74	10%
2	Canyon Point	56	7%
3	Delta Terrace	71	9%
4	De Neve A/B	74	10%
5	De Neve C/D	75	10%
6	De Neve E/F	97	13%
7	Rieber Terrace	99	13%
8	Rieber Vista	92	12%
9	Hedrick Summit	138	18%
	Total	776	100%

2. What year are you?

#	Answer		Response	%
1	1st year		350	45%
2	2nd year		216	28%
3	3rd year		162	21%
4	4th year		43	6%
5	5th year		5	1%
	Total		776	100%

3. What is your gender?

#	Answer		Response	%
1	Male		287	37%
2	Female		484	62%
3	Other		0	0%
4	Prefer not to state		5	1%
	Total		776	100%

4. Do you understand how your thermostat works?

#	Answer	Response	%
1	Yes	481	62%
2	Yes, but I am not sure what all the buttons do or what I should set it at to be sustainable	209	27%
3	No, I try but it usually gets too hot or cold	69	9%
4	No	17	2%
	Total	776	100%

5. How do you use your thermostat? (check all that apply)

#	Answer	Response	%
1	I turn the air on when it gets hot in my room	487	63%
2	I turn the heat on when it gets cold in my room	343	44%
3	I leave the thermostat on "auto" so I don't need to change it (if applicable)	184	24%
4	I leave the air conditioning or heat off at all times	43	6%
5	I leave my thermostat set to a sustainable range of temperatures (68-78 degrees or wider)	313	40%
6	I turn off the heat/air conditioning at night or when I'm out of the room for long periods of time	227	29%
7	I struggle with my roommate(s) on temperature controls	143	18%
8	I rarely touch the thermostat or just let my roommate(s) adjust it	127	16%

6. Approximately how long do you usually run the A/C or Heat in a 24 hour period?

#	Answer	Response	%
1	0-1 Hours	171	22%
2	1-2 Hours	153	20%
3	2-4 Hours	148	19%
4	4-6 Hours	88	11%
5	6-8 Hours	64	8%
6	Over 8 Hours	152	20%
	Total	776	100%

7. Did this video help clarify/explain: (check all that apply)

#	Answer	Response	%
1	How to use the A/C controls	567	79%
2	How to use the heating controls	511	71%
3	How to use the auto function (if applicable)	408	57%
4	How to reduce energy use	572	80%

9. What is another way to reduce AC/Heat usage and save energy?

#	Answer	Response	%
1	Wear a sweater or use a blanket when it gets cold	38	6%
2	Open the windows when it gets hot in the room	13	2%
3	Close the curtains to insulate the room when it is cold or to keep out heat when it is hot	6	1%
4	All of the above	539	90%
5	Using a plug-in fan to cool down, which takes a lot less energy to run	0	0%
	Total	596	100%

10. To save energy, you should set the FAN to:

#	Answer	Response	%
1	On	15	3%
2	Auto	432	97%
	Total	447	100%

11. Would you find an informational or reminder sign near your thermostat helpful?

#	Answer	Response	%
1	Yes	391	66%
2	No	205	34%
	Total	596	100%

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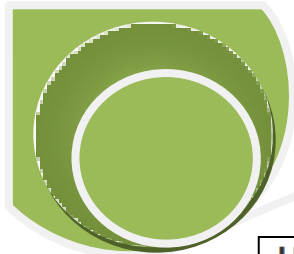


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0:02 / 1:00 300p

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UCLA Today Article

<http://today.ucla.edu/portal/ut/students-compete-to-use-less-energy-201876.aspx>

Students cut back energy use

In last spring's pilot test, researchers found that students with the Engage mechanism cut back on light use by 20-30 percent, a finding they replicated this fall.

The actual impact, however, was minimal since lighting only constitutes about 5 percent of energy use in a dorm room. In fact, heating and air conditioning account for the lion's share of power consumed in a dorm room. So this year's experiment has focused on ways to inspire HVAC conservation. Chen added a pie chart to the computer dashboard, enabling undergrads to see not only how much energy they're using, but also how they're using it, whether it's in lighting, HVAC or devices plugged into wall sockets.

Researchers then introduced an element of peer pressure and prestige. They tacked up charts showing energy savings – or abuses – clear to dorm mates. Green dots went beside the room numbers with below-average use; higher-than-average use got red dots. While the final results aren't in, researchers say that as the quarter wore on, students' energy use definitely got greener. It's looking like students cut their HVAC use by about 30 percent, Delmas said.

"This shows that status and social pressure is a powerful tool," said Delmas, the environmental economist. "That's how the Prius became such a popular car. People like the status of demonstrating how green they are, and we believe we've captured that impulse."

During spring quarter, the team will be evaluating whether this one-time intervention leads to persistent behavioral change.

"Through social status rewards we have induced large behavioral changes," Lessem said, "but it is unclear whether this has led to the formation of new habits, or whether people need constant motivation to



Residents of Hedrick Summit compare their energy use with that of others.

http://www.dailybruin.com/index.php/article/2011/04/engage_study_investigates Whether power consumption monitors in residence halls lead students to use

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Engage study investigates whether power consumption monitors in residence halls lead students to use less electricity

By KAVITHA SUBRAMANIAN

Published April 29, 2011, 2:15 am in News, Campus

The wires, hidden behind white tape, were supposed to be inconspicuous.

Yet every time Sonia Izmirian walked in and out of her dorm room, she saw the wires taped to her walls and remembered to switch off the lights and turn off the air.

Izmirian was part of a pilot study to understand whether making energy consumption information available to students leads to a conscious decrease in energy consumption.

The pilot led to the full-scale Engage study, which began this fall. Researchers will continue recording how much energy each of the 66 participating rooms uses until the end of the school year.

Izmirian, who graduated last year with a degree in psychology, said she was shocked to see that 50 percent of her usage was just air conditioning.

The wires in her room led from the lights and air vents to a monitor, which was sandwiched neatly between a power strip and the wall outlet.

This monitor recorded every kilowatt of energy being used in her Rieber Terrace room in real time and showed Izmirian exactly what percentage came from what source.

Tools



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