# Green the Greeks 2011

ESLP Action Research Program 2011

Green the Greeks Final Report

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**Executive Summary:** The Green the Greeks Action Research Team has worked on efforts that include recycling, water usage, and lighting efficiency among the Greek community on campus. Our goals were to ensure all Greek houses not only had access to recycling, but also had the proper knowledge about how to recycle. For water usage and lighting efficiency, we strove to provide Greek members with the tools which would allow them to decrease their energy and water usage, without making significant alterations to their everyday life.

Our team had many significant key findings throughout the two quarters of action research. First, we found that often times it is not necessarily a lack of motivation that leads to an unsustainable house; in our case, many people were excited to make environmentally efficient changes once they were provided with the proper tools. Second, making changes among Greek houses can be difficult due to restrictions placed by the house boards; despite the house member's positive incentives. Thirdly, we learned the importance of accepting that plans don't always go as expected; simply being able to adapt and create new actions are what will in the end prevail.

One big recommendation our team has towards future teams that are interested in taking on Greek sustainability action are is take advantage of the newly installed eco-chairs that our team has put in place at each house. Each eco-chair that our team has contacted was extremely excited and motivated to make environmental changes within their own house; they can be an extreme aid to helping a team's cause. The future team should also make a timeline of goals and plans; this would help the team figure out what objectives are actually realistic in the amount of time given. Finally, take advantage of stakeholders. Mande Adams and Troy Bartels are extremely knowledgeable about what feasible environmental changes could be made within the

Greek system; in addition to this, they have a lot of power within the Greek system that could make a team's actions very successful.

**Overview, Objectives & Project Goals:** Prior to the Green the Greeks Action Research Team, there was solely a Green the Greeks club on campus here at UCLA. This club had great incentives for environmental change within the Greek community; however, it lacked in certain areas in practice, such as proper research, organization, and inability to have access to certain fundamental tools. The Green the Greeks Action Research Team was created and was able to take advantage of these limitations by offering a structured system that motivates not only action but compelling researched. Our Action Research team also had an advantage due to the fact that we were able to focus more closely on the research side of sustainability, and work on the action side in conjunction with the members of the Green the Greeks club. Since there are more members of the club, they were able to take our research and knowledge and put that information into action among Greek houses. In addition, since the Action Research team was provided with a proper hierarchy of directors, co-leaders, stakeholders, and members, it was simple to provide people with the most effective tasks possible. Finally, the fact that the Action Research team was actually part of a graded class that consistently met every or every other week here at UCLA gave our team further incentives to perform well and ensure our actions were taking place on a timely basis.

Our goals from the start included researching ways to increase awareness and involvement for sustainability in the Greek system. We wanted to reduce the environmental footprint of Greek Housing by making significant changes that, although may require Greek member involvement, did not force members to make non-practical changes that would not be sustained. We foremost wanted to produce long term change. Finally, we wanted to institute a

position within each chapter on campus dedicated to sustainability. This would be a good way to not only expand our efforts within each house, but would also help motivate certain members in terms of sustainability, and would also be one to provide sustainable efforts for future years to come after our team is has finished its work.

**Significance and Background:**

UCLA has been taking action on environmental ways to reduce water consumption, energy consumption, and increase recycling for many years. The school has targeted these efforts within the dorms, cafeterias, campus buildings, the wooden center, and more in the past--however, until this year it had not yet reached to the Greek system since these are technically off campus facilities. Since the Greek system houses a significant percentage of UCLA students and hosts events with an even higher percentage of students, we feel that bringing sustainability efforts to the Greek system is a crucial step to making UCLA as environmentally sustainable as possible. Greek members have been taking personal actions among themselves such as purchasing energy-efficient light bulbs for their rooms, and maybe even taking a shorter shower which shows us there is an interest in sustainable practice. Yet while these are certainly effective actions, there are other actions that are not within their individual ability to green their house as a whole as much as possible. In addition to this, we want to ensure that even those with less motivation are able to become more environmentally sustainable.

As stated in the prior section, before the Green the Greeks Action Research Team, there was a Green the Greeks club which is still in place today. Again, this club was great in ideology, but did not have enough tools to make the proper sustainable changes within the Greek system here at UCLA. We feel that the Action Research Team's involvement and collaboration with the Green the Greeks club was a crucial step to making significant sustainability changes among

Greek houses.

It is important for us to note that although we were only able to provide a few houses with energy and water efficient appliances which decrease the amount of water used during showers and bathroom sinks, and also to decrease the amount of energy used while lights are turned on; we were able to provide all houses with proper recycling, as well as their own individual eco-chair positions. We feel that these changes that we have made will make a lasting impression for Greek members, as well as for future Green the Greeks members who are trying to make more sustainable changes within the Greek system.

**Initial Conditions:**

Given that Green the Greeks is a new Action Research Team this year, the majority of our goals revolved around laying down the fundamentals that were lacking in many Greek houses to make future changes towards sustainability easier. To begin with, some houses had an Environmental Chairman or a person that was a representative for sustainability in the house already. For those houses that were lacking an Environmental Chairperson, we encouraged that they appoint one in order to be a liaison for our team and to ensure that environmental improvements continue to be made within the house on a more individual basis. Additionally, the Green the Greeks club is another group composed of men and women from the Greek system whose aim is to raise awareness of sustainability. We were able to collaborate with them to achieve some of our goals, like receiving energy audits for two Greek houses and also assist them with research based questions that they were unable to obtain on their own. Lastly, a few houses had already begun making sustainable changes, like recycling more and installing compact fluorescent light bulbs. For those that didn't we contacted their waste management companies to set up recycling and supplied the houses with sustainable light bulbs, showerheads,

and faucet aerators, to promote sustainable usage of such appliances. We also helped establish a relationship with Troy and Mande, the advisors of the Greek System. By establishing this relationship we began to show them that sustainability is important to the students involved in houses on campus.

**Research Methodology:**

WATER EFFICIENCY AT ZBT:

The first step in our research was to perform simple online searches about what sustainable appliances could be installed among houses; of which, we chose appliances that were feasible in both price range and ones that would actually make a significant change. We then estimated the approximate savings of water usage, electricity, and price that each appliance would save at a fraternity and sorority. Using DART funding, we ordered a series of faucet aerators that varied in type of flow (standard vs. laminar) and volumetric flow (0.5, 1.0, 1.5, 2.0, 2.5 gpm), where 2.5gpm is the current standard in most houses. Faucet aerators are faucet attachments which not only limit the amount of water flow that is able to leave the faucet, but they also mix air into the water so as to increase the volume and pressure of the out-coming spray. We also ordered a series of low-flow shower heads ranging in volumetric flow of 1.5, 1.75, 2.0, 2.5gpm (again, 2.5gpm being the current standard). Note, that we chose products that were rated highly on online review sources. Once all of these low-flow devices were ordered, we then proceeded to undergo a series of tests to allow us to decide which appliances should be purchased in bulk and dispersed throughout Greek houses. We first tested each product among ourselves at our apartments, and then later collaborated with the Green the Greeks club to test certain products at both Theta Xi and Kappa Alpha Theta to see which appliances were favored the most (some appliances are still in place at each house today). We created surveys for members of Kappa

Alpha Theta that allowed members to decide which device they favored based on the water spray and amount of water they saved; unfortunately, however, our contact with the sorority was low, and the members did not fully commit to the survey and we were not able to use results from them. Through all of our studies, we were able to choose a shower head of 1.75gpm (30% water savings) and we chose between three faucet aerators; 1.0gpm laminar flow (60% water savings), 1.5gpm laminar flow and 1.5gpm standard flow (40%savings). Each of these products provided adequate pressure.

In late April the members of our team physically replaced HALF of the shower heads and all of the faucet aerators at Zeta Beta Tau. We only replaced half of the shower heads in case there were still negative attitudes towards the shower heads that we were not expecting. With regards to the faucet aerators, we made it so 50% of the aerators were 1.0gpm laminar flow, 25% were 1.5gpm laminar, and 25% were 1.5gpm standard. We used this variety of faucet aerators because each of them provides a significant amount of water savings, however we were still unsure which aerators people will prefer.

We later found that members preferred the 1.0gpm laminar flow faucet aerators because of its high pressure capabilities and severely low water usage; it was preferred not only over the other low-flow aerators, but they were even preferred more than the original max flow aerators that were in place before our team's influence. With regards to the shower heads, it was clear that some fraternity members felt a negative attitude towards the newly installed attachments as compared with the old high-flow shower heads; however, it appeared that most members were more enthusiastic about the water savings than they were about the slight decrease in shower comfort. For now, we will leave half of the shower heads as low-flow ones, and we most likely swap out more faucet aerators to the 1.0gpm laminar attachments.

## WATER AND ENERGY EFFICIENCY AT CHI OMEGA:

For Chi Omega, we took an alternate approach. Due to the fact that there were complications from the house board and house moms which were hesitant to install aerators if it meant breaking off the old ones. The house corporation board was willing to work with Chi Omega to improve on the house's sustainability, but won't agree to anything that could result in damages.

Instead of installing energy and water efficient appliances at Chi Omega, we decided to raise awareness by putting up small notes over light switches, near electronic appliances, and around bathroom sinks which would make people be more conscious of saving water and electricity by shutting off appliances and sinks, etc. when they were not in use. Two members also gave a presentation to about 50 members covering why sustainability is important and what they can do to improve sustainability at Chi Omega. Our goal was thus to try to compare how well simply raising awareness at Chi Omega saves energy and water, as apposed to our actions at Zeta Beta Tau in which we installed efficient appliances and also raised awareness.

## ENERGY AUDIT AT CHI OMEGA

An integral part of our research came from an energy audit that we purchased for Chi Omega using TGIF funding. It was a $900 audit in which two experienced people took an extensive walk through Chi Omega and not only pointed out all of the areas, appliances, etc. that were constantly wasting unnecessary energy and water, but also provided us with physical data on how much could be saved by making certain changes within the house.

What was found was not necessarily what we wanted to hear, although it was expected. We were informed that the significant ways to save energy involved modifying the structure and insulation of the house. This is clearly an expensive and timely process that extends out of our

scope of work. Aside from this however, we were informed of some feasible practices and techniques that we were able to apply in relation to base-load electricity usage which relates more so to behavioral and small changes. First, the audit professionals told us about a "kill-a-watt" meter, which is a device that allows one to plug an appliance into the meter, and then the meter into a standard wall socket; the device then tells you how much power is drawn from the appliance and an overall energy usage over an extended time period. Using some more advice from the professionals, we measured the energy consumption of one of the refrigerators at Chi Omega over a series of consecutive days, using the kill-a-watt meter. We were then able to compare the savings that a newer energy-efficient model would have as compared to the old refrigerator. However, even with the savings, TGIF did not provide us with the funds to purchase a new refrigerator.

Overall, even though the energy audit provided our team with a lot of actions that were not necessarily feasible for us, it was very informational and useful. The professionals not only gave us some cheaper techniques such as measuring appliance wattage, but they also provided a list of house improvements to relay to the house corporation board that could easily make the house more airtight, such as sealing the vents at the top of every closet.

## RECYCLING

As our first part of research for recycling, we sent an email to all of the newly instated eco-chairs asking if they had a recycling service, we also asked what waste service they used, whether they had recycling or not. We received a variety of responses, most of which did not say they had recycling. Of the ones that did have recycling, the companies that provided the waste services varied significantly. Contrary to on campus waste services that all use the same waste service provider we were able to see how complicated the Greek system was in terms of just waste.

Our team then proceeded to take note of all of the houses that did not currently have recycling and call the waste service company that coincided with what the house already had. In most cases houses that did not think they had recycling actually had it all along. They just did not realize how or where to properly recycle.

EARTH DAY/AWARENESS

To help raise awareness on campus for the efforts of Green the Greeks we utilized members of both the Action Research Team as well as the club to participate in row walks at all chapter meetings. Furthermore we also had a table at the 2011 Earth Day Fair in which we put on a "give a bottle, get a bottle" activity in which people on campus were encouraged to trade in their plastic bottles for a free re-usable bottle provided by TGIF. Furthermore we asked participants trivia questions at the table and rewarded them with a recycled ping pong ball. Finally we provided information about water usage and even had examples of the products that we would be passing out to the houses such as water efficient shower heads and faucet aerators. To continue to keep the club growing we also had a mailing list at our table for visitors to sign up to join our mailing list to find out future information on the club.

**Data/Cost Analysis:**

Table 1: ZBT's LADWP water/energy bill

| | 4/16/10 - 5/17/10 | 4/15/11 - 5/16/11 |
|---|---|---|
| **water usage** | **72 HCF** | **65 HCF** |
| water usage charges | $302.75 | $261.56 |

| | | |
|---|---|---|
| sewer sanitation charges (based on 90% of water usage) | $214.33 | $194.55 |
| total water usage/sanitation charges | $517.08 | $456.11 |
| **electricity used** | **7032 kWh** | **8,056 kWh** |
| electric charges | $795.50 | $1,055.16 |
| **total LADWP charges** | **$1,413.57** | **$1,511.27** |

****1HCF = 748 gallons = 1 hundred cubic feet*

Table 1 shows the energy and water usage and costs for the time period between mid April and mid May for 2010 and 2011 for the Zeta Beta Tau fraternity house. We received this data directly from the treasurer of Zeta Beta Tau. We were previously informed that we were able to obtain this data for the entire month of May (for both 2010 and 2011), instead of midway through April and midway through May. Although this does not cover the exact dates that we expected to see results for; since we started our case study on May 1st, we can still use this data to analyze our results for half of the month of the trial. Note that we included both the water and energy used, in gallons used and kilowatt-hours respectively, as well as the cost for both and the total; this is all included to show that the price change of the water usage/electricity used is not a major factor in the increase or decrease of overall cost. Also be aware, that there are many assumptions that we make in this report taken from our case study; this data could have been coincidental or more or less people may have begun to live in ZBT this year as apposed to last

year, the climate may have been warmer than last year which caused people to use more water, etc...

There are a few major points that we would like to discuss after finding our case study results. First, and most significant to our research, the water usage decreased by approximately 7 hundred cubic feet of water; which is 5,236 gallons of water saved! If we make the assumption that this much water was saved within the 16 days of our case study that took place in May, we can approximate that 5,236gal/16days*365days = 119,446.25 gallons of water could be saved each year; which could approximate to ($517.08-$456.11)/16*365 = $1,391/yr worth of savings. Note that since we started installing water efficient appliances and raising awareness on May 1st, we can assume that most of the savings were between May 1st through May 16th.

The second point is that the electricity usage increased by1,024 kilo-Watt-hours from this year's data from last years. Since we were not able to install many energy efficient devices, nor were we able to make major insulation changes in order to decrease the electricity demand from the house, it makes sense that the energy usage did not decrease. However, it is strange that the energy usage increased; again, this may be due to an increase in the number of residents, appliance usages, a change in climate which would require more air conditioning and fans, etc... This electricity increase was enough to offset the decrease in water savings and cause the overall LADWP bill to increase from last year.

Third, the cost of faucet aerators are about $1.50 each, and the shower heads are about $8.50 each, both depending on the amount of devices that are ordered and from which company they are ordered from. By installing five shower heads and ten faucet aerators, which costs under $60 in total to purchase, we have saved about $61 in only 16 days! The great thing about these devices is that there is no annual cost.

Overall, we can conclude that if we were to add more water efficient devices; including making all of the faucet aerators 1.0gpm (instead of only half) and all shower heads 1.75gpm (instead of only half), the savings would increase by a significant amount. In addition to this, further savings could be accomplished by swapping out standard toilets and urinals with low-flow ones. According to a study performed by the University of Minnesota, showers and faucets together comprise approximately 35% of a standard house's water usage; whereas toilets comprise about 40% of the house's water usage. Therefore, the water savings could increase greatly if ZBT's toilets were replaced with more efficient ones. Old standard toilets range from 3.5-6 gallons per flush; whereas new efficient ones could provide as low as 1.5 gallons per flush. Clearly, the savings from replacing toilets could increase severely.

A very rough estimate of the amount of savings, based on the savings from our case study, as well as the potential savings from online sources, is that by swapping standard water appliances with more efficient ones, the savings would be approximately 300,000 gallons per year. This would equate to a savings of approximately $3,500 per year.

**Key Findings:**

The first significant hurdle we reached was when we tried to perform our case study at Chi Omega. We had Green Homes America come in and do an energy audit on the sorority house, which took an entire day because of the size. Although it was difficult to do some of the tests because the house leaks so much air, there were several helpful insights we received. There were several key areas in Chi Omega's house that could use restructuring. First, the attic of the house has almost no insulation, so heating and cooling costs were much higher than they could be. There was also a large leak due to a poorly sealed door in the basement, which could be fixed in order to further reduce air conditioning costs. Other significant infrastructure problems

involved the inefficient distribution of air conditioning units throughout the house and the fact that many outlets were not grounded, which is a fire hazard. The appliances at Chi Omega are also very old, which means that they use a lot more energy than newer Energy Star models. As stated earlier, TGIF did not deem our application for new appliances at Chi Omega as meeting justification for funding, so we were unable to replace the oldest and most inefficient refrigerators. The insulation and air conditioning issues were also difficult because funding for them would probably exceed $100,000, so we mainly focused on the smaller changes mentioned earlier, such as faucets and showerheads.

At the beginning of May, two members of Chi Omega invited the house to a workshop covering sustainability concepts and how the house can be made more efficient. So an education and awareness approach was taken at Chi Omega. The workshop mainly covered consumption, especially of disposable products. After the workshop, the participants put signage by every electrical outlet, shower, and sink reminding its users to unplug electronics, cut shower lengths, and turn off the sinks when they are not needed. Since this workshop, the amount of disposable food containers, plastic utensils, and paper cups has noticeably decreased because house staff has commented on how many less they need to put out a week. Reusable "late plates" have become habit for many members and ceramic mugs have replaced the paper cups. These findings demonstrate how education and awareness can initiate behavioral changes and improve sustainability practices in Greek residences.

After the energy audit at Chi Omega, it was determined that an audit at Zeta Beta Tau was not necessary. The auditor from Green Homes America had such a hard time obtaining the measurements at Chi Omega that they knew it would be the same situation at a fraternity house. For her to get the measurements, she needed to be in control of every room and opening in the

building, and with around 50 students with varying schedules living in each house, such a request was not realistic. So, it was concluded that a successful audit could not be accomplished while students were living in the houses. At Zeta Beta Tau, the data and cost analysis mentioned above shows that the water efficiency was greatly improved with the installation of aerators on the sinks and showers. It was estimated that around 120,000 gallons of water and $1,400 could be saved a year by installing such appliances. With the 12 sorority houses and 15 fraternity houses on each respective row, it can be approximated that 3,240,000 gallons of water could be saved by the Greek system every year if every house installed water efficiency appliances, based off the findings from the ZBT case study. Although we found that improving infrastructure at the Greek houses is not realistic due to budgeting and the difficulties of working with house corporation boards, the findings from the case studies show that simple appliance improvements and behavior changes can add up to significant resource savings and improved sustainability.

**Recommendations:**

In terms of improvements and a path for next year, there must be a more established framework within the Green the Greeks program regarding the club. Without better collaboration by the leaders beforehand, it could be more difficult for a Green the Greeks action research team to find material that would be worth two quarters of researching. This is because we have already given all the houses sustainable showerheads and faucet aerators, so that would be mostly repetition to ensure sustainability. Also, as the case study showed, it is not worth it to improve the infrastructure of the house gradually for a few reasons. First, replacing old appliance in the industrial sizes required by these houses is not that sustainable (with an average payback time of at least five years) so the dumping of so much material is not recovered by the electrical savings. Second, the house corps (to our knowledge anyhow) are not easy to work with and like to do

things their own way, most of them are extremely hesitant to even release power bills, let alone replace temporary infrastructure. Third, the cost is too expensive to justify the sustainable benefits. At the TGIF hearings this year, we learned that the committee is definitely not on board with replacing individual appliances in these houses- it is too expensive and it doesn't fit with their goals to increase campus wide sustainability efforts.

What Green the Greeks needs is a complete restructuring if it is to survive and continue to benefit the community. Everybody knows that the Greek system is old and somewhat outdated, but it shouldn't be the job of The Green Initiative Fund or DART funding to replace all of the old appliances and repair dilapidated infrastructure. Instead, the Green the Greeks team should focus their money and effort on what will have a longer lasting impact- the students themselves. This is what the Green the Greeks club under Kally Chamberlain and Joel Afterth did this year, and they have been doing a great job. However, we believe that there is a way to tie the two teams together so that the club and all of its outreach can meld with the Research team and its funding and on campus presence. We have heard that teaching people isn't the "research" which constitutes and Action Research Team, and have suggestions to address this issue as well. If the teams (hopefully merged into one unit somehow) used a program such as Sustainable Works in Santa Monica, or were taught by some other similar organization on how to increase individual sustainable practices in a communal living setting, they could set out to make big changes.

First, it would be possible (because the club has already painstakingly gathered power bills from most of the fraternities/sororities) to conduct a quarter long competition to see who could save the most energy during this period. This would encourage habits to change, because in this case, it is nearly impossible to further increase the sustainability of the facilities. Then the team would collect post competition bills and determine a winner (and a low funding budget

could provide incentives to the houses). I know that the Club has already tried to implement this to some degree, but once again, the on campus presence could really help gain exposure for this campaign. After seeing a few articles in the Daily Bruin about the negative image of the Greek system, publicity for positive change could be the key issue. Most of the members of the team will be Greek affiliated, and I am sure they wouldn't mind building up the reputation of their Greek System whilst also increasing sustainable habits in a quantifiable way. In addition, collaboration with the stakeholders must be improved. If this sustainable competition or other ideas could be incorporated into the SOE point totals for the houses, it would provide additional incentives to the houses to actually change their ways. Our stakeholders, Troy Bartels and Mande Adams, were both enthusiastic about our ideas, but with the Energy Audit, we didn't really use the tools at our disposal. A team next year needs to focus on using Troy, Mande, and the eco chairs in each house to get the word out to more students and implement a program with IFC to give houses SOE points for certain sustainable incentives.

**Conclusion:**

Throughout the quarter we approached the Green the Greeks team as a more exploratory team. We had to adjust our goals a few times throughout the last two quarters to reflect what we were learning about the structure and bureaucracy of each house in the system. We ended up approaching the project by splitting up the quarters with different goals for each. Originally we wanted to try to adjust the entire Greek system by making changes in every house across both rows. Our first step for this was to implement eco-chairs into each house who would be our point person for ensuring effective change. After compiling this list we started doing research into what were some ways that we could make simple changes in the houses. We determined that a great way to make long term changes would be to adjust the facilities and the houses. We

then focused on lighting, water usage and recycling. By using the eco-chairs we were able to implement recycling in all houses that participated. This took up a majority of our first quarter, but we also helped to establish how we were going to proceed in spring quarter.

After realizing the scope and complication of dealing with the entire Greek system as a whole we decided that in our spring quarter we would focus on doing case studies in two houses on campus, one sorority and one Fraternity. With the help of an energy audit paid for by the Green Initiative Fund we were able to acquire an energy audit for two houses. After executing the first audit we were able to realize how challenging the structures we were working with. Each Greek house posed its own challenges, but with the advice of the company we used we decided to focus on what was called "Base-load energy usage". By implementing educational workshops, and changing out energy efficient alternatives we worked with ZBT and Chi Omega in the month of May to discover if we could make a difference. In Chi Omega we focused on education, conversely in ZBT we mainly focused on making changes in facilities like water efficient faucets and showers.

Per this information we would like to suggest in the future that any team make an effort to include the house cores of each house. Perhaps they could compile a list of adult or advisor eco-chairs who could be a point of reference for the houses and how they can better accomplish their goals without having to wait for approvals or cooperation within the bureaucracy of the chapter leadership. Furthermore with more stakeholder involvement significant changes could be easily facilitated.

Over the past two quarters, our Green the Greeks Action Research Team has learned an incredible amount. We learned how to transform a house into a more environmentally sustainable one; for both environmental and monetary purposes. More importantly, we learned

how to successfully work together with a huge group of random Greek members in order to become a team to accomplish our goals; and moreover, had an extremely fun and exciting two quarters.

Our team had the chance to show the Greek community how much water could be saved by swapping out standard appliances with newer lower-flow appliances; savings that even we did not anticipate.

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