

The Kukui Cup at UH Manoa:

Lessons Learned in 2014 and Prospects for New Partnerships in Campus Sustainability

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Executive Summary

This report identifies lessons learned from the Kukui Cup, and opportunities to integrate the Kukui Cup with a comprehensive, institutionalized program of sustainability at the University of Hawaii (UH). The Kukui Cup is an energy efficiency and conservation challenge designed by the UH Collaborative Software Development Lab (CSDL) that links educational online gaming with real-world experiential learning.

The Kukui Cup challenge has been held annually since 2011 at the Hale Aloha freshman dormitories at UH at Manoa. This report focuses on findings from the Spring 2014 challenge, based on qualitative interviews with CSDL staff, directors from the UH Residential Life Office, and the Sustainability Coordinator; online surveys distributed to Residential Assistants by the Residential Directors; and participant observation.

Overall, the major findings related to this study are listed below, and explained in further detail below:

- 1) The Kukui Cup is an enjoyable, educational, and innovative part of residential life at UH Manoa, that has consistently garnered significant student participation levels - about one-third of UH Manoa college freshmen every year since the challenge's inception.
- 2) There is support among students and Residential Life staff to make the Kukui Cup a regular, institutionalized part of the college dormitory experience.
- 3) The Kukui Cup could be folded into a broader, more comprehensive sustainability program at UH.
- 4) The keys to success for a comprehensive and effective campus sustainability program include, but are not limited to:
 - a) a stable source of funding;
 - b) paid, non-faculty, non-student staff;
 - c) clear sustainability goals, objectives, benchmarks, and metrics;
 - d) students who are engaged and trained as employees, interns, or fellows to advance those campus sustainability goals and objectives;
 - e) a means of compensating students for their time and effort, whether through a paid salary, stipend, course credit, or other incentives;
 - f) multiple layers of accountability and responsibility within the institution for developing and implementing the campus sustainability program; and
 - g) physical office space.

1.0 Introduction

In recent years there has been increasing interest at the University of Hawaii and at higher education campuses around the country to adopt sustainability policies and programs, including energy efficiency and conservation initiatives. With fossil fuel dependency and electricity rates in the state of Hawaii ranking among the highest in the nation, the imperative to reduce energy consumption and enhance efficiency is particularly great. Hawaii also has one of the most ambitious energy policies in the country, articulated in the state's Clean Energy Act, which mandates a reduction in fossil fuel dependency by 70% by the year 2030 through renewable energy and energy efficiency and conservation programs. This goal translates into a reduction of 4.3 billion kilowatt-hours by the target year.

College dormitory energy competitions are one popular way to raise energy literacy and sustainability awareness among students, and have been held at over 150 campuses across the nation just over the past few years (Johnson et al, n.d.). Inspired in part by this trend, and with three-year funding from a National Science Foundation grant, the UH Collaborative Software Development Laboratory developed the Kukui Cup in 2010. The CSDL team's concept was to go beyond simple dormitory competitions geared towards reducing energy consumption, to create an interdisciplinary and interactive educational experience that integrated online gaming with real-world activities, community-building, and pedagogy. Students learn about energy, monitor their energy use and progress towards energy savings goals in real time online, go on sustainability-themed field trips and other events, and compete for points and prizes. The first Kukui Cup challenge was held at the Hale Aloha college freshman dormitories at UH Manoa in 2011. Kukui Cup challenges have been held at the Hale Aloha dormitories every year since then, and have spun off into pilot projects at other institutions in Hawaii, including Hawaii Pacific University, the East-West Center, and Holy Nativity School.

In 2013, Hawaii Energy, the energy efficiency and conservation program serving the counties of Hawaii, Honolulu, and Maui, provided funding for a nine-month Kukui Cup graduate student fellowship through RISE, a sustainability training program run by Honolulu-based nonprofit organization Kupu. Funding for Hawaii Energy is derived from the public benefit fee that is paid by electric ratepayers in the service areas, and the program's mandate is to implement the energy efficiency and conservation goals of the Clean Energy Act. A portion of this funding is directed towards Hawaii Energy's Transformational Program, which supports education and outreach initiatives that raise energy literacy and foster sustained behavior and social change.

Hawaii Energy's interest in the Kukui Cup centers on the Kukui Cup's potential, limitations, and role within a campus-wide strategy to reduce energy use through efficiency and conservation and, more broadly, to enhance sustainability literacy and behavior first at UH at Manoa, and then system-wide, across all UH campuses. This report is one of the deliverables of the eight-month Kukui Cup fellowship project. Its purpose is to identify lessons learned from the Kukui Cup, and opportunities to institutionalize the Kukui Cup in residential college life and integrate it with a larger, comprehensive program of sustainability at UH.

1.1 Background: The Kukui Cup 2014

The Kukui Cup in 2014 consisted of a two-week challenge held at the beginning of the Spring semester, from January 27 - February 10. A total of 318 freshman students living in Hale Aloha towers participated, or about one-third of the Hale Aloha dormitory population. For the first time since the Kukui Cup's inception at UH, the 2014 challenge was led by Residential Directors (RDs) who are paid staff from the Office of Residential Life, and the Residential Assistants (RAs), who are all students, with each RA assigned to one floor in a tower. The RAs are also university employees with the Office of Residential Life. A total of 40 RAs were responsible for marketing the Kukui Cup challenge, monitoring and motivating student participation in the game, and planning and implementing a series of real-world sustainability-themed events. The two RDs were responsible for supervising the RAs and overseeing procurement of supplies, prizes, and other items that the RAs requested.

Staff from the CSDL and the RISE fellow served as administrators for the online game, reviewing student submissions and awarding points for correct answers to questions. Points were also awarded for participation in events. Event codes were prepared by game administrators, and handed out to student participants either during the event or after. Game administrators prepared and distributed the event code either directly to students during or after the events, or to the RDs who in turn gave them to the RAs to pass along to students from their floors who came to their events. Additionally, game administrators awarded points to student teams based on the extent to which they met or exceeded the energy savings goals for their respective lounges.

The events in Spring 2014 consisted of a Kick-Off Event in the Hale Aloha courtyard to launch the Kukui Cup, approximately 20 events that were planned and coordinated by students, and a Closing Event during which the winners were announced and prizes distributed. Funding for the prizes came from the Office of Residential Life budget, and the types of prizes that were given out were decided by the RDs and RAs. Prizes were given to the individual and team winners with the highest points in each of two rounds. Raffle prizes were also awarded, and students were enrolled in the online raffle if they participated in the game.

1.2 Project Overview

This RISE fellowship entailed an evaluation of the following components of the Kukui Cup:

- 1) Lessons learned from the Kukui Cup 2014 Challenge in terms of strengths, challenges, and recommendations. Specifically, I looked at student and staff participation, energy savings, game content, and game administration.
- 2) Prospects for institutionalizing the Kukui Cup as a part of college residential life at UH.
- 3) Prospects for integrating the Kukui Cup as a component to a broader, more comprehensive sustainability program at UH.

1.3 Methodology

Methods used in this study include qualitative interviews with the CSDL staff, Residential Directors, and the Sustainability Coordinator at UH Manoa. The RISE Fellow also reviewed and analyzed the results of online surveys distributed to the Residential Assistants by the Residential Directors who supervise them. Finally, the RISE Fellow relied on personal experience and field notes as a participant-observer in the Kukui Cup, attending multiple Kukui Cup planning meetings and events, serving as one of the administrators in the online game, and talking informally to student participants before, during, and after the Kukui Cup challenge.

2.0 Findings: Lessons Learned from the Kukui Cup 2014

2.1 Impacts on Student and Staff Participation

The level of participation among college freshmen in the Hale Aloha dorms was roughly the same in the Spring 2014 Kukui Cup compared to previous challenges - about one-third of students living in the dorms. The number was slightly lower than the 2012 figure of approximately 350, but the event in 2014 was held over a significantly shorter period of time. The RDs noted that participation in the Kukui Cup was higher over the 2014 game period than over the equivalent two-week period in 2012. They also noted that higher-value prizes, like tuition breaks, were offered in the 2012 competition; in 2014, bicycles and UH cage passes were the top prizes for individuals.

The RDs and RAs were significantly more involved in 2014 than they were before, as they assumed primary responsibilities that were once held by CSDL staff for planning and implementing the events. The RDs directly supervised the RAs and ensured that Kukui Cup participation was part of RA job duties and programming. The RDs also monitored student participation and energy savings progress in the online game, and prodded RAs to check in with residents to motivate competitive spirit if it seemed like participation was waning. The RDs additionally conferred with the game administrators for guidance on logistical matters such as the timing for procurement of prizes, information about how points were to be awarded, and determinations of raffle winners. They also notified the game administrators of glitches that were uncovered in the online game once the competition began.

In general, CSDL staff and RDs agreed that RAs felt more ownership in the Kukui Cup in 2014 compared to previous years, as they were given the freedom and flexibility to come up with events that they would be interested in that would be consistent with the sustainability theme of the Kukui Cup. The RAs were also responsible for marketing the Kukui Cup, and publicity efforts included a countdown to the Kukui Cup Kick-off in the halls, and marketing for individual events through posters and flyers placed strategically throughout the dorms in the lobbies, on the floors, and in the lounges.

Shortly after the Kukui Cup challenge ended, the RDs held a debriefing meeting among all of the RAs and also distributed an online survey to all of the RAs to evaluate their experience; 29 out of 40 responded. At the debriefing, the RDs said that some RAs expressed disappointment at low turnout at some of their events, while others said they felt their activities were effective and students learned a lot. Based on the survey, in general, RAs reported that they liked the online games, enjoyed collaboration with other RAs to implement sustainability-oriented programs and plan events, liked having ownership in the programs, had fun, enjoyed the sense of community that was created, the diversity of programs, and enjoyed the competition and level of engagement and learning among students in all four towers. Twenty-one out of the 29 respondents said they learned something about sustainability during the Kukui Cup, 18 said they had taught others something about sustainability, and 15 said they believed their involvement in the Kukui Cup had made an impact on the community.

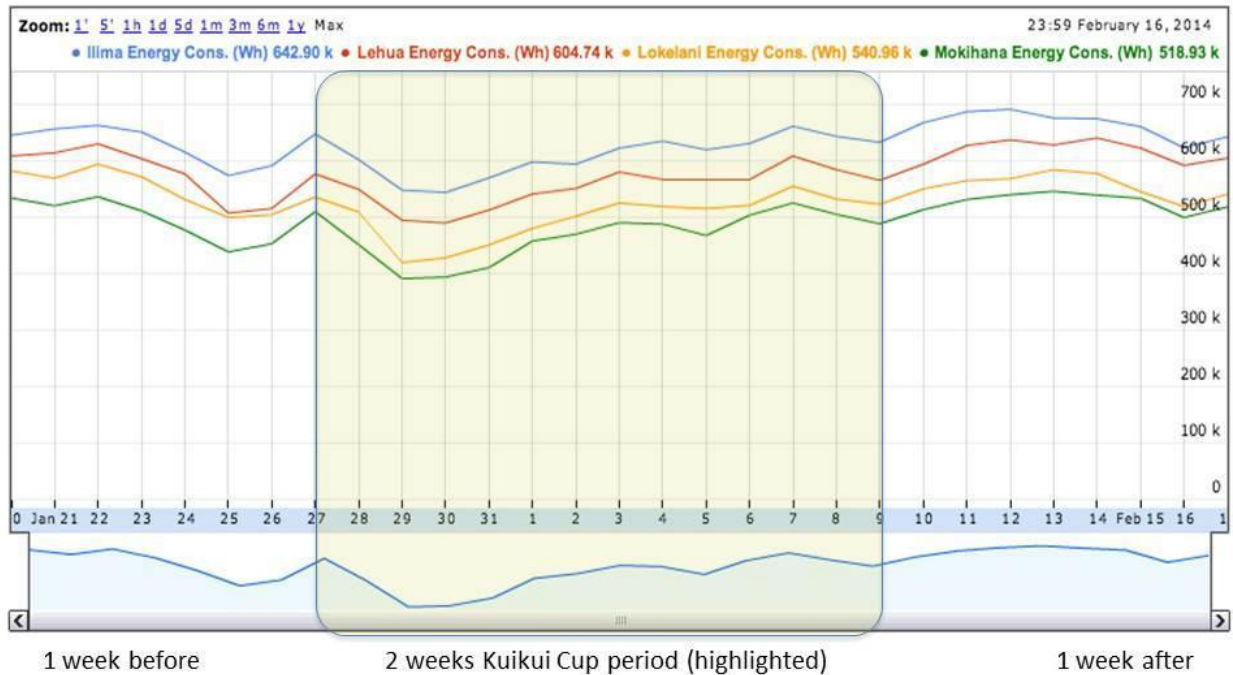
Overall the RDs described the RAs' level of excitement as "awesome," and said that the RAs seemed to feel genuinely vested in the Kukui Cup because they were creating the event programs themselves, and responsibility for planning and implementation seemed to have a positive effect on motivation. By contrast, in the 2012 competition when CSDL staff still led event planning and implementation, friction resulted between the RAs and CSDL staff, as some RAs resisted taking directions from CSDL staff who were not actually their supervisors. In 2014, however, CSDL staff took on more of an advisory and background role, while the RDs who do directly supervise the RAs encouraged the RAs to be creative and work cooperatively, and submit their resource needs (i.e., for supplies or transportation) to the RDs. The RDs observed that in 2014 the RAs showed more positivity about being involved in the Kukui Cup, and even if they were not explicitly positive they were neutral instead of negative.

Finally, and significantly, the term "Kukui Cup" appears to have become a kind of "household phrase" within Hale Aloha – a substitute for sustainability, used as reminders for recycling and energy. Examples overheard among students, "That's very un-Kukui Cup of you" (referring to failure to turn off lights) or "Recycle that bottle. Kukui Cup."

2.2 Impacts on Energy Use

As in previous Kukui Cup competitions, in 2014 a noticeable drop in energy use was observed in each dorm lounge during the game period, particularly during the first week. By the second week of the challenge, however, energy use can be seen climbing back up, and then returning to previous levels after the competition ended.

2014 Kukui Cup Energy Consumption by buildings



One possible factor in this phenomenon, on which the RDs also commented, is that there is no institutionalized program of energy efficiency and conservation at UH that would foster sustained behavior change beyond the short-term Kukui Cup competition.

2.3 Game Content

After the Kukui Cup game had already started, some videos or links were found to not be working, and had to either be corrected or deleted entirely. Game administrators may not have had enough time to closely review and test online content for quality assurance. Moreover, much of the game content in 2014 was unchanged since the first Kukui Cup challenge in 2011, and could be updated to enhance the game and ensure that the activities are current and relevant.

Another question raised by game administrators dealt with the pedagogical quality of the challenge, particularly since students (the RAs) were largely deciding on their own what types of activities to plan and carry out. Although the autonomy fostered a stronger sense of student ownership in the game, it could potentially affect the quality of the game since no guidance was provided with respect to events. In previous years, events were designed by a CSDL-led team that had an explicit interest and academic background in sustainability.

2.4 Game Administration

Communication among game administrators during the Kukui Cup was generally quite frequent, facilitated by meetings that were called on a weekly and as-needed basis, and discussions over Google group mail. During the two-week game period, game administrators communicated live via Google Hangouts, and later said that this method was convenient and effective for addressing issues as they arose relatively quickly.

Because the game questions and activities were generally not yes-no or multiple choice types, awarding points to students required game administrators to individually evaluate answers. Online submissions by students sometimes piled up quickly if game administrators were not constantly checking for them. There was also occasionally a backlog of email inquiries from students, and it was not immediately clear who among the multiple administrators would be responsible for responding. At times the backlog occurred as administrators grappled over how to evaluate rather subjective submissions, such as poems, songs, and artwork.

CSDL staff observed that students went through the game quickly, and by the end of the first round had finished most of the 85 activities in three levels that were part of the original game design, so new levels and activities had to be added. That students completed so many activities so quickly could indicate a high level of motivation, or suggest that the activities that were incorporated into the game were collectively relatively easy.

Logistical challenges also arose in terms of distributing event codes to students so they could earn points for showing up and participating in real-world Kukui Cup activities. Game administrators were not always able to attend events, and many of the codes were handed to the RDs to distribute to the RAs, which raised concerns among some of the game administrators about whether the quality or security of the game might be compromised as a result, since the RAs are also students who participate in the Kukui Cup. Some of these codes were passed out via dormitory mailboxes, and not every RA received these codes in a timely manner. A few students contacted the game administrators directly to inquire about their event points, and were emailed their bonus codes.

From the RDs' perspective, although both of them had participated in previous Kukui Cups, the planning process was new to them, and both said that in retrospect they would have begun that process much earlier. For the spring 2014 competition, they began the planning process around November 2013. The RDs said they would have benefited from having more time, particularly for the procurement of prizes, which turned out to be a laborious process with restrictions, timelines, justifications, and various levels of approval at UH that took more time than they had expected, even for requests like theirs of \$2500 or less. Production time (i.e., for printing materials) was also a factor to consider.

The RDs and RAs also suggested extending the Kukui Cup period to at least three weeks in order to afford more flexibility in terms of scheduling events, since overlapping events was an issue in

2014, particularly if students wanted to attend multiple events that were happening at the same time, or if transportation was required for field trips and available vehicles were limited.

The RDs and RAs also recommended moving the Kukui Cup back to the fall semester, perhaps in October. Preparations in that case would begin in the summer, prior to the beginning of the fall semester, during July and August fiscal planning and training for RDs and RAs, respectively. At least one CSDL staff member advised against this recommendation, however, noting that RAs in previous years had called for a spring semester Kukui Cup, and that the RDs and RAs may not have the time to organize a Kukui Cup in the fall if they are going to largely be doing the planning by themselves (i.e., without CSDL assistance). Moreover, one advantage that CSDL staff perceived in holding a Kukui Cup challenge in the spring is that most freshman students in the dorms would have had a semester to form relationships with each other and adjust to college life. On the other hand, the RDs said that the spring semester is an especially hectic time for them, as the committees they oversee are busy with student and professional staff selections for the following academic year. Some of the RAs assist with conducting interviews, so they are busy in the spring as well.

The RDs and RAs also indicated that they wanted to see more publicity and education about the Kukui Cup before the event, and suggested integrating Kukui Cup into UH's annual Welcome Week for incoming students in the fall. Providing students with an informational session or orientation about the Kukui Cup will help build buzz around the challenge, and also allow for more substantive energy and sustainability education at the Kukui Cup kick-off, since students would already be familiar with the event at least on a basic level.

To facilitate future Kukui Cup challenges and so that future event organizers do not need to start from scratch, the RDs have created a file containing guidance for the process they followed, including templates for all documents that were used in 2014. Several RAs who participated in the 2014 challenge expressed interest in remaining involved in organizing the next event, which will be helpful for continuity.

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2.5 Recommendations

The RDs and RAs suggested extending the Kukui Cup period to at least three weeks in order to afford more flexibility in terms of scheduling events, since overlapping events was an issue in 2014, particularly if students wanted to attend multiple events that were happening at the same time, or if transportation was required for field trips and available vehicles were limited.

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3.0 Institutionalizing the Kukui Cup in Residential Life at UHM

The Kukui Cup appears to be well on its way to becoming institutionalized as part of the first year resident student experience. Some of the issues to be addressed include:

- Energy meters are limited on campus (only at the Hale Aloha towers for dorms) and expensive to install and maintain.
- Future closing events should be like a rite of passage, and stimulate discussion about post-Kukui Cup behavior, programs, meaning to students.
- The Kukui Cup should be a presence at the welcoming event for first-year students at the beginning of the fall semester – all freshmen are required to attend, and this would be a good opportunity to begin priming them for the challenge and explain what the Kukui Cup is all about so that they know about it at the Kickoff event.
- Generally, RAs said they would be willing and/or eager to participate again and plan/host other events.

4.0 Institutionalizing the Kukui Cup as part of a Broader Sustainability Strategy at UH Manoa

The Chancellor adopted the UH Manoa Sustainability Policy last year and the Board of Regents adopted UH policy in January 2014. This policy directs the UH President to establish executive policy with respect to metrics, goals, targets. A Presidential Policy was developed two years ago and is now being refined.

Each campus would ideally develop and adopt its own Sustainability Plan, with a vision, mission, goals, objectives, metrics, targets, that would be updated every three years.

According to interviews with UH faculty, staff, and students, some of the issues and opportunities in institutionalizing the Kukui Cup as a campus-wide initiative include:

- Having paid staff (non-faculty, non-student) with Kukui Cup responsibilities in job descriptions of these staff;
- Having multiple layers of accountability and involvement (i.e., Sustainability Office, Computer Science, Housing/Residential Life).
- Integrating the Kukui Cup as part of a broader program, such as AASHE Star Program, Green Campus, and Campus Eco Reps program could be good models.
- A Green Campus program could involve development of a “green” curriculum, partnerships with Facilities, comprehensive training, and paid student internships.
- A Sustainability Fee, if it passes, could provide stable financial support for sustainability initiatives like the Kukui Cup.
- Key partners
 - a. Student Sustainability Coalition of Hawaii - launched after the 1st Sustainability Summit, with contacts at 10 UH campuses statewide. Students mobilized to support the Board of Regents adoption of a sustainability policy.
 - b. Sustainability Council - still forming its identity, consists of Manoa faculty, staff, and students; could assist with the design process for a Green Campus program

There is interest in developing a pilot fellowship program that involves a collaboration of RISE and Sustainability Office. A cohort of around 5 fellows could develop the following:

1. A Curriculum Fellow could develop a green curriculum program and work closely with the Sustainability Council
2. A Kukui Cup Fellow would focus on institutionalization and support for the Kukui Cup;
3. A Sustainability Funding Fellow could help develop a revolving loan fund;
4. An Outreach/Education fellow could work on Earth Day projects, a newsletter, and website, etc);
5. A Sustainability Engineering fellow could do lighting analysis or metering.

5.0 Recommendations for the Kukui Cup

In conclusion, here are recommendations for future Kukui Cup programs.

1. The RDs and RAs should continue to take the lead in organizing the Kukui Cup at the Hale Aloha dormitories, and consider exploring ways to expand the challenge to other dormitories on campus.
2. Conduct further research (i.e., through surveys) into the specific ways that Kukui Cup participants in 2014 and prior years actually reduced their energy consumption over the course of the challenge period, and what barriers prevented them from continuing that behavior after the challenge was over.
3. Review and update Kukui Cup game content to ensure quality and currency.

4. Engage educational specialists to ensure that content is pedagogically appropriate.
5. Assess game content for future challenges to determine if they are an appropriately challenging mix of activities, and sufficient for the game period.
6. Develop a rubric for evaluating students' art, literary, and musical submissions.
7. Devise a mechanism to do away with hard-copy event codes and award points automatically, i.e., through a phone app, or by swiping a points card.
8. Explore feasibility of outsourcing game administration and software development, which may be important for long-term sustainability.
9. Afford sufficient time for planning, procurement, and production of materials.
10. Revisit the issue of timing for the Kukui Cup, and carefully consider the advantages and disadvantages of a spring versus fall event.
11. Extend the challenge period to at least three weeks.
12. Integrate a Kukui Cup orientation presentation into Welcome Week for incoming students.
13. More marketing/outreach opportunities at UH
14. Promote Hawaii Energy as a partner of the Kukui Cup and UH sustainability policy/energy strategy.
15. Engage educational specialists to ensure that content is pedagogically appropriate;

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