WELLESLEY COLLEGE DORM ROOM ENERGY AUDIT

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ABSTRACT

This paper seeks to advise the Wellesley College Sustainability Advisory Committee on cost-effective and feasible methods of reducing energy usage in Wellesley College dorm rooms. Current energy usage in dorm rooms was calculated from the results of a survey taken by a random assortment of Wellesley students. This same survey was also used to determine student willingness to pay, student willingness to institute behavioral changes, and general student support for sustainable energy at Wellesley. Results revealed that each year, Wellesley College dorm rooms consume 2,142,616 kWh of electricity of which 59,120 kWh is due to wasteful behavior. Dorm room energy consumption costs the school $214,262 in annual electricity bills and results in 1,331 tons of CO_2 emissions per year. Viable options for decreasing dorm room energy usage include: 1) a sustainability workshop during first-year orientation, 2) altering the incoming student lists of suggested dorm room appliances, 3) encouraging the use of energy efficient refrigerators, and 4) improving the quality of overhead lights. The idea of sustainable energy initiatives is strongly supported by survey participants, 93% of whom wanted Wellesley to be a more sustainable campus.

INTRODUCTION

According to the US Energy Information Administration, petroleum supplies approximately 40% of the energy consumed in the United States[i]. In recent years, the price of petroleum has risen dramatically due to mineral shortages, wars, and political instability in oil exporting nations[ii]. Thus, reducing energy consumption is becoming increasingly more favorable from an economic perspective especially where reductions can be made at little monetary cost.

Wellesley, however, has not yet instituted sustainable energy programs like Harvard's Green Campus Initiative or Tufts's "Get clean! Power your room green!" initiative. Instead, Wellesley's co-generation plant—which was cutting edge when it was built in 1994—now emits more greenhouse gases (GHGs) per kWh than

Massachusetts state electricity production[iii]. Far from reducing energy consumption and GHG emissions through sustainable energy initiatives, Wellesley's energy consumption levels rose between 1995 and 2002 resulting in an average increase of 650 tons of CO_2 per year. In January 2007, the Sustainable Endowment Institute evaluated Wellesley College on the basis of several sustainability criteria and gave it an overall grade of C[iv]. Besides Endowment Transparency, the college received its lowest score contributing to this grade in the category of Climate Change and Energy.

In the dorm room setting, the accumulation of many small energy-wasting habits results in large energy bills for the college as well as a large ecological footprint. Students living in dorms are often less aware of the energy they consume than if they were living in an apartment since dorm energy bills are paid through the college rather than directly. This represents an arena of behavioral change within which improvements may be possible without the implementation of large, expensive projects by the college.

The purpose of this paper is to advise the Wellesley College Sustainability Advisory Committee on cost-effective and feasible ways of reducing dorm room energy usage. Based on a survey of Wellesley College students, it: 1) examines the current state of energy usage in Wellesley College dorm rooms, 2) evaluates student willingness to support sustainable energy initiatives through monetary and behavioral means, and 3) proposes several energy reducing initiatives targeting technology and behavioral changes.

METHODS

The Survey

A random survey of resident Wellesley College students was conducted using www.surveymonkey.com. Because this study constituted a dorm room audit, questions contained in the survey related to energy use in dorm rooms only and did not seek to determine energy use in Residence Halls. The survey had two components. In the first component, we presented students with a list of common dorm room appliances and

asked them to give information concerning the number of each appliance in their dorm room, the average number of hours per day that each appliance was in use, and the average number of hours per day that each appliance was using electricity idly. In the second part of the survey, respondents were asked to answer questions concerning sustainability at Wellesley and in their own lives with the objective of ascertaining to what degree students would support sustainable energy initiatives at Wellesley College. This section also aimed to determine to what extent student support could be translated into financial support, behavioral changes, and campus pride. In addition, students were asked to propose their own ideas for improving Wellesley College dorm room energy usage. A final question was included to determine how accurately the surveyed population represented the demographics of Wellesley's student body.

RESULTS

Survey demographics

The sample population of this survey, in large part, reflected the demographics of Wellesley's student body. Wellesley College has 2,117 resident students[v], 113 of whom responded to our survey. Of those 113, one hundred and four chose to disclose information that would allow them to be associated with a particular demographic. Majors in the humanities, social sciences and the arts accounted for 57.7% of the sample population. The most prevalent majors within this group were: psychology, English, political science, and economics, which are consistent with the demographics of the class of 2005 of which 68.2% graduated within these four majors (Wellesley College admissions website)[vi]. Of the remaining respondents, 25% were math and science majors, 12.5% were undecided and 4.8% were environmental studies majors. Although respondents, for the most part, reflected the demographics of Wellesley's student body, the percentage of environmental studies majors who responded to this survey exceeds the percentage of the student body pursuing the environmental studies major. The elevated number of environmental studies students participating in this survey can be

attributed to heightened interest in sustainable energy options among this group. However, since even with increased representation, this group only accounted for 4.8% of survey respondents, the results of this survey remain a valuable indicator of energy usage in Wellesley College dorm rooms.

Additionally, the respondents represented every class year and residence hall, and their ethnic makeup very roughly corresponds that of the class of 2010. We compared our data with data from the Class of 2010 because the each class has very similar ethnic profiles so we can use the Class of 2010 as a representative sample of the school as a whole. Even though the number of Caucasian students may have been overrepresented and the number of African American students may have been underrepresented, our data as a whole approximately represented the ethnic demographics of Wellesley College[vii].

A table comparing the majors of the respondents and listing the class years of the respondents follows:

Table 1: Distribution of majors of respondents compared to that of the class of 2001

Major	**Respondents**	**Major**	**2005**
Humanities, Social Sciences and the Arts	57.7%	*Humanities, Social Sciences and the Arts*	68.7%%
Math and Sciences	25%	*Math and Sciences*	15.5%
Environmental Studies	4.8%		

A comparison of the ethnic demographics of the survey respondents in comparison to the ethnic makeup of the Class of 2010 follows:

Table 2: Ethnic demographics of survey respondents compared to that of the class of 2010.

Race	**Respondents**	**Race**	**Class of 2010**
Caucasian	63.9%	Caucasian	45.9%
African-American	0.8%	African-American	5.6%
Asian/Pacific Islander	24.3%	Asian/Pacific Islander	26.5%
Latina	3.4%	Latina	4.3%
No Answer	6.9%	No Answer	4%

Assumptions

Several assumptions were made in interpreting the survey data. First, energy involved in dorm room heating was excluded from calculations. This was due to the cogeneration of heat and electricity on Wellesley Campus which allows heaters to run on steam produced as a byproduct of electricity generation at the physical plant rather than requiring separate generation which would lead to additional costs or environmental impact[viii]. Second, because no information was available concerning the number of students on campus during particular school breaks and their electricity consumption habits, a 30 week academic year which excluded wintersession, spring break, fall break, and the summer session was employed in all calculations[ix]. In addition a CO2 emissions factor of 1.37 corresponding to the US Energy Information Administration (EIA) published CO2 emission factor for co-generation plants was employed [x]. Finally, the price of electricity was assumed to be a uniform $0.10/kWh[xi].

Current state of energy usage

Based on the results of the survey, the percentage of students owning each appliance and the average hours per week that each appliance was using energy were estimated. The electricity consumed by each appliance was then calculated according to Equations 1 and 2 with separate values being ascertained for energy used[1] and energy wasted[2]. Annual electricity costs were calculated by combining energy used and energy wasted and multiplying the sum by the US standard price of electricity (Equation 3). Total annual electricity kWh was multiplied by the CO2 emission factor for co-generation plants of 1.37[x] to obtain emissions in pounds of CO2 and these values were subsequently converted to tons (Equation 4).

Note that "waste" here has multiple definitions. Energy wasted is energy consumed while an appliance is on or plugged in, but not in use. Refrigerators, because they need to be on constantly to prevent food from going bad, are not considered to waste energy. For computers (both laptops and desktops) this includes sleep time, because students cannot use their computers while the computer is asleep.

[1] Energy Wasted is defined as energy consumed while an appliance is on but not in use.
[2] Energy Wasted is defined as energy consumed while an appliance is on but not in use.

Equation 1: Calculation of hours in use & wasted per school year

(hrs/student/day) x (# days/week) x (30 weeks) = (hrs/student)

Equation 2: Calculation of energy used per school year per appliance

Watts x (hrs/student) x (1kW/1,000 watts) x (2117 resident students) x (% students with appliance) = (kWh)

Equation 3: Calculation of cost of energy used

(kWh/school year) x ($0.10/kWh) = Cost/year

Equation 4: Calculation of annual CO2 emissions

[(kWh of electricity/school year) x (1.37)] / (2,204.6 lbs/ton) = tons of CO2/year

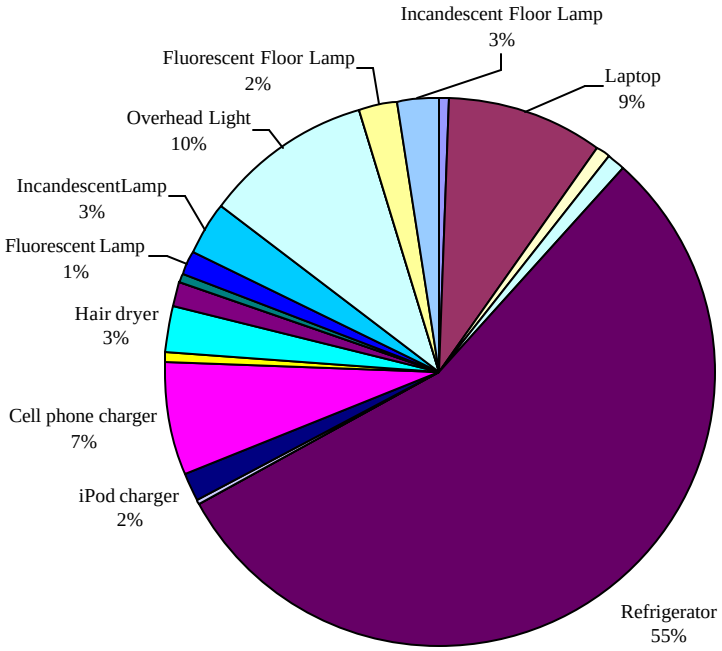
Calculations based on survey data revealed that Wellesley College dorm rooms use 2 million kilowatt hours (kWh) of electricity and generate 1,331 tons of CO_2 every year (Table 1). According to the US Climate Technology Cooperation Gateway, offsetting this carbon load would require the CO_2 uptake of 30,961 tree seedlings grown for 10 years[xii]. This means that if each Wellesley student planted 15 trees today, she could offset the CO_2 she emitted due to her dorm room electricity consumption during the 2006-2007 school year by the time she completed graduate school. A table illustrating the results of the above calculations can be found on the next page.

Table 3. Energy usage, cost, and impact of high consuming appliances in dorm rooms				
Appliance	**Energy Used (kWh)[c]**	**Energy Wasted (kWh)**	**Total Estimated Cost ($)**	**CO2 emissions (tons)**
Telephone	12,537	0	1,254	7.79
Laptop	192,054	4,268	19,632	122.00
Desktop	17,783	53	1,784	11.08
Printer	19,815	1,982	2,180	13.55
Refrigerator	1,184,334	0	118,433	735.98
Television	3,430	0	343	2.13
DVD/VCR	991	0	99	0.62
Stereo	1,334	89	142	0.88
iPod charger	34,454	689	3,514	21.84
Cell phone charger	133,371	8,891	14,226	88.41
Curling iron/Hair straightener	14,099	0	1,410	8.76
Hair dryer	57,159	0	5,716	35.52
Electric Clock	30,942	0	3,094	19.23
Hot Pot	953	0	95	0.59
Microwave	15,242	0	1,524	9.47
Fluorescent Lamp	21,206	4,241	2,545	15.81
Incandescent Lamp	56,016	11,203	6,722	41.77
Overhead Light	200,057	13,337	21,339	132.61
Decorative Lights	762	762	152	0.95
Fluorescent Floor Lamp	33,609	11,203	4,481	27.85
Incandescent Floor Lamp	53,348	2,401	5,575	34.64
TOTALS	**2,083,496**	**59,120**	**214,262**	**1331.48**

In addition to externality costs due to greenhouse gas emissions, dorm room energy usage costs the college an estimated $214,262 in annual electricity bills. Four appliances account for the bulk of that estimated expense. Each year, refrigerators account for 55% of total dorm room energy usage followed by lights (19%),

chargers (9%), and laptops (9%) (Figure 1). Personal refrigerators alone comprise $118.433 of college electricity expenditures emit 736 tons of carbon dioxide annually.[3]

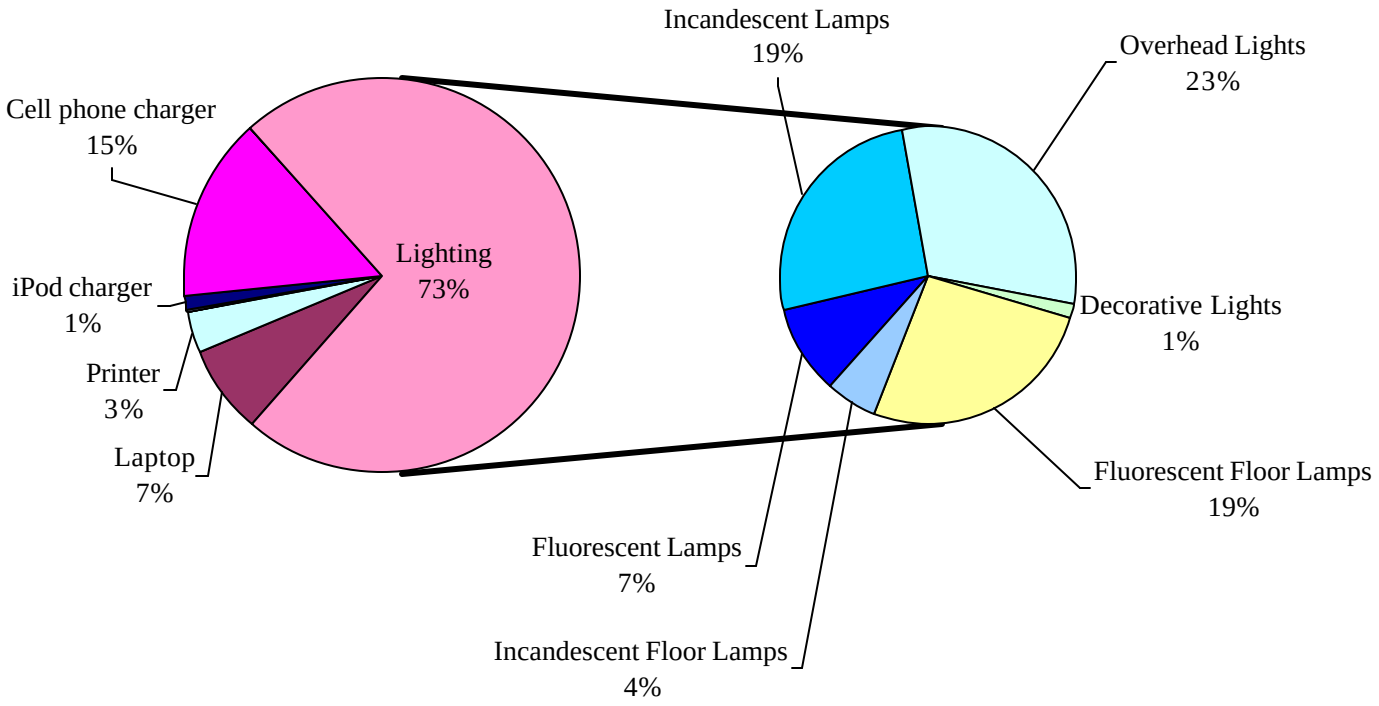
Figure 1. Energy Used (kWh) by Appliance



Although refrigerators consume the most energy overall, the energy they consume is in continuous use to preserve perishable foods. This is not the case with other appliances. Dorm rooms waste 59 thousand kWh of electricity per year corresponding to $5,912 in electricity bills (Table 3). Lights account for 73% of wasted electricity with overheads and standing lamps responsible for 2 to 3 times as much energy waste as desk lamps (Figure 2). Cell phone chargers account for another 15% of wasted energy and laptop computers for 7% (Figure 2).

[C] Calculations of kWh were based on wattage values available at: Appliances and Typical Wattage. Flathead Electric Cooperative, Inc. © 2001-2007 [updated in 2006]. http://www.flatheadelectric.com/energy/appliancewattage.htm

Figure 2. Energy Wasted (kWh) by Appliance



Energy wasted by lighting has the potential to be mitigated by increasing the number of students practicing sustainable behaviors. The majority of those surveyed are already making efforts to decrease energy wasted through unnecessary lighting. Ninety-four percent of those surveyed reported making an effort to turn off lights. Depending on the type of light, 72-82% of those surveyed reported leaving their lights on unnecessarily for less than one hour per day. The trend was for overhead lights to be left on more than standing or desk lamps and for incandescent lamps to be left on less than fluorescent lamps. The special attention paid to turning off incandescent lights suggests that students are aware that incandescent lights consume more energy than fluorescent lamps and both trends indicate that students are taking steps to decrease energy waste.

Electricity wasted by cell phone chargers and other chargers may result from lack of awareness. While 93% of respondents were in favor of sustainable energy and 94% made a concerted effort to practice sustainable

behaviors by turning off lights when not in use, 49% of respondents reported leaving their cell phone chargers plugged in all the time regardless of whether they were actually being used to charge their cell phones. Since unplugging only requires a minimal effort behavioral change and because the majority of students support sustainable energy, these results suggest that students are unaware that appliances consume energy whenever they are plugged in.

Although laptops are responsible for a significant portion of both energy consumed and energy wasted, they also constitute a significant improvement over alternative technologies and are an important example of how student decisions can reduce the costs of Wellesley College electricity bills. Ninety-six percent of survey respondents reported owning a laptop rather than a desktop computer. Of appliances that do not require 24-hour electricity consumption (as is the case with refrigerators), laptops were the appliance in use for the greatest amount of time and were considered to be the most useful by survey participants. In addition, laptops were reported as being in use 7 days a week by 99% of participants and 5-15 hours a day by 70% of participants. This usage costs the school $19,632 per year and accounts for 9% percent of dorm room energy usage. If, however, students were to buy desktop computers instead of laptop computers, electricity costs would be much higher. Because desktop computers use 155 more watts of electricity than laptops[xiii], student preference for laptops saves the college 66 thousand dollars per year assuming that the average student uses her computer for 10 hours per day and leaves Wellesley for all major vacations including Wintersession. This is an example of how student choice of technology already saves the college in annual electricity expenditures.

Student support

Students who responded to the survey supported sustainable energy initiatives at Wellesley. When asked how they felt about the grade of C in Sustainability bestowed upon Wellesley College by the Sustainable Endowment Institute in January 2007, 66.3% of those surveyed described themselves as feeling ashamed or frustrated while only 19.1% reported feeling ambivalent. In addition, 93% of respondents agreed with the

statement that 'Wellesley should be more sustainable'. Respondent's desire that Wellesley be more sustainable combined with their emotional response to Wellesley's low grade in sustainability indicates that, not only do students want a sustainable Wellesley, but that campus pride is effected by the limited presence of sustainable initiatives.

In addition to supporting the idea of sustainable energy, respondents reported a willingness to make their behaviors more sustainable if this were a clear necessity of achieving more sustainable energy usage. Of the survey population, 92% expressed a willingness to change their behavior and when asked whether they currently engaged in actions against climate change, 94.3% of students reported making a concerted effort to turn of lights and 41.5% reported that climate change issues influenced their voting tendencies. The proportion of respondents who are already changing their behaviors towards more sustainable energy usage indicates that student willingness towards behavioral change is not an empty statement.

Respondents also reported some willingness to finance sustainable initiatives. Of those surveyed, 45% claimed a willingness to pay extra money for sustainable energy initiatives. However, when the idea of paying extra was explicitly connected to an energy saving appliance rather than being associated with tuition payments, 86% of those surveyed were willing to pay up to $10 extra, 46% were willing to pay up to $50 extra, and 10% were willing to pay $100 extra. This supports the hypothesis that students are more likely to support financing sustainable energy if extra costs are connected directly to the new policy or technology being implemented.

The majority of respondents voluntarily provided their own suggestions of how Wellesley can become greener and more sustainable. The fact that 62% of students surveyed took the extra time to offer their own ideas and observations shows just how much of an issue sustainability and waste are on Wellesley's campus. The most popular suggestions were motion sensor lights, turning off lights when they are not in use, and increasing awareness on campus.

Most respondents felt that the people in their lives supported sustainable energy. 80% of respondents

believed that their parents were in favor of sustainable energy, indicating the possibility that parents would be willing to pay for extra costs associated with more sustainable energy. In addition to their parents, the majority of surveyed students reported that other students at Wellesley; their siblings, communities, home states, and professors were in favor of sustainable energy. However, while only 44% of respondents reported that their grandparents supported sustainable energy, even less (34%) thought that Wellesley's administration did so. This suggests that respondents feel as though Wellesley College is lagging behind the times.

DISCUSSION

The results of this study show that reductions in both the cost and environmental impact of energy usage in Wellesley college dorm rooms are possible through simple policy, technology, and behavioral changes. Effective measures include encouraging the use of energy efficient refrigerators, improving the overhead lighting in each room, starting sustainability workshops, and modifying the list of items each student is suggested to bring to campus.

Personal Refrigerators

Within the category of used energy, refrigerators account for 55% of energy consumption (Figure 1). Eliminating this appliance from campus dorm rooms represents one method for reducing energy expenditures and carbon dioxide emissions. However, instituting such a ban would be met with great protest. Although it would be cost-effective in monetary terms, it would not be a cost-effective method overall because students would be extremely unhappy and inconvenienced by the ban. If, instead, students used energy-efficient refrigerators, it would save the college money while also using less energy and thus emitting less carbon dioxide. Currently, personal refrigerators use 1,184,334 kWh of energy each school year, which is equivalent to $118,433 per year or 735.98 tons of carbon dioxide emitted per year. With the energy efficient refrigerators

however, the cost is smaller, with 132,457.5 kWh per year costing $13,245.75 per year, or 82.31 tons of carbon dioxide per year. If everyone with a personal refrigerator now replaced it with an energy efficient one, it would cut the cost of powering refrigerators to almost one tenth of what it is now. Encouraging students to purchase energy efficient refrigerators could be very easy, especially if the College could contract with a company and provide lower prices for the fridges. Perhaps it would be possible to implement a recycling program that would allow graduating students to safely dispose of their refrigerators, rather than selling them to underclasswomen. This would further the likelihood of students buying more energy efficient refrigerators. The College does send out information regarding buying and renting mini-fridges to first years the summer before they arrive, so all it would take would be to send out a sheet of paper with different information on it. Additionally, while an energy efficient fridge would cost more than a non-energy efficient fridge, the savings incurred by not having to pay as much for energy more than makes up for the difference.

Brighter Overhead Lights

Dorm room electricity consumption has the potential to be reduced by 6% with the improvement of college supplied lights (Figure 1). Dorm room lighting accounts for 19% of used electricity, 6% of which is due to incandescent lights that students use in addition to the lights supplied with the dorm rooms. One survey respondent suggested that since "The fluorescent overhead lights and desk lamps are not very good … many students end up buying lots of incandescent lights ...." If this is indeed the case, improving the quality of light supplied by dorm room fluorescent lights would result in a decrease in the number of students using incandescent lights and thus a reduction in total electricity consumption. Since results suggest that students use overhead lighting for twice as many hours as other types of college supplied lighting, improving the quality of overhead lights would be more effective than improving the quality of standing or desk lamps. Right now, most

overhead lights in dorm rooms use incandescent light bulbs. Assuming that these lights use one 60 watt bulb each, Wellesley can save a lot of energy by switching to 23 watt fluorescent light bulbs. These emit the same amount of lighting as a 100 watt incandescent bulb, so Wellesley would be saving energy while improving overhead lighting. If fluorescent light bulbs cost $8 each, the cost of changing all the incandescent light bulbs to fluorescent light bulbs in dorm rooms would be $12,520. However, the college would save $12,336.82 in energy costs so this change essentially pays for itself. In addition, the improvement in overhead lighting would hopefully decrease the need for students to provide their own lighting, thus reducing the college's energy savings even further.

Results show that students may be willing to fund such a technology change, but would be more willing to do so if the results of their expenditures affected them directly. While 86% of the study population reported being willing to pay up to $10 extra for a sustainable energy appliance and 46% reported being willing to pay up to $50 extra, only 46% of respondents reported a willingness to pay anything at all when the charge was ambiguously associated with 'sustainable energy initiatives'. Thus, offering students the option of having their overhead lights upgraded rather than buying incandescent lights is more likely to yield positive results than adding the costs for such a technology change to tuition payments. In addition to allowing students to see exactly where their money is being applied, this also saves students the time and money consumed by having to go shopping for lamps.

Sustainability Workshop

A sustainability workshop during freshman orientation would reduce the amount of energy wasted in dorm rooms. Participants in this study most frequently stated lack of awareness as the greatest barrier to sustainable energy. One individual even went so far as to suggest "[talking] to first years at orientation about [sustainable energy]" as a responsibility that Wellesley has been remiss in upholding. Sustainability workshops on campus would help give students the information they need to make more informed decisions about how to

decrease the amount of energy wasted in dorm rooms. Information provided at a workshop could help students to choose more sustainable technologies and encourage them to practice energy conserving behaviors.

Although some students are already making efforts to practice sustainable behaviors such as turning off lights when not in use, there is still progress to be made towards those ends. For example, lights account for 73% of the 59,000 kWh of electricity wasted annually in Wellesley College dorm rooms. In addition, chargers, which are easily unplugged, account for 16% of wasted energy and computers, which shut down with the click of a button, account for 7% (Figure 2; Table 3). Including a sustainability workshop during freshman orientation could address these issues while simultaneously building a sustainable community at Wellesley and appeasing students who see Wellesley's environmental outlook as archaic. In addition, such a workshop would also serve to make sustainability part of the Wellesley culture and thus increase student participation in sustainable behaviors.

Incorporating a sustainability workshop into first-year orientation, when students are new to Wellesley, promises to yield the greatest outcome. When first years move to Wellesley, they undergo many lifestyle changes. Therefore, a behavioral change aimed at reducing energy consumption would not be as difficult for first-years as they would be for upper-classwomen. This strategy would tackle the issue of wastefulness before it starts. In addition, first-years who practice sustainable behaviors from the outset create a new generation of Wellesley women who maintain sustainability at the core of their community. Thus, sustainability would be incorporated into the larger Wellesley culture with the entrance of successive classes. Although excessive programming could yield negative results, it might be valuable to hold campus-wide sustainability workshops throughout the year to encourage the continuation sustainable behaviors.

A sustainability workshop is valuable because it has the potential to cause a great amount of change by influencing the behavior of Wellesley students while keeping event costs at a minimum. Wellesley is an institution that prides itself on service. Many of the leadership positions on campus are unpaid, so it is very

probable that students would be willing to volunteer and donate their time to educate others during the sustainability workshop. It is also possible that WEED members and Environmental Studies professors would be willing to donate their time to help run such a workshop as well. We have not yet approached WEED or professors with this idea, but professors give talks regularly at Wellesley so this could be considered a possibility.

Students would do the brunt of the work of setting up and putting on the workshop, and the only monetary costs associated with this event would be the cost of printing pamphlets and flyers and custodial fees for using a space like Alumnae Hall. If Wellesley decided to invite a speaker for the workshop, that might cost additional money, but workshop volunteers can ask organizations like WEED to co-sponsor the event and donate their funds. Overall, this would be a cost-effective program – the knowledge that students gain from the workshop would outweigh the costs of donated time, flyers, and fees.

Update Appliance Lists

"The requirement that all students need a telephone seems a bit wasteful. My roommates and I probably use our landlines about once or twice per semester…"

By updating the list of suggested appliances for incoming students, the college could encourage the choice of energy saving technologies. Students, for example, are already choosing laptops over desktop computers. The college can reinforce this sustainable preference by including a discussion of the advantages of laptops on the incoming student appliance list. Wellesley could also use this list to discourage personal refrigerators simply by explaining that they aren't necessary since refrigerators are already present in the residence halls. If the student insists on bringing a personal refrigerator, Wellesley can limit the refrigerators allowed to only those that are energy efficient. Other types of appliances that are similarly supplied by the school, such as printers, can also be addressed. Appliances that are required but not widely used such as room phones can be eliminated from the list for students who choose to use their cell phones.

CONCLUSIONS

This study shows that Wellesley College dorm rooms consume 2 million kWh of electricity per year. Each year, this costs the college $214,262 and results in the emission of 1,331 tons of carbon dioxide. However, not all of the energy consumed is used in a purposeful manner. Fifty-nine thousand kilowatt hours of electricity ($5,912) are wasted by lights left on while not in use, chargers left plugged in to wall sockets, computers left running, and printers left on. This is equivalent to 37 tons of CO2 emissions. In addition, refrigerators consume 55% of the total amount of energy used in dorm rooms, costing Wellesley $118,433 per year and releasing 736 tons of CO2 in the process. Means of reducing the monetary cost and environmental impact of dorm room energy usage include: 1) banning personal refrigerators, 2) installing brighter overhead lights, 3) updating incoming student appliance lists, and 4) incorporating a sustainability workshop into freshman orientation. These means are supported by the study population, 93% of whom think Wellesley should be more sustainable, 92% of whom would be willing to practice more sustainable energy behaviors and 45% of whom are willing to financially support sustainable energy initiatives at Wellesley College.

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