The Sparks of Sustainable Energy

Mona Patel, March 25, 2008

Introduction and Methods

Emory University's history dates back to 1837 when the first Board of Trustees "accepted land belonging to the Manual Labor School on which to situate the 'contemplated college' and the proposed new town they would call Oxford." [1] Quite a bit has changed on campus and within Atlanta since the early 1800s to the present day. And although change has been welcomed and provided the Atlanta community and university with expanded opportunities, the growth and expansion has also forced the city of Atlanta and Emory to make tradeoffs—tradeoffs of open and green space for buildings, loss of plants and vegetation for more roads, and increased smog from decisions to accommodate more cars. However, in 1999, when a need for new student housing pushed Emory University to consider building a road through campus woods, many faculty and staff members decided the voice of a few administrators should not force the majority at Emory to suffer the loss of a historical, natural wooded area.

Sensing the frustration of the decision to build a road, and the feeling of powerlessness among faculty and staff, Peggy Barlett, an anthropology professor at Emory, took the initiative to create an outlet for individuals to channel their dissatisfaction. The group of voices from the disgruntled faculty and staff culminated into the formation of an ad hoc committee. This group—called the Ad Hoc Committee on Environmental Stewardship—allowed faculty, staff, and students to unite around this common concern and collectively discuss campus-wide environmental issues. From this beginning emerged the Office of Sustainability Initiatives and a wide range of innovations around energy use. This report will explore the early steps around energy conservation and behavior change and trace their evolution and challenges over the first eight years of sustainability work at Emory.

This paper is part of a multi-sectoral project to gather oral interviews to record the history of the sustainability movement at Emory University and was part of the anthropology course, "Issues in Sustainability" (ANT 585), taught by Peggy Barlett in 2008. Other sectors examined were green buildings, transportation, and forest preservation. Information was collected through background research on Emory's Facilities Management website, the Emory Report, Office of Sustainability website, class readings and in-class discussion with Barlett and other researchers on the project. Individual interviews on energy sustainability were conducted with Jimmy Powell (Director of Exterior Services and Sustainability) and Eric Weber (Utilities Engineer with Campus Services). Interviews lasted approximately 45 minutes to 1 hour. The interview with Jimmy Powell was held in the DUC, while the interview with Eric Weber was in his office.

Consent for the interviews was gained via email. Once the researcher arrived at the interview location, the purpose of the study was clearly explained, namely to gather the history and timeline of energy sustainability at Emory from those who were designated as key leaders in the past, present, and future sustainability movement. It was explained that eventually, these histories would be used to discuss trends in sustainability and to understand factors that

contributed to its success. Interviewees were given an opportunity to review the report, and in 2017, the reports were edited for clarity and consistency, to be part of an archive of Emory's sustainability history.

Sustainable Energy: Pilot Project

Although the seed of sustainability initially began with a focus on forest and woodland preservation, Emory University's sustainability vision expanded to include energy reduction, alternative transportation, green buildings, and green purchasing. In 2002, with the support of Dean of Emory College Bobby Paul and both the Information Technology division and Facilities Management, the Ad hoc Committee on Environmental Stewardship decided to conduct a pilot study for energy conservation. Reflecting on the time when the decision was made, Barlett commented, "It seemed like a no-brainer, energy reduction seemed like an obvious project. Not only would the university reduce its impact on the environment, but they would save money in the process."

Emory University spends approximately $30-40 million dollars on utilities consumption annually and is currently the 6th largest consumer for Georgia Power[2]. Based on simple recommendations by the US Environmental Protection Agency and other university energy conservation initiatives, a document titled "Emory Energy Conservation Project" was created. This project was implemented for one year as a "test run" to explore the extent to which impact would occur primarily through behavior change initiatives. The committee created a proposal for Year 1 and created a follow up continuation and report in Year 2.

The proposal for Year 1 included the following sections: Rationale; Recommendations; Project guidelines; and Experiences from other schools. The report explained why Emory should partake in energy reduction activities, citing Emory's responsibility as a learning institution to act to reduce its own contribution to global warming and financial savings as prime reasons. The committee specifically decided to focus on behavior change initiatives among faculty and staff. Five simple recommendations were created and shared among faculty and staff in Emory College to encourage small actions that could be taken to reduce collective energy use. Behavior change components within the proposal highlighted the need to provide clear messages, created an advisory committee within College buildings to help publicize efforts, and incorporated the personal obligation of committee members to have one-on-one conversations with university members.

A pamphlet was also designed titled, "The Energy Conservation Project at Emory" which provided a rationale for the project and answers to frequently asked questions about energy use. For example,

> *Q: Isn't turning my computer off and on bad for the machine?* A: Studies conducted at the Lawrence National Laboratory at Berkeley have found that hard drives are not affected by frequent shutdowns. In fact, your hardware may actually last longer because of reduced heat stress and mechanical wear.

The report also cited initiatives undertaken by leading universities that had already committed to reducing energy consumption and provided examples of cost savings received from simple adjustments. Excerpts from the initial proposal state[3]:

I. Rationale:

Polluted air is a major environmental concern in Atlanta, and roughly half comes from power plants (the other half comes from vehicle exhaust).

Power plants are one of the major producers of greenhouse gases, which contribute to global climate change. Many universities around the country seek to reduce energy use as part of their commitment to international climate change concerns.

Electricity saving is financially smart (Sharp 2002). Harvard's Arts and Sciences Energy Reduction Project estimates cost savings of $300,000 this year. Tulane expects $200,000 from changes in computer use alone. The winning dorm in Tufts' residence hall competition reduced electricity use by 50%.

This project focuses on behavioral change and the broad involvement of Emory employees. It builds on substantial work over the last 10 years by Emory's Facilities Management Division to improve energy efficiency through improved motors, fans, boilers, and chillers. ITD is also supporting the project with staff time and planning guidance, as part of its own commitment to environmental stewardship.

With this Project, Emory College takes the lead in helping employees take responsibility for eliminating waste and fostering creative solutions to reducing harmful environmental impacts.

II. Recommendations:

1. Turn off computers at night and on weekends
2. Reduce computer monitor energy use
3. Turn off lights
4. Look at other electricity uses
5. Work with heating and air conditioning experts to reduce waste in your building

III. Project Guidelines: Year 1 (2002-2003)

Goals: To foster new expertise among individuals in the college; to support creative attention to energy reduction in all departments, labs, and offices; to save money; to reduce environmental harm; to bring the Environmental Mission Statement into the ethos of the campus.

Strategy:

1. The project begins with a signal of high-level support from Dean Paul.
2. Present a clear, vivid message of why it's important to act and what we can do, to Department and Program Chairs, Office Managers, and Administrative Assistants.
3. Develop a pamphlet for wide distribution.
4. Create an Advisory Committee of interested faculty and staff in as many College Buildings as possible to help publicize the effort.
5. Seek broad participation of faculty and staff (Campus Life and ITD are planning to extend the project to students), beginning with department meetings.
6. Help Chairs and Office Managers explain clearly the actions requested and allow participants to feel competent and in control.
7. Maximize one-on-one conversations.
8. Work with Facilities Management to track baseline and current energy use.
9. Work with ITD to make necessary computer adjustments.
10. Publicize the project and its impacts.
11. Make contacts with individual faculty and staff in each building to: Clarify what's being asked. Listen attentively. Ask individuals if they'd be willing to talk with a colleague/co-worker. Call back, check back, to see how change is going.
12. Choose 1-3 departments in consultation with ITD and FMD for closer measurement of energy savings, which will guide future computer upgrade and replacement program decisions.

IV. Experience of other Schools:

Tulane University estimates it has 6000 computers on one main campus. If they are turned off 8 hours a night for students and at the end of each workday for faculty and staff, savings are estimated to be over $200,000 a year (at 2000 prices). Greenhouse gases will be reduced by .5% (Davey et al., 2002: 171). (Alan Cattier of ITD estimates we have 1800 computers in Emory College Departments).

The University of Buffalo has implemented the recommendations suggested above, and they estimate electricity costs fall from $125 on average per computer per year to $30 (Simpson 2000:3).

Harvard University has documented that its energy use has been increasing by 3% per year and seeks to reverse this trend because of campus concerns about global climate change (Sharp 2002:133).

Mills College in California found that a program to turn off monitors using the "sleep" mode saved $10,000 in the first year (Olsen 2002).

The University of British Columbia's energy management plan expects to save $500,000 (Canadian) a year. The University of Manitoba's energy retrofits have reduced consumption 24% for an annual savings of $1.8 million (Canadian).

Iowa State University project saves $750,000 a year from building temperature adjustments alone. Their electricity costs are $7.7 million. Their savings from voluntary adjustments to lights, computers, and small appliances is estimated to be $500,000 (6.5%).

In 2004, the committee was able to report positive results from the pilot project. The energy use in Emory College continued to decline in 2003-4 between 5-7%. Behavior change from one-on-one contacts between student volunteers and faculty and staff in the college was a primary reason, as well as dissemination of brochures, an e-mail request for cooperation by the Dean, and queries in visits to each department. Bookmarks were also distributed by students to remind faculty of the 5 conservation recommendations, and students developed classroom reminders to turn off lights. With the help of facilities management, new meters were also installed in almost every college building to obtain better analysis of the university's energy use. Though this simple pilot plan primarily focused on behavior change, Emory College was able to reduce its energy consumption and convince administrators the pilot should be expanded both to include a comprehensive behavioral effort by all members of Emory University and a commitment to technical changes in equipment to improve efficiency and reduce energy expenditure.

Energy Use in Emory College Buildings, 2002-2004

	10 Buildings*		**8 Buildings****	
Year	AvKwh/day	Change	AvKwh/day	Change
September 2002- June 2003	286,580		255,859	
September 2003- June 2004	272,254	-5.00%	238,723	-6.70%

*Atwood, Bowden, Callaway, Emerson, Geosciences/Anthropology, Psychology, Rich, Studio Arts, Tarbutton, and White; some data are not strictly comparable over the time period, due to new meter installation.

**These 8 buildings have been less affected by meter changes (Callaway and Tarbutton omitted because comparison with previous year may not be valid; both show declines in energy use in 03-04, however).

Sustainable Energy: Commitment

Jimmy Powell, current Director of Exterior Services and Sustainability, began working with Emory 11 years ago and still recalls the early formation of Emory faculty, staff and students into the Ad hoc committee. Jimmy actively participated in Ad Hoc related activities, such as the ivy pulls sponsored by the group; he commented, "The ivy pulls were important because they pushed back the English ivy from most of the eastern end of Baker Woods and allowed the native vegetation to return, including some replanted native azaleas." Jimmy has his degree from the University of Georgia in Horticulture and Plant Science. His initial environmental work at Emory pertained to the "No net loss of tree canopy policy," an initiative to prevent loss of campus trees, essentially to balance campus construction while keeping in mind the number of trees removed and planted. He is also credited with forming and leading "Friends of the Emory Forest," a campus group dedicated to supporting reforestation, and planting trees to sustain Emory's native forests.

Through the Ad Hoc Committee's grass-roots efforts, Emory as an institution has come to recognize the concerns and importance of campus sustainability. The university has redirected campus policies and identified sustainability as a top priority in its strategic plan and created a vision statement. Included in this plan is the dedication to reduce energy consumption by 25% by year 2015. Already committed and recognized as a leader on Emory's campus in sustainability, Jimmy Powell was approached by the Ad Hoc Committee, after the successful results from the pilot project, to discuss energy initiatives and to be a part of the team in charge of monitoring and regulating energy consumption. Jimmy immediately agreed.

Another integral member of the sustainable energy vision is Eric Weber. Eric initially began working with Emory as a part-time consultant in 2001. He is currently the Utilities Engineer and works closely with (and was hired by) Jimmy Powell.

Office of Sustainable Initiatives

The Office of Sustainability Initiatives was established in the Fall of 2006, with Ciannat Howett as Director and Erica Weaver as Administrative Assistant. Sustainability emerged as a university-wide concern through Emory's strategic planning process in 2004 and 2005 and has been adopted as a core principle of the operation of the university. A committee was formed in the Fall of 2005, co-chaired by Executive Vice President for Finance and Administration, Michael Mandl, and Professor of Anthropology, Peggy Barlett, to develop a vision and a path for ways Emory could make their sustainability commitment concrete. At this time, Emory adopted a campus-wide (as opposed to the initial pilot plan) energy conservation plan to reduce energy use throughout campus by 25% by 2015. The reduction is expected to be met through building retrofits and awareness campaigns. Eric Weber also discussed campus-wide operations, such as HVAC shutdowns which occur from midnight to 6:00am in 7 buildings throughout campus. Emory has installed a digital/automated system which monitors the temperature of buildings from a central location and has already resulted in significant energy reduction and led to monetary savings of $500,000.

In 2005, A "Natural Resources Conservation Policy" was also created by Facilities Management as a guideline to provide tips to easily reduce personal energy use and lead to collective financial savings for the university. The policy is cited as "part of a comprehensive energy management program" and includes proposals of new design and retrofits. The expected savings will be reinvested in upgrades of infrastructure and facilities. A summary of the policy and recommendations are included below:

1. **Building Envelope Control:** Building occupants should strive to keep exterior doors and windows closed; in the summer, close window shades during periods of direct sunlight and during weekends and holiday; conversely in the winter, shades should be open during the day to provide radiant heating and closed at night to prevent heat loss.

2. **Miscellaneous Equipment Control:** Set computers to enter sleep mode after ten minutes of inactivity; computers should be turned off at night, over weekends and holidays; copiers need to be placed in the standby mode when not actively in use. Office equipment that is Energy Star compliant should be purchased when possible.

3. **Lighting:** Interior lighting will be fluorescent, whenever possible; use of incandescent "atmosphere" light in offices are discouraged; energy saving fixtures, lamps and ballast will be used to replace existing less efficient lighting whenever economically viable and appropriate.

4. **Space heaters:** The use of personal heaters is strongly discouraged unless efforts to remedy the need for heaters are unsuccessful; if space heaters are used, they must meet UL approval.

5. **Thermostat Temperature Standards:** Recommended temperature settings have been adopted for campus spaces for summer and winter.

6. **Building HVAC System Setback/Shutdown:** Periods of low to no building occupancy offer great potential for energy savings. Overnight and weekend/holiday setback/shutdown of HVAC systems will be implemented in buildings that can effectively respond to automated setback commands. [4]

Behavior Change

The primary goal of the Office of Sustainability is to focus on behavior change components and encourage students, faculty, and staff to understand that their actions can make a difference for Emory and the Atlanta community. Ciannat Howett, a former Emory alumna and attorney for the Environmental Protection Agency, believes that education is the best way to get people on board with the sustainability plan. In Emory's alumni newsletter, she expressed, "Awareness creates change. . . an important part of Emory's sustainability plan is to help spread that awareness in the wider community.[5]"

Michael Mandl, Executive Vice President for Finance and Administration, also recognizes the importance of changing behavior. In addition to serving as the co-chair of the sustainability committee, he recognizes the simple creation of a policy will only do so much. He stays engaged with the Emory community by sending out e-mails and promoting initiatives created by the Office of Sustainability. It is important for students, faculty, and staff to recognize sustainability should be identified as a priority by *all members* of Emory's community. Rather than being viewed as a movement among a specific niche in Emory's sub-population (i.e. environmentalists or the "hippies" of campus), active involvement by all levels of Emory community members—faculty, administration, staff, and students—is crucial. As Vice President of Finance and Administration, Michael Mandl's involvement creates legitimacy among people who may be numbers focused or understand the importance of an organization's budget and costs; Ciannat Howett's e-mails target students and faculty who may be more familiar with projects undertaken by the Office of Sustainability; while, Peggy Barlett's e-mails may relate more to students and faculty in the social sciences field. Equally important is the sustainability commitment by President Wagner and the top administration within the campus hierarchy. Recently, the Office of Media Relations published an article in which President Wagner expressed, "Emory's enthusiastic and steadfast commitment to environmental stewardship and sustainability" as an integral component of the university's mission. He continued, it "represent[s] the foundation of a healthy environment for teaching, learning, and living at Emory.[6]"

Behavior change initiatives need to target different personalities and subgroups within campus. Emory has used various approaches to influence the behavior of the Emory community and raise awareness. A couple of strategies/initiatives are listed below:

If faculty member or staff is not convinced by the necessity and significance of considering the impact of our actions on the economy, society, and environment today, he/she may be swayed by a potential consequence that may be faced if Emory does not reduce consumption and decrease cost—a cut in budget to allocate to increasing energy costs. An e-mail was sent out in October 2005 by Michael Mandl titled "Energy Conservation Message from Michael Mandl" to all Emory employees. Within the e-mail, he said,

> "As you know, the cost of natural resources (i.e. oil and gas), as well as electricity, is increasing dramatically. In fact, the cost of natural gas has reached an all time high. These increases are putting real pressure on our home and institutional budgets. .... Emory must be committed to leadership in the efficient use of energy and, as a community, do all we can to reduce energy consumption. It is important so that ***we do not divert even more resources from high priority items like salaries and benefits***. It is important, also, because it is simply the right thing to do for our future. . . ."

He continues to discuss projected costs and provides "simple conservation practices that can greatly affect Emory energy usage and costs[7]." Money or lack thereof can shape individual behavior change. Michael Mandl focuses on numbers and costs, and emphasizes a number that everyone can relate to—salary figure. In addition to providing education and tips of sustainable behavior, he also highlights economic self-interest. The message underscores the importance of

incurring minor costs (taking the stairs, remembering to turn off the light) in order to gain future benefits (increased salary) or minimize a future cost (decreased salary). Mr. Mandl recognizes the promotion of public (Emory community and Atlanta community) benefits may not serve as a motivation to all individuals and essentially highlights a potential cost that may be faced if people choose not to comply. Because this e-mail is one of many e-mails (of which the other e-mails do not discuss salary) sent by Michael Mandl, faculty and staff should recognize (hopefully) the e-mail is not a passive threat of budget cuts, but merely serves as a reminder that sustainability initiatives are *relevant* to the entire Emory community.

As highlighted in their case study at Tufts University, Marcell et al. found many students often "have a poor understanding of climate change science and are unaware of how their energy use contributes to the problem.[8]" Documented by many researchers, the discrepancy between environmental values and action is common and usually referred to as "the value-action gap." [9] In an effort to educate and actively involve students, faculty, and staff in energy conservation, Emory University hosted an event called "Lights Out Emory." Modeling a similar effort from Sydney, Australia, on October 19, 2007, key buildings at Emory University turned off their light for one-half hour on a Friday from 9:00-9:30pm to promote awareness of energy conservation. Ciannat Howett commented, "In order to meet these goals, we first need to raise awareness of our individual and collective energy use. . . Simple steps to reduce energy consumption do matter. By turning out lights on campus for even a short period of time, we hope students, faculty, staff and campus neighbors will recognize their energy impact, and how it can easily be reduced."

The "Lights Out Emory" event was linked with and occurred the evening before His Holiness the Dalai Lama arrived on Emory's campus. Ciannat Howett said, "The lights-out event, which will occur the evening before His Holiness the Dalai Lamai arrives on campus, serves as both an expression of thanks for his visit, as well as a collective mindfulness that our behavior yields implications for the environment. As his Holiness has indicated in the past, there are a lot of unnecessary, man-made problems on this planet, but we have no other home, and need to take seriously our obligation to take care for the Earth.[10]" Michael Mandl also sent out an e-mail to the Emory community urging people to participate in "Lights Out Emory." He echoed Ciannat Howett's thoughts by stating, "This collective act of mindfulness can lead to long-term changes in our daily habits that affect the environment." He also encouraged simple steps such as "taking the stairs instead of the elevator, turning off lights, unplugging cell phone chargers, hibernating or turning off computers." [11] By connecting the "Lights Out Emory" event with the momentous and anticipated visit of an international icon who embodies peace and spirituality, the Emory community may have been able to see the holistic vision and meaning of sustainability. Sustainability can be mistakenly boiled down to "consume less." Fricker discusses the importance of considering and understanding "the non-material side of life—the intuitive, the emotion, the creative and the spiritual, for which we need to engage all our ways of learning (being and insight as well as doing and knowing)." [12] Peggy Barlett highlights the importance and necessity of recognizing sustainability as a "worldview that sees one's own life and circumstances in the context of individualistic views of one's own personal habits of consumption." [13] This joint effort of linking an individual's action to something more than one's own self and one's own community is more likely to resonate and promote new ways of thinking.

Emory also held its first University-wide energy competition among campus buildings in March 2008. Rydin and Pennington discuss, "It is difficult to encourage pro-environmental behavior if the public does not perceive their behavior to make difference." [14] It is hard to make students, faculty and/or staff recognize one individual's behavior can make a change. This friendly rivalry among campus buildings provided a reward to the building with the greatest reduction in energy use for the month of March 2008 compared to last year's use in March 2007. The winning building was awarded $1000 from the Office of Sustainability, in which the money was to be spent on a sustainability-related prize. A similar competition was held in October 2007 between freshman residence halls. Freshmen were able to prove each individual's behavior can lead to significant, collective energy reduction. The energy savings from one month alone were enough to power an additional residence hall. [15] The energy savings from the residential competition are provided below:[16]

Emory University
Residential Energy Conservation Competition
October 1-21st versus September 1-21st

Energy Saved October 1-21st versus September 1-21st
155,000MBtus - which is equivalent to 27 barrels of oil
29,000kWhrs - which is enough electricity to run Dobbs Hall for a month
29,000kWhrs removed reduces CO2 emissions by 43,000lbs and SO2 by 246lbs

Electricity Savings for Residence Halls with Electric A/C

Trimble	McTyeire	Means-Longst.
24.7%	15.9%	15.3%

Electricity Savings for Residence Halls with Central Plant A/C

Dobbs	Alabama	Harris	STH	Turman
8.4%	8.0%	3.2%	2.7%	6.4%

Challenges and Barriers

Emory currently works with SIEMENS, an external engineering consulting group that provides Emory with energy audits and recommendations for efficient energy use. SIEMENS has conducted efficiency ratings of equipment, measured light use and consumption in many of Emory's campus buildings. The university has the potential to save significant costs by investing in improved technology today, ultimately leading to substantial savings of energy costs in the future; simply put, Jimmy summarized technological improvements as "paying for investment through future savings." However the benefits or return on investments (ROI) may not be incurred until 15-20 years later—the delayed gratification makes it difficult for individuals who may focus on the short term versus the long term. Although Powell admits the university-wide goal to reduce energy consumption by 25% (which is supported by Bob Hascall, Vice President of Campus Services) by 2015 is "pretty aggressive," he is excited to be a part of the strong university commitment.

When asked his thoughts about the 2015 goal, Eric Weber commented "The hard thing about energy reduction is that it's not a short term program. Everyday something has to happen—you have to monitor how the building is working everyday…. You can do an audit to improve efficiency, but then have to make sure the building continues to operate in that efficient manner." Eric is a member of the energy committee and focuses on the technical aspects of energy conservation, such as the "Steam Trap Reduction" plan—an approach to reduce steam use in buildings and reduce leakage. He has also encouraged Emory community members to slowly make minor changes in their daily routine and recognizes "change does not happen overnight." He e-mails tips about daily energy conservation strategies, such as thermostat standardization, keeping windows closed and blinds down to Emory community members to remind them of simple activities that can be done to create long term impact.

As highlighted by Weber, technical energy approaches have to be linked and synergistic with behavior change initiatives to reduce energy consumption. Weber recognizes, in addition to the long term ROI of equipment, the return on community behavior may be a slow process as well. He acknowledged the intricacies of creating sustainable behavior change as an immediate barrier but one that is possible if the Emory community remains committed and continues outreach: "It's a paradigm shift—we have to change habits and it takes time." In addition, he commented "within the approaches to reduce energy consumption, 3-5% reduction is usually expected through behavior change. Awareness programs are a very important component of sustainable energy."

Specific barriers or roadblocks mentioned by Jimmy Powell and Eric Weber revolved around funding. Although Emory has made a commitment towards the energy sector at Emory, competing projects can lead to reduced investments in technological improvements and behavior change programs. The current "capital building program" has led to escalating construction costs, and the "master plan" for Emory includes 6 new buildings in the span of 2 years. Of course new buildings will also lead to increasing use of energy. However, Emory has promised to incorporate LEED principles with new building construction and renovation projects. A key component of the LEED guideline includes energy conservation methods, such as high-efficiency lighting controls and HVAC systems.

Conclusion

What began as a concern by a small group of faculty, staff, and student about the destruction of campus woods at Emory University in 1999 has escalated into a laudable strategic plan. Significant progress has been made since the initial pilot in 2002 and the formation of the Ad Hoc Committee. Most recent figures show a 4% reduction of energy use within buildings from 232 MBtu/sqft in FY2004-05 to 223 MBtu/sqft in FY2006-07. [17] The determination of the Ad Hoc Committee on Environmental Stewardship proved that changes can be made from the bottom up. The commitment by President Wagner and the top administration, and the creation of the Office of Sustainability Initiatives has shown the Emory is truly concerned and making sustainability issues a top priority for the university.

Although Emory is making progress towards more sustainable energy, much work is still needed to meet the goal of 25% energy reduction by 2015. Efforts to reduce energy are in place, and Emory team members such as Jimmy Powell, Eric Weber, Michael Mandl, and Ciannat Howett are striving to create change through technological improvements and increased efficiency, and through activities surrounding behavior change.

However, as progress is being made on both ends to reduce energy consumption—the technical changes to increase efficiency, and behavior change activities to shift personal energy reduction—a disconnect seems to exist between the two strategies. While attempting to piece together the timeline and projects in place for this report on energy sustainability, it seems that the technical individuals are not familiar with behavior change activities and vice versa. The current movement seems piecemeal, and though it has arguably been effective, it could be more successful if more connection and communication existed between the behavior change activities and technical aspect of energy reduction. Currently, a leader or group of leaders is not driving the energy sustainability initiative at Emory to serve as an intermediary and to focus solely on sustainable energy issues. Although Emory University agreed to designate a specific committee for energy sustainability (according to the pilot Emory Energy Conservation Project), one has not yet been assigned. This committee would be extremely beneficial in aiding in the measurement and evaluation of outcomes, and in guiding the future energy initiatives. Many of the other sustainability initiatives at Emory, recycling, alternative transportation, green buildings, and forest projects have distinct leaders who are directing and steering efforts and are held accountable to help Emory meet designated goals. The energy sustainability sector of Emory would benefit from an individual or committee who can serve as a liaison. Currently, due to an abundance of work, members of facilities management—Jimmy Powell, who is in charge of managing the entire department, and Eric Weber, the only utilities engineer—and Ciannat Howett, director of all sustainability initiatives, do not seem to have time to foster collaboration between the behavior change and technical strategies for energy reduction. To reach the 2015 target will require the continual collective participation of all Emory community members: students, faculty, staff, and administration. An energy sustainability committee may be integral to make the energy projects more holistic, to encourage and ensure participation, and provide support to all of the dynamic components of energy reduction projects.

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[1] http://emoryhistory.emory.edu/history/index.html.

[2] However, it is important to note that historically Emory's energy costs (and use) have always been lower than the national average costs. In 2001, Emory's energy costs were approximately 3.3 cents/kilowatt hour, while the national average was 12 cents/kilowatt hour. Currently Emory's costs equate to 5.5 cents/kilowatt hour, which is still lower than the present average cost. Eric Weber attributes the "increase in costs primarily to the rise of fuel costs (coal and natural gas)."

[3] Emory Energy Conservation Project Draft #3. August 29, 2002.

[4] Emory University Natural Resources Conservation Policy. Dec 2005.

[5] Ibid.

[6] Payne, David. Emory Hosts EPA's Regional Audit Agreement Ceremony. Emory University: Office of Media Relations. June 2007.

[7] Mandl, Michael J. "Energy Conservation Message from Michael Mandl" October 31, 2005.

[8] Marcell, Kristin, Agyeman, Julian, and Rappaport, Ann. Cooling the Campus: Experiences from a pilot study to reduce electricity use at Tufts University, USA, using social marketing methods. Tufts University. International Journal of Sustainability in Higher Education. Vol5 No 2. 2004. Page 169.

[9] Blake, 1999; Kempton et al., 1995; Fishbein and Azjen, 1975 quoted in Marcell, Kristin, Agyeman, Julian, and Rappaport, Ann. Cooling the Campus: Experiences from a pilot study to reduce electricity use at Tufts University, USA, using social marketing methods. Tufts University. International Journal of Sustainability in Higher Education. Vol5 No 2. 2004. Page 171.

[10] Payne, David. Emory Dims Lights to Promote Energy Conservation, Welcome Dalai Lama. Emory University: Office of Media Relations. October 2007.

[11] Email message from EVP Michael Mandl. October 2007.

[12] Fricker, Alan. Measuring Up Sustainability in Haenn and Wilk, eds. The Environment in Anthropology. Chapter Eighteen. NYU Press. 2006.

[13] Barlett, Peggy. 2009. Reason and Reenchantment in Cultural Change: Sustainability and Higher Education. Current Anthropology 49(6):1077-1098).

[15] Contest to Spark Energy Use Reduction: Office of Sustainability Initiatives http://www.emory.edu/sustainability.cfm.

[16] Email "Residence Hall Energy Competition Results" provided by Kristen L. Holm-Hansen. October 2007.

[17] Figure provided by Eric Weber, Utilities Engineer, Facilities Management, Emory University.