

C.W. Post's Office of Sustainability

By Chris Jackson

The Mission

C.W. Post will become a model green university. The Office of Sustainability (OS) will be responsible for facilitating collaboration among faculty, staff, and students on sustainable projects, reducing the campus carbon and ecological footprints, managing sustainable grants, projects, and campus education programs. To maximize efficiency, the Office of Sustainability will initially focus on a limited

number of projects: Composting, Green Buildings and Renewable Energy, Transportation, and Recycling.

Staff and Support

Following the example of Harvard University, C.W. Post will create a "Green Team" where students can volunteer and also earn college credit for working on OS projects. OS projects will be guided by a committee of professors, staff, and student leaders. The Director of the Office would report directly to the Provost.

What Other Universities are Doing

Many universities have now established their own Office of Sustainability. These serve as clearinghouses for strategic planning, information, grants, research projects, and related activities. For

example, Harvard University's Office of Sustainability lives up to that school's reputation for excellence.

Their mission is "to lead Harvard in achieving all its sustainability goals, aimed at saving resources and reducing the University's environmental impacts. We will achieve this by leveraging the collective knowledge of our partners across Harvard" (Harvard). Harvard's Office is tackling the problems of energy & greenhouse gas emissions, food, water, green buildings, transportation, and solid waste.

Harvard also has a **Green Office Program** where "participating offices receive a plaque celebrating their certification status and are acknowledged on their website and in other publications for their positive contribution to Harvard sustainability" (Harvard). **The ultimate goal of the program is "reducing**

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greenhouse gas emissions 30% below 2006 levels by 2016, while using fewer materials and producing less waste” (Harvard).

The mission of the Tufts University Office of Sustainability is to “serve as a resource, a catalyst, and an advocate for environmental sustainability at Tufts. Often we serve as a bridge between ideas and their practical implementation” (Tufts). Tufts has **Eco Ambassadors** - environmental stewards who connect staff and students to sustainability resources on campus. Their programs include energy, food, green buildings, green purchasing, recycling, transportation, and water. This list is very similar to Harvard and other universities. Tufts University offers an undergraduate course to support the Office of Sustainability; the class is called Environmental Action: Shifting from Saying to Doing:

This Experimental college class is designed for students who want a refreshing way to examine the truths behind the environmental concerns in the news. Through the lens of psychology, social marketing and critical thinking, we will examine the current environmental issues impacting our world. Activities during the semester will include: critical thinking research examining current environmental issues, personal challenges, campus social marketing group projects, and the opportunity to prepare for and host a symposium on peer-to-peer sustainability education with Boston-area colleges and universities. By the end of the semester students will leave this class with a new perspective on themselves, society and the environment. (Tufts)

Other university models include the University of New Hampshire. They have designed their sustainability program around what they call Curriculum, Operations, Research and Engagement (CORE). The initiatives of CORE are “designed around four key systems that underpin our ability to define and pursue quality of life” (Univ. of New Hampshire). Those systems are Biodiversity Education, Climate Education, Food & Society Initiative, and Culture and Sustainability Initiative. UNH has one of the oldest sustainability programs in the United States.

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Composting

By Meghan McKillop

Individuals, governments, and hundreds of colleges and universities are making a commitment to sustainable practices. Sustainability visionary Roy F. Weston's comprehensive definition of sustainability states:

Sustainable development is the process of change in which the direction of investment, the orientation of technology, the allocation of resources, and the development and functioning of institutions meet present needs and aspirations without endangering the capacity of natural systems to absorb the effects of human activities, and without compromising the ability of future generations to meet their own needs and aspirations.¹

Composting: Overview

Waste management is a major issue facing society today. The three R's: Reduce, Reuse, and Recycle, are commonly emphasized; composting provides a way to accomplish all three. Through composting, the amount of garbage sent to landfills is reduced, organic matter is reused rather than discarded, and organic matter is recycled into a useful soil amendment.² Composting is a practice that will allow C.W. Post to reduce waste and campus environmental impact.

Many colleges and universities throughout the United States have implemented effective and successful composting programs and initiatives on their campuses. Composting is "a naturally occurring process that converts organic material like food-scrap, manure, or weeds into a nutrient and microbe-rich soil amendment."³ The monitoring and regulation of moisture, air, and the raw material mix creates an optimal environment for various microorganisms (including bacteria and fungi); this optimal environment breaks down complex organic matter into simpler substances that are suitable for use in landscaping and other agricultural projects.⁴ In the United States, organic wastes constitute approximately 20% to 40% of

¹ Cornell University: Cornell Sustainable Campus. <http://www.sustainablecampus.cornell.edu/csi.cfm> (accessed 4 November, 2009).

² Cornell Composting: Composting in Schools. <http://compost.css.cornell.edu/technique.html> (accessed 4 November, 2009).

³ Evergreen State College: Compost Facility. <http://www.evergreen.edu/cell/compost.htm> (accessed 3 November, 2009).

⁴ Evergreen State College: Compost Facility. <http://www.evergreen.edu/cell/compost.htm> (accessed 3 November, 2009).

disposable waste; composting “provides an opportunity to keep these organic materials out of landfills and incinerators, using them instead to create a useful end product.”⁵ Compost has the ability to:

- help regenerate poor soils;
- suppress plant diseases/pests;
- reduce or eliminate chemical fertilizers;
- extend the life of existing landfills.
- reduce other sources of pollution (e.g., transportation of solid waste and landfill methane).

Financial Savings

On-campus composting at C.W. Post will save money and reduce environmental impacts.

Transporting wastes from the campus to final disposal sites is expensive. Since beginning its composting program in 1993, Middlebury College in Vermont has saved an estimated \$102,000; the “average cost for the college to dispose of wastes in a landfill is \$135/ton, while the average cost for composting is \$39/ton.”⁶ Similarly, the University of Vermont’s composting program saves the school thousands of dollars every year; as of 2006, UVM’s disposal cost per ton of compost was \$25, while the disposal cost per ton of trash was \$90.72/ton.⁷

C.W. Post’s beautiful and expansive campus is attractively landscaped and maintained year round; a composting program on campus would save money by reducing the need for purchasing large quantities of soil and artificial soil amendments. Compost material can be used for aesthetic/landscaping purposes, as container mix and potting soils, topsoil blends, nursery beds, backfill for trees and shrubs, and as fertilizer for the campus garden project. In addition to its use on campus, compost is a marketable commodity that can be used by the local community; C.W. Post could advertise its composting program locally, encouraging gardeners and small business owners to purchase and use its excess compost material

⁵ Cornell University: Environmental Inquiry (EI): Authentic Scientific Research for High School Students. <http://ei.cornell.edu/biodeg/composting/> (accessed 11, November 2009).

⁶ Sustainable solution: on-campus composting gets the right fit (Middlebury College, 2005). http://www.secondnature.org/efs/profiles/profile_middlebury.htm (accessed 3 November, 2009).

⁷ UVM Food Waste and Composting: Final Report (2006). http://www.uvm.edu/~recycle/Students/UVM_Food_Waste_Composting_FINAL_REPORT_Fall_2006.pdf (accessed 3 November, 2009).

instead of artificial fertilizers and pesticides.⁸ C.W. Post can serve as a model of sustainable behavior and even inspire the local community to practice more environmentally-friendly practices.

Composting systems run from the simple to the complex. Startup costs for some systems can be quite expensive (tens to hundreds of thousands of dollars). Other systems are simpler and less expensive and can be assembled by hand with relatively cheap and attainable materials (manure, wood chips, hay/straw, leaves, etc.).

In February 2009, Ohio University “launched a solar powered, in-vessel composting system...the largest of its kind at any college or university in the nation.”⁹ Ohio University’s website describes that the system works “by controlling temperature, moisture, and aeration inside the machine...[and it] accelerates waste decomposition, turning waste into soil in 14 days with no odors, no vector or pathogen control issues, and minimal staff involvement.”¹⁰ As of July 2009, Ohio University has composted “over 47 tons of food waste and service-ware and 19 tons of yard waste for a total of 66 tons of organic waste.”¹¹ The compost facility has a rainwater harvesting system as well as a roof- and pole-mounted photovoltaic array (which will provide 50% of the site’s electric needs).¹² The in-vessel composting system cost \$355,370, but Ohio University received a \$350,000 grant from the Ohio Department of Natural Resources and \$35,105 for solar energy from the Development of Energy.¹³ Total start-up costs associated with the project were \$800,000, which included a road upgrade, a cement pad, bringing utilities to the site,

⁸ U.S. EPA: Composting. <http://www.epa.gov/wastes/conserve/rrr/composting/benefits.htm> (accessed 13 November, 2009).

⁹ National Wildlife Federation – Campus Ecology: Ohio University. <http://www.nwf.org/campusEcology/docs/Ohio%20University%20Case%20Study-Composting%20FINAL.pdf> (accessed 25 November, 2009).

¹⁰ Ohio University Office of Sustainability: The Composting Project at Ohio University. http://www.ohio.edu/sustainability/Compost.htm#How_does_it_work (accessed 25 November, 2009).

¹¹ Ohio University Office of Sustainability: The Composting Project at Ohio University. http://www.ohio.edu/sustainability/Compost.htm#How_does_it_work (accessed 25 November, 2009).

¹² National Wildlife Federation – Campus Ecology: Ohio University. <http://www.nwf.org/campusEcology/docs/Ohio%20University%20Case%20Study-Composting%20FINAL.pdf> (accessed 25 November, 2009).

¹³ Ohio University Office of Sustainability: The Composting Project at Ohio University. http://www.ohio.edu/sustainability/Compost.htm#How_does_it_work (accessed 25 November, 2009).

creating a leach field, and installing the sustainability features mentioned previously.¹⁴ While expensive, the site is an excellent educational and research tool.

Oregon State University utilizes a less expensive composting system, called an Earth Tub. The Earth Tub “is a small scale, in-vessel composting system for recycling organic waste materials at the site where they are generated.”¹⁵ This unit is considered ideal for use at schools/universities, restaurants/caferterias, and supermarkets because it is a self-contained, “fully enclosed composting vessel featuring power mixing, compost aeration, and biofiltration of all process air.”¹⁶ At Oregon State University, an Earth Tub is located at its major dining center which collects food waste from the other dining locations on campus. The most basic Earth Tub system costs about \$10,000, while more sophisticated systems cost upwards of \$20,000.¹⁷

Compost Administration & Management

Many colleges and universities manage their composting programs through Offices of Sustainability or equivalent programs and offices. Compost bins are collected daily by the Grounds Departments. The more sophisticated/mechanized composting designs require little human work (other than depositing the organic waste and removing the compost material); mechanized compost systems control temperature, moisture, and aeration on their own. The less sophisticated composting designs require more regular maintenance to control temperature, moisture, and aeration by hand.

At some schools, compost maintenance is a paid professional job, while at other schools students (especially earth/environmental science majors) and faculty/staff volunteer to maintain the compost

¹⁴ Ohio University Office of Sustainability: The Composting Project at Ohio University.

http://www.ohio.edu/sustainability/Compost.htm#How_does_it_work (accessed 25 November, 2009).

¹⁵ Green Mountain Technologies: Earth Tub. <http://www.compostingtechnology.com/invesselsystems/earthtub/faq/> (accessed 25 November, 2009).

¹⁶ Green Mountain Technologies: Earth Tub. <http://www.compostingtechnology.com/invesselsystems/earthtub/> (accessed 25 November, 2009).

¹⁷ Green Mountain Technologies: Earth Tub: Price Calculator.

<http://www.compostingtechnology.com/invesselsystems/earthtub/> (accessed 25 November, 2009).

sites.¹⁸ Ultimately, maintaining a campus compost program requires the coordination of students, faculty/staff, and administrators. Composting may appear to be a difficult, time-consuming task, but the economic and environmental benefits are positive rewards for the entire campus and for the environment.

Not all colleges and universities compost on campus. At Colby College, all pre- and post-consumer food waste (waste from preparing foods and waste from after meals) from all campus dining kitchens is trucked off campus and composted. Food waste is collected daily from the kitchens and dish rooms on campus and is placed in sealable five-gallon buckets. Trucks transport the buckets from the kitchens and dining locations to the composting bin at the campus's Physical Plant Department. The buckets are emptied into the compost bin and are returned to the kitchens, where they are washed and reused. As needed (usually once a month), the compost material is removed "by an outside transportation firm and [is] then taken to the Hawk Ridge Composting Facility" in Unity Plantation, Maine.¹⁹ The Hawk Ridge Composting Facility is a facility of New England Organics, a company that "provides world-class removal, transportation, recycling, processing, and marketing of organic resources – including short paper fiber, ash, wood wastes, food wastes, biosolids and compost."²⁰ In February 2009, the Hawk Ridge facility was certified and admitted to the National Biosolids Partnership's Environmental Management System (EMS) for Biosolids program.²¹

In 2005, Colby College calculated that its "net annual savings in composting versus using garbage disposals [was] \$10,500."²² Colby College's cost savings totaled \$22,500; this figure included a \$2,000 savings in electrical costs for running garbage disposals, a \$10,000 savings in water use, and a

¹⁸ Ohio University: Office of Sustainability. http://www.ohio.edu/sustainability/Compost.htm#Collecting_compost (accessed 3 November, 2009); Second Nature: Education for Sustainability.

http://www.secondnature.org/efs/profiles/profile_middlebury.htm (accessed 3 November, 2009); Evergreen State College: Compost Facility. <http://www.evergreen.edu/cell/compost.htm> (accessed 3 November, 2009).

¹⁹ Colby College: Dining Services Sustainability Initiatives – Composting (March 2007).

<http://www.sodexhocares.com/resources/SustainabilityProfileColby.pdf> (accessed 25 November, 2009).

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²¹ National Biosolids Partnership: Press Release (February 2009).

http://www.biosolids.org/docs/NBP_EMS_PR_to_New%20England%20Organics_ME_022709.pdf (accessed 25 November, 2009).

²² Colby College: Dining Services Sustainability Initiatives – Composting (March 2007).

<http://www.sodexhocares.com/resources/SustainabilityProfileColby.pdf> (accessed 25 November, 2009).

\$10,500 savings in sewage fees.²³ Contrastingly, the cost of composting was \$12,000. Composting did include costs, such as labor for dining hall/kitchen employees “to separate and collect food waste in the dish room and to collect buckets and transport and empty them in the composting bin at the Physical Plant Department (PPD) on campus;” a transportation fee to remove the compost material from the Colby Physical Plant Department and bring that material to the Hawk Ridge Facility; and a composting fee from the Hawk Ridge facility.²⁴ Colby College eventually buys back the compost for landscaping use on its campus, allowing its compost program to come full circle. Despite the argument that an on-campus compost facility reduces the pollution and costs resulting from transportation/exportation of waste, Colby College has chosen to outsource its compost materials to the New England Organics company. Schools that are hesitant about the labor and management commitment of an on-campus compost site/facility may choose to follow Colby College’s example. Instead of an on-campus composting site/facility that would be left to campus students and faculty/staff to manage, outsourcing to a company that specializes in waste management and recycling can provide the “experience and knowledge with liquid and solid residuals [to] help clients build, manage, and maintain sustainable and effective waste solutions.”²⁵

Starting Small

When asked how the University of Vermont created its Office of Sustainability, Mieko A. Ozeki, the University of Vermont’s Sustainability Projects Coordinator, stated that the University first began by setting small goals. On campus, small groups of students and faculty interested in sustainable practices gathered together and eventually expressed their interest to the University’s administration. Students and faculty from these groups created an Environmental Council and smaller task forces/committees, which served to stimulate attention and drive initiative on campus; individual task forces each focused on a specific topic (energy efficiency, composting/recycling, etc.) and the larger Environmental Council

²³ Colby College: Dining Services Sustainability Initiatives – Composting (March 2007).
<http://www.sodexhocares.com/resources/SustainabilityProfileColby.pdf> (accessed 25 November, 2009).

²⁴ Colby College: Dining Services Sustainability Initiatives – Composting (March 2007).
<http://www.sodexhocares.com/resources/SustainabilityProfileColby.pdf> (accessed 25 November, 2009).

²⁵ New England Organics: <http://www.newenglandorganics.com/who-we-are/> (accessed 25 November, 2009).

(which was re-born in 2008 as the Environmental Forum) met monthly as a grassroots and middle management network that supports greening efforts and student involvement at the University. The Environmental Council and task forces also appointed campus Eco-Reps, who worked to change student behaviors; for example, through posters/signs and demonstrations, Eco-Reps taught students and faculty to distinguish which materials were compostable and recyclable, and which were disposable. After the Environmental Council gained enough support on campus and the administration agreed that the University should make a commitment to sustainable practices, the University of Vermont decided to sign the President's Climate Commitment (a commitment to climate neutrality on their campus by a chosen date); the University needed to demonstrate that a campus group/office would manage the commitment and, as a result, the University of Vermont created an Office of Sustainability in 2007/2008.²⁶

Composting has been an area of involvement at the University of Vermont for many years. Erica Spiegel, the University of Vermont's Solid Waste/Recycling/Surplus Manager, stated that the University has collected food scraps for composting since 1990, long before its Office of Sustainability was created in 2007/2008. The University of Vermont does not (yet) compost its own food waste on University property; instead the University collects and delivers organics (food) to a local municipal non-profit compost facility. Ms. Spiegel said that when composting became a sustainable practice that the University wished to enact on-campus (over ten years ago), it made sense to use an existing community-wide facility because start up costs for the site and the lack of land were reasons the University did not compost on-campus. However, the University is currently in the planning stages of creating its own composting site within two to four years. When asked if it is more cost-effective for the University to have an outside company remove/transport/process the compost instead of composting on-campus, Ms. Spiegel stated that the Office of Sustainability is currently conducting research to determine which method is more economically beneficial for their campus. Even though she believes it will likely cost more to compost

²⁶ Mieke A. Ozeki: University of Vermont – Sustainability Projects Coordinator. Email: Sustainability@uvm.edu. Phone: 802-656-0906; University of Vermont: Office of Sustainability. <http://www.uvm.edu/~sustain/> (accessed 4 November, 2009).

on-campus, the Office of Sustainability wants the opportunity for research and student involvement, which does not exist with the current process. From an economic consideration, waste disposal landfill fees are high in Vermont. Due to the fact that the University of Vermont pays \$90/ton, keeping heavy food waste out of landfills makes sense economically as well as environmentally.²⁷

Conclusion

One of the major roles of an Office of Sustainability at C.W. Post would be to connect people and resources to effectively facilitate the achievement of sustainability initiatives on its campus and even in the wider community. Composting would be a valuable component of an Office of Sustainability at C.W. Post. Composting would allow the campus to shrink its ecological footprint, reduce its waste management and landscaping costs, decrease pre- and post-consumer food waste, produce a valuable soil amendment, and create new learning and research opportunities for faculty and students.²⁸ C.W. Post should examine the Offices of Sustainability and composting programs at other colleges; our campus can learn from the many successful programs already in operation. An Office of Sustainability is necessary for moving sustainability initiatives forward at C.W. Post. Only with an Office of Sustainability can the University and its campus plan, organize, and implement sustainable practices.

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²⁷ Erica Spiegel: University of Vermont – Solid Waste/Recycling/Surplus Manager. Email: Erica.Spiegel@uvm.edu. Phone: 802-656-4191.

²⁸ Erin Sykes: Ohio University Office of Sustainability – Program Assistant. Email: ee293007@ohio.edu.

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Regional Composting Resources By Lindsay Duwe

The Queens Botanical Garden's Compost Project educates the residents of NYC and works with landscapers and grounds workers at hospitals and universities.²⁹ The Queens Botanical Garden was acknowledged as a success story by the U.S. Environmental Protection Agency in September 2006. The QBG's sustainable design uses a "green roof, composting toilets and a rainwater harvest system".³⁰ The QBG's visitor center is **NYC's most advanced green building** – certified as Platinum LEED. To get started, we can attend Queens Botanical Garden compost workshops (and visit this exciting new building) or invite them to C.W. Post.

St. John's University "officially became the first college in the US to use advanced composting technology."³¹ St. John's was the first University in the U.S. to use the Rocket®. The A500 Rocket® is manufactured by U.K. based Accelerated Compost and is distributed by NATH Sustainable Solutions. The North American Trading House, (NATH) is a Minority-Owned Business Enterprise that is certified by the State of New York and the City of New York.³ St. John's University got their A500 Rocket model from them.

The Rocket® requires approximately fifteen to twenty minutes of labor per day. "The cost of operation is only wood chips (bulking agent) and minimal electrical power."⁴ The A500 Rocket® is 6 ft long, 2 ft wide, 4 ft high, and weighs 400 pounds when empty. It can hold up to 80 gallons of food waste per week or 160 gallons of mixed waste per week. The A500 Rocket® costs about \$4 per month to run. It only takes 14 days for the Rocket to convert food waste into compost that can be used for landscapes. The campus club, P.E.A.C.E., and/or the Earth & Environmental Science Club can gather and deposit the

²⁹ <http://www.queensbotanical.org/education/56847/composting>

³⁰ <http://www.epa.gov/osw/conservation/rrr/greenscapes/projects/qbg.htm>

³¹ www.eatlearnlive.com/News/StJohns_University_Composting.pdf

³ www.natradinghouse.com

⁴ www.natradinghouse.com

food waste from the kitchen areas into the Rocket® compost machine. They will deposit the food waste into the composter with the addition of a bulking product, such as wood chips.⁵

Like St. John's, C. W. Post can sign a Memorandum of Understanding with the EPA and establish a GreenScapes Partnership.⁶ To sign up as a partner with the EPA partnership, all that is needed is to go online and fill out the form. By following in St. John's University's footsteps as well as other colleges, we can begin to create a sustainable campus.

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Colorado College- Compost

<http://sustainability.coloradocollege.edu/compost>

Evergreen State College-Compost Facility

<http://www.evergreen.edu/cell/compost.htm>

Harvard University- Facilities Maintenance Operations-Organic Landscaping-Composting

http://www.uos.harvard.edu/fmo/landscape/organiclandscaping/getting_started.shtml#composting

Memorandum of Understanding between the United States Environmental Agency (EPA) and St. John's University

www.stjohns.edu/campuses/enhancements/stjsi/mou2.stj

NATH Sustainable Solutions

www.natradinghouse.com

Queens Botanical Garden- Composting

<http://www.queensbotanical.org/education/56847/composting>

St. Michael's College- Compost

www.smcvt.edu/sustainability/projects/compost.asp

St. John's University-The Compost King of Queens

http://www.eatlearnlive.com/News/StJohns_University_Composting.pdf

The New York City Compost Project

⁵ www.natradinghouse.com

⁶ www.stjohns.edu/campuses/enhancements/stjsi/mou2.stj

<http://www.nyccompost.org/resources/publications.html>

U.S. Environmental Protection Agency: Adding Green to Queens Botanical Garden --Queens Botanical Garden Uses Innovative Methods to Promote Sustainable Design
<http://www.epa.gov/osw/consERVE/rrr/greenscapes/projects/qbg.htm>

Appendix by Meghan McKillop

*These are other schools with composting initiatives/programs that can also serve as positive examples and models of sustainability:

Harvard University – Office for Sustainability
<http://www.greencampus.harvard.edu/>

Middlebury College – Sustainability Integration Office
<http://www.middlebury.edu/administration/enviro/>

Saint Michael’s College – Office of Sustainability
<http://www.smcvt.edu/sustainability/default.asp>

University of Maryland – Office of Sustainability
<http://www.sustainability.umd.edu/index.php>

Green Buildings

By Franci Freilich

Sightlines, a campus facilities analysis service, cited C.W. Post for being one of the top energy-efficient colleges/universities in the Northeast³². C.W. Post consumes 83,000 British Thermal Units per square foot, well below the average of 138,000 BTUs at comparable campuses. How can C.W. Post expand upon this achievement? I will look at how the successful improvements made to Winnick House, the 89 year-old Tudor style mansion, can be applied to other aging buildings on campus. I will also look at some solutions that other universities have found helpful, as well as explore some steps that can increase efficiency with minimal or no cost to the University.

Poorly insulated windows and doors; out-dated, poorly run, energy hogging air-conditioning systems; as well as unnecessary electric lighting are classic examples of wasted energy. The re-design of the Winnick House administrative building air conditioning system earned the C.W. Post Campus the Platinum Award for Excellence in the Category of Energy from the American Council of Engineering Companies of New York.³³

There are many aging buildings on campus that will require similar renovations, including Life Sciences/Pell Hall, Kumble Hall, and the B. Davis Schwartz Memorial Library. LEED, the Leadership in Energy and Environmental Design, has a Green Building Rating System, which includes a certification for Existing Buildings (EB). C.W. Post should strive to earn an EB certification for these aforementioned buildings.

A popular, modern option for retrofitting existing buildings is called “green performance contracting.” Green performance contracting is where existing buildings can be turned into high-efficiency green buildings, in which ventures can be completed with minimal or no upfront costs, and future costs and savings are pretty much guaranteed. Green performance contracting looks at the entire

³² Post Press- Spring 2009- page 17

³³ Post Press- Spring 2009- page 17

footprint of the building and addresses issues involving: water efficiency, green housekeeping, renewable energy, waste management, and green purchasing policies.³⁴ For example, “The National Geographic Society invested \$6 million in its green retrofit and increased its real estate value by \$24 million, which equals a \$4 return for every dollar spent.”³⁵ Therefore, C.W. Post will have the opportunity to improve their buildings both ecologically and financially.

At Harvard University’s Office of Sustainability, their **Green Building Manifesto** takes into account: lighting, HVAC, plug load, plumbing fixtures, interior architecture, furniture and seating, landscaping and storm water, fume hoods, minimum insulation requirements, window performance, and skylight performance. Their aim is to meet LEED requirements, but certification would not be a necessity. Harvard has a very well laid out ideal to obtain “benchmark” status for high performance buildings. Many other universities are moving in this direction as well. For example, Cornell University has started a Green Building Oversight Committee to promote green goals and standards and to develop a system to measure performance and results.³⁶

The American College and University Presidents’ Climate Commitment (ACUPCC) singled out buildings as the major environmental concern on college campuses. It is understood that buildings that are not built or retrofitted “green” are responsible for a “major proportion of a campus’ carbon footprint.”³⁷ The ACUPCC was just created in early 2007, and in its short nearly three years, 662 college and university presidents, representing 35% of the college student population, have joined the committee and pledged to neutralize greenhouse gas emissions on their campuses. They have committed to dedicate research and programs to the development of climate change solutions, and they are encouraging their students to continue their focus on climate change even after graduation.³⁸

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<http://www.awarenessintoaction.com/search.php?author=Paul+von+Paumgarten+%F+Alliance+for+Sustainable+Built+Environments>

³⁵ <http://www.awarenessintoaction.com/whitepapers/how-existing-buildings-high-performing-green-leed-certified.html>

³⁶ <http://www.sustainablecampus.cornell.edu/getinvolved/gboc.cfm>

³⁷ <http://www.presidentsclimatecommitment.org/resources/eebrp>

³⁸ http://secondnature.org/news/secondnature_USGBC_award.html

“According to the USGBC, there are nearly 4,000 LEED registered projects on the nation’s campuses. The USGBC and ACUPCC leaders are working to fully transform the higher education sector toward sustainable operations, including green building practices and renewable energy use, resulting in dramatic reductions in pollution and energy costs. The goal is to make green building ‘second nature’ - the default for the entire building sector of society.”³⁹

Conclusions

Among the most frustrating of issues regarding building energy efficiency is the visible waste. There is an exterior light that remains on in the front of Pell Hall until at least 11 o’clock in the morning. Why do those automatic toilets flush so often? Many classrooms become overheated in the wintertime and over air-conditioned during the summer. There are simple solutions that should be looked into to prevent this clear squandering of resources. It is the responsibility of everyone to avoid this unnecessary waste.

It is clear that there are many environmental benefits that can be obtained by concentrating on making existing buildings more efficient. Long Island University would be setting a great example for surrounding communities by exhibiting an interest in making its campus “more green.”

By forming an Office of Sustainability, Harvard University and Cornell University were better able to define and execute their goals. C.W. Post could certainly benefit from this model.

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³⁹ http://secondnature.org/news/secondnature_USGBC_award.html

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Renewable Energy
by Michael Celano

A university is a great place to study how sustainability can work. It is comparable to a small, self-sustained city. That is why students and university leaders should take the task of setting an example to the rest of the public. The most popular sources of alternative energy are wind power, hydroelectric energy, solar power, and biomass. Wind energy turns turbines to generate electricity on scales ranging from individual homeowners using small turbines to meet some of their energy needs to large-scale wind farms. The simplest form of biomass is burning wood for heat, but that's just the beginning. Other crops such as switch grass are proving very practical, and technologies such as bio-digesters reduce pollution, provide valuable products, and energy.

At C.W. Post, wind would be a real challenge. Wind is very cost efficient, but it requires a lot of space for anything but a small demonstration unit. Solar energy is an abundant resource and is very feasible for our university. Solar panels can be installed on roofs, on the ground, or even as an awning over a window or a doorway. A small solar electric system is usually connected to the utility grid, but it could remain "off-grid," and excess power can be stored in a battery bank.

According to National Geographic, if we install 42 solar panels on building roofs it will produce enough electricity to power the equivalent of three typical Long Island homes. Solar panels will typically pay for themselves in less than 15 years. The global industry is growing very rapidly. "By 2020, global installed solar capacity could be 20 to 40 times its present level."⁴⁰ The solar power sector is still very young.

40. Lorenz, Peter, Dickon Pinner, and Thomas Seitz. *The economics of solar power*. Forbes.com, 07 Sept. 2008. Web. 11 Nov. 2009.
http://www.forbes.com/2008/07/09/solar-power-economics-lead-cx_pldpts_0708mckinsey.html.

The life expectancy of a typical solar panel system can also be 40 to 50 years if properly maintained. Systems generally require minimal maintenance. Over its 40 year expected life,

“a 10 kW system will provide the equivalent CO₂ reduction as planting 1450 trees. (Based on typical utility pollution, it will prevent emissions of 963,125 lbs of carbon dioxide, 4,237 lbs of sulfur dioxide, and 1,364 lbs of nitrogen oxides.) It will produce 575,000 kilowatt hours of electricity, as much as would be generated by burning 583,000 lbs of coal.”⁴¹

In addition to providing energy, the panels can be used as a learning tool. A new solar power system and building electricity use can be monitored, and students will be able to access real-time data from the college's website.

Universities are starting to install solar power systems on their own campuses. Colorado State University just installed a two-megawatt solar power plant on their campus, which has enough solar power to meet more than 10% of the University's electric energy needs on the campus.

On Long Island, Brookhaven National Lab will soon install a 50 MW system, the largest in New York State. Farmingdale State College, also located on Long Island, has four 20KW solar units located throughout their campus. Farmingdale State College does a great job incorporating students into these projects. They now teach classes on electricity, electronic controls, heat transfer, and fluid mechanics to students who learn firsthand from these solar panels. The college is initiating steps to utilize this large-scale demonstration project in education, research, and community service as well. “Farmingdale Solar Energy center is planning to provide training in installation and maintenance of PV panels as its first and one of the most important steps to meet the local industry needs”⁴²

Yale University is another school that is using solar panels to lessen their greenhouse gas output. “Yale is committed to a level of investment in energy conservation and alternate energy sources that will

⁴¹ *Solarmarket.com*. Solar Market. Web. 04 Dec. 2009. <http://www.solarmarket.com/why.html>.

⁴² *Farmingdale.edu*. Farmingdale State College. Web. 12 Nov. 2009. <http://info.lu.farmingdale.edu/depts/met/solar/background.html>.

lead, based on current projections, to a reduction in its greenhouse gas emissions.”⁴³ In 2007 Yale installed solar panels on a dorm building. They project that two-thirds of the dorm building’s electric requirements will be met by these solar panels. The University’s “Student Task Force” for environmental partnership employs more than 25 students to act as sustainability educators and coordinators around campus. Their campus is now a learning lab for students not just interested in sustainability but also for engineering majors, earth science majors, economic majors, and many others.

Colleges and universities, as well as their students, are the leaders of innovation in our society. Decreasing the College carbon footprint is not and will not be an easy task but with hard working students and professors on hand with an Office of Sustainability, that thought could become reality.

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⁴³ *Yale.edu*. Yale University. Web. 12 Nov, 2009.

http://www.yale.edu/divinity/news/060710_news_soloar.shtml.

Energy Efficiency: Managing Greenhouse Gases

by Rebecca Lee

C.W. Post needs an Office of Sustainability, an office dedicated to helping the community of C.W. Post and its neighboring towns. This office can help students translate their ideas for a greener campus into action. One branch of environmental science that the Office of Sustainability can focus on is managing greenhouse gases.

We can do this is by burning less fossil fuels in the buses, vans, and cars around campus. On Yale's campus, they use bio-diesel buses, which reduces greenhouse gases. At C.W. Post, the Nassau Bus system comes right on campus. We can all learn to use the buses once in a while or car pool. The school also has plenty of Public Safety cars and vans. We could slowly change them into energy efficient cars, such as the Toyota Prius. For example, the campus can let go of older trucks and vans with low miles per gallon and trade them in for more fuel efficient vehicles. We can also use Smart Cars. Certain diesel Smart Cars in Europe can go up to 80 MPG (2). Since there is only one person per Public Safety car, the Smart Car would be a great idea.

Brown University decided to make an office designed specifically for their transportation systems. Brown offers a “comprehensive transportation demand management program that includes incentives for carpools, subsidized fares for bus ridership, and parking policies that discourage single-occupancy vehicles. Significant changes and additions were made to the campus shuttle program.”(3) Brown has some excellent ideas. At C.W. Post we should have students pay less for parking if they are carpooling. Students at Post usually commute alone and because of this, there is an abundance of cars in our parking lots. Our policies should also encourage more people to take the bus. When Brown made it so that their students could take the buses for free in their area, the percentage of not only students, but teachers and faculty who took public transportation went up 189%.

The College can also do more to encourage students to bike, skateboard, and rollerblade around campus. Right now, too many people drive their car to get across campus. Students can be given an

opportunity to rent a bicycle cheaply through the school. Princeton University does this and they have a similar climate to ours. (1) There should also be more bicycle racks around campus for students to use. Once students see these changes, they might consider bringing their bikes from their homes to ride around campus.

Our campus already has a strong commitment to greenery and trees. We have an arboretum on campus. Do we need more? We should examine that possibility. Yale has done a similar thing where they have made their campus literally greener.(4) At Yale they planted a large amount of shrubbery and trees which helped take away pollutants in the air. We can ask Aramark to contribute and buy saplings to populate the campus. Fruit trees would be nice. Fruit could be sold in places such as the Hillwood Café.

C.W. Post administrators work hard to improve energy efficiency on campus, but students, faculty, and staff can do a lot more to conserve energy. The main way to do this would be to educate more people about what they're missing by not doing things efficiently. At Emory University, students, faculty, and staff compete annually to use the least amount of energy. The faculty and staff can submit green ideas for prizes and incentive awards to restore local ecosystems and reduce their carbon footprint. These incentive awards are grants that range from \$100 - \$5,000.

Most classrooms have motion sensors that turn off lights when there is no movement in a room. We can close computers when they're not in use or put them into sleep mode. We can unplug the unnecessary electronic devices when they are not in use, such as microphones, screen projectors, and pencil sharpeners. We can also lower thermostats by two degrees in the winter months.

Dartmouth College is another school to follow. "Dartmouth has been using efficient co-generation to produce heat and electricity since 1904 and already requires that new buildings are constructed with tight envelopes that are super-insulated and use innovative energy-saving technologies. In the years ahead we will improve the energy efficiency of existing buildings, investigate alternative energy options, and promote energy conservation on campus."(6) C.W. Post dorms are so warm that people wear shorts in the dorms.

Students at Princeton University joined recyclemaniacs.com to promote recycling. At C.W. Post we can give the campus an incentive to be more eco-friendly. Successful dorms might get rewards: which dorm will be the first to get LED lighting? LEDs are the most energy efficient lights on the market!

An Office of Sustainability is necessary not only at C.W. Post, but everywhere. The problem we face with an energy crisis is coming sooner than we think.

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APPENDIX

Office of Sustainability Programs

Cornell University by Franci Freilich

Cornell University, in Ithaca, NY, has a well-established Office of Sustainability. Cornell's Office of Sustainability has documented guidelines and goals. Cornell refers to their program as the Environmental Compliance and Sustainability Office (ECOS). It was formed to "ensure compliance with regulations to protect the air, water, and other natural resources throughout the university, and leads the campus Operations Sustainability Initiative." Their guidelines state that the goal of ECOS is to:

- Improve Cornell's performance in meeting or exceeding regulatory standards;
- Reduce the university's environmental footprint and enhance the local communities;
- Maximize operating efficiencies while meeting requirements and furthering the university's voluntary environmental initiatives;
- Enhance Cornell's environmental leadership and reputation.

Cornell University has benefited greatly through efforts led by ECOS. In 2010, Cornell will exceed the CO₂ target goals that they set for themselves under Kyoto protocols. They have a new building on campus that was certified by the Green Buildings Council in 2005, and they are applying the same principles to other building projects. They save 25 million Kwh each year because they now utilize a lake source cooling system. Their recycling program is said to keep 2,000 tons of waste out of landfills each year. They have an award-winning Transportation Demand Management Program on campus that has reduced the number of parking permits by 25% and has enabled Cornell employees to commute 10 million fewer miles each year.

It is clear that having an Office of Sustainability has enabled Cornell to become a leader in the green campus movement. They have set an enviable example of environmental responsibility.

University of Maryland – Campus Sustainability by Meghan McKillop

Mission

In May 2007, the University of Maryland signed the **American College and University Presidents' Climate Commitment**. This commitment “provides a framework and support for American colleges and universities to eventually become carbon neutral.”⁴⁴ The University of Maryland’s mission as a signatory of this commitment is to reduce its greenhouse gas (GHG) emissions from campus operations and move toward the goal of carbon neutrality. After **conducting an inventory** of its campus emissions, the University of Maryland developed a **Climate Action Plan** that will help the campus accomplish its **goal of becoming carbon neutral by 2050**. The action plan strategies address power and operations, transportation, solid waste/recycling/composting, administrative policies, education and research, and financial strategies.⁴⁵ Over the next ten years, the University plans to make substantial progress in addressing energy issues; its ten year goal is to slash energy use, expand green spaces, dramatically reduce its carbon footprint, and build/retrofit buildings to comply with strict environmental standards.⁴⁶ **With sustainability as a mission, the University aims to be “a national model for a Green University.”**⁴⁷

Key Strengths

In the fall of 2009, the University “convened a new 16-member University Sustainability Council to advise the President, the Office of Sustainability, and the campus community about issues related to the integration of sustainability into campus operations.”⁴⁸ The organization and communication of offices, administration, and the campus community facilitates smooth and effective decisions and practices.

⁴⁴ University of Maryland: Campus Sustainability – Presidents’ Climate Commitment.
http://www.sustainability.umd.edu/content/about/climate_commitment.php (accessed 1 December, 2009).

⁴⁵ University of Maryland: Campus Sustainability – Presidents’ Climate Commitment.
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⁴⁶ University of Maryland: Campus Sustainability – University Strategic Plan.
http://www.sustainability.umd.edu/content/about/university_strategic_plan.php (accessed 1 December, 2009).

⁴⁷ University of Maryland: Campus Sustainability – UM Sustainability Snapshot.
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⁴⁸ University of Maryland: Campus Sustainability – UM Sustainability Snapshot.
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Regarding climate, the University of Maryland's first Climate Action Plan (which was finalized in September 2009), includes over forty strategies for how the campus will work toward carbon neutrality by 2050.

Regarding energy, the University's Combined Heat and Power Plant (which earned an EPA Energy Star Award in 2003) produces electricity, steam, and chilled water for the campus, and the campus's \$20 million energy conservation project (in nine campus buildings thus far) is designed to save nearly \$2 million a year in energy costs and reduce the CO₂ emissions by over 4,200 tons per year. Regarding green buildings, all new construction and major renovations must (at a minimum) meet the LEED (Leadership in Energy and Environmental Design)-Silver green building standard of the U.S. Green Building Council. Regarding waste management and recycling, the campus recycling rate increased from 17% in 2003 to 54% in 2008. What separates the University of Maryland from other colleges and universities with sustainability programs/goals is its level of student activism; the **University was named "America's Greenest Campus" by Climate Culture** (in October 2009) for having the largest number of campus community members register on the site and calculate their carbon footprint. Even before this recognition, in April 2007, **students overwhelmingly voted in favor of increasing student fees by \$12 per year in an effort to fund the purchase of clean, renewable energy**. This level of student interest, involvement, and activism creates a campus environment that champions sustainability initiatives.⁴⁹

What C.W. Post Can Learn from the University of Maryland

The University of Maryland is an exemplary model for C.W. Post. Sustainability is driven at the University of Maryland by the principles of building an inclusive community, embracing the power of technology, acting with entrepreneurial spirit, partnering with others (locally and globally), and taking

⁴⁹ University of Maryland: Campus Sustainability – UM Sustainability Snapshot. http://www.sustainability.umd.edu/content/about/sustainability_snapshot.php (accessed 1 December, 2009).

responsibility for the future.⁵⁰ C.W. Post can also learn from the University of Maryland's methods of implementing and maintaining its sustainable initiatives/practices. The University of Maryland takes direct action to actualize its sustainable practices; however, "the University will complement these concrete actions with its teaching, research, and development efforts in energy science and policy, smart growth, environmental mapping, sustainable agriculture, and other fields."⁵¹ By focusing on specific sustainable practices as well as on education, research, and broader fields that encompass/address sustainability, other schools can follow the University of Maryland's example and commit their campuses to "all that sustainability encompasses – social equity, environmental management, and economic prosperity."⁵²

⁵⁰ University of Maryland: Campus Sustainability – University Strategic Plan.
http://www.sustainability.umd.edu/content/about/university_strategic_plan.php (accessed 1 December, 2009).

⁵¹ University of Maryland: Campus Sustainability – University Strategic Plan.
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University of Iowa by Michael Celano

The University of Iowa Office of Sustainability's key strengths include energy conservation and renewable energy, finding sustainable materials and life-cycle costs (including recycling and purchasing), green buildings and environmental friendly designs for new construction, the reduction of the carbon footprint of University-related transportation and travel, and the integration of sustainability into the academic mission of the University of Iowa. The Office of Sustainability's functions include the following: "communications including web and print based materials on campus sustainability efforts, media relations, and information processing, connections to individuals and organizations with similar learning, research, and living interests, promotion of a sustainable-oriented culture including behavioral changes, coordination of current and future sustainable projects across campus, credibility by collecting data, writing and publishing progress reports" (Uiowa.edu)