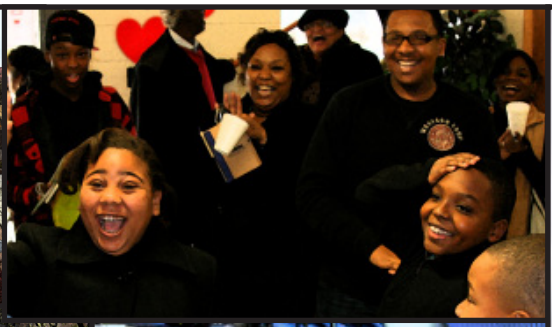

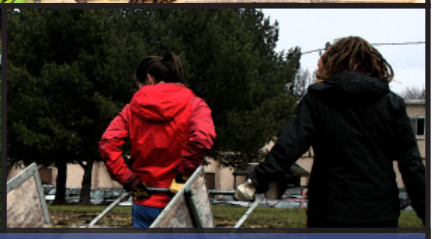

2011 *higher education* sustainability *review*

AASHE

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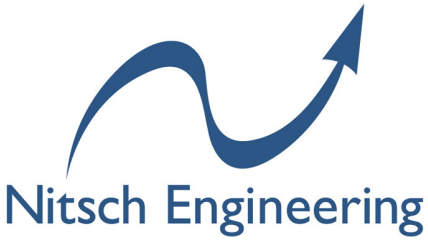

{COVER}

A mosaic of sustainability in higher education.

Photos courtesy of:
Earlham College
GREEN Costa Rica Program
Kentucky Community and Technical College System
Metropolitan Community College
New York University
Portland State University
Unity College
University of Colorado Boulder
University of Louisville
University of Wyoming

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The Association for the Advancement of Sustainability in Higher Education (AASHE) is helping to create a brighter future of opportunity for all by advancing sustainability in higher education. By creating a diverse community engaged in sharing ideas and promising practices, AASHE provides administrators, faculty, staff and students, as well as the businesses that serve them, with: thought leadership and essential knowledge resources; outstanding opportunities for professional development; and a unique framework for demonstrating the value and competitive edge created by sustainability initiatives.

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AASHE
Association for the Advancement of Sustainability in Higher Education

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Letter from the Editor

"What will your voice be and how will you cultivate the voices of those around you?" asked Second Nature Presidential Fellow Mitchell Thomashow during the closing moments of his plenary session at the AASHE 2011 conference in Pittsburgh. Urging attendees to get the word out about their institution's sustainability accomplishments as one of the most effective ways toward a sustainable future, he said: "Every sustainability project should have an interactive, dynamic explanation."

Not only do AASHE's annual reviews of sustainability in higher education provide a chance to celebrate, reflect and quantify successes and challenges in the movement, but they are also a chance to celebrate storytellers. AASHE Bulletin, the weekly e-newsletter that fuels the content of these annual reviews, would not be possible without the intrepid students and industrious faculty and staff who share their hard work through words, video, images and interactive dialogue. Thanks to these storytellers, AASHE Bulletin captured many notable trends in the higher education sustainability movement:

- The number of Bulletin stories dealing with higher education access and affordability increased from three in 2009 and four in 2010 to 36 in 2011.
- Nearly 60 percent of all new programs or training opportunities reported in 2011 were focused on training students for renewable energy and green careers with $543 million recorded toward the effort.
- 284 energy-related initiatives were announced in 2011 including new solar installations, energy competitions, and energy efficiency efforts.
- With 191 environmentally friendly building stories in 2011, there were more green buildings on campus reported in the Bulletin than ever.

Amid these significant accomplishments, however, there is evidence of another important strand of the higher education sustainability movement growing stronger. Campuses have stepped up their efforts to include their surrounding (and distant) communities into their sustainability conversations and initiatives, forging new partnerships that move the higher education sustainability movement toward a more inclusive dialogue and expanded focus. Among other community engagement efforts, in this review you will find higher education initiatives to create food-secure communities on campus and off, and synergies between community colleges and their local communities to address what is becoming one of the higher education sustainability movement's biggest hurdles: access to an affordable college education that results in strong job prospects and low student debt.

We hope you learn as much from these storytellers as we did.

Sincerely,

Margo Wagner

Margo Wagner
AASHE Bulletin Editor

Photo: Green roof at Portland State University in Oregon.

AASHE BULLETIN LENS

In 2011, more than 2,000 items were published in AASHE Bulletin, including:

- 1,449 individual stories
- 234 job opportunities
- 152 events
- 138 opportunities
- 120 new resources

All were geared toward the higher education sustainability community and were collected through individual submissions, Internet searches, list-serve reviews, Google alerts and Twitter feeds. For more information on the types of stories we are able to include, visit our AASHE Bulletin Submission Guidelines.

This section of the Review provides a portfolio of 2011 higher education sustainability efforts through the lens of AASHE Bulletin.

Courtesy of Earlhan College.

Higher Education Access & Affordability

The number of Bulletin stories dealing with higher education access and affordability increased from three in 2009 and four in 2010 to 36 in 2011.

The conversation about access to an affordable higher education heated up in 2011 with Occupy protests in the U.S. and Canada that addressed rising tuition costs, weak job prospects, shrinking academic programs and student debt that was at an all-time high. The number of Bulletin stories dealing with higher education access and affordability increased from three in 2009 and four in 2010 to 36 in 2011.

"Students are worried," reported an October 2011 article in the Chronicle of Higher Education that tallied Occupy protests on nearly 100 campuses. Said a student organizer at Indiana University-Purdue University at Fort Wayne: "I have amassed $20,000 so far in debt...many students are not certain that they're going to get jobs, and that's why we're here."

A large concentration of the Occupy movement in 2011 focused on California campuses. Gov. Jerry Brown signed a budget in June 2011 that cut higher education by $1.3 billion and students in all 23 California State University campuses saw a 12 percent rise in tuition. The University of California, Davis was home to one of the most controversial incidents as students staging a peaceful sit-in were pepper-sprayed by police officers. Students at the University of California, Berkeley who were setting up an Occupy tent city on campus were beaten and arrested by police in riot gear who broke up the encampment.

Students and faculty members urged the University of California's Board of Regents and administrators to support the "ReFund California Pledge," which called for raising taxes on the wealthiest Californians, closing tax loopholes and lowering tuition. The California State Student Association (CSSA) launched the "Bucks Start Here" campaign, organizing students at all 23 California State University campuses to send their "bucks" to Gov. Jerry Brown. The mock $650 million bills, representing the 2011 cuts to the state university system, included students' personal stories about how the cuts have impacted their lives. ◊

{For more information on strategies for higher education attainment in the U.S., see "A Deeper Look" with James Applegate, vice president of program development at the Lumina Foundation, on page 31.}

Higher Education & Food Security

Food security efforts on college campuses made up the largest percentage of the "Public Engagement" (33 percent), "Dining Services" (64 percent) and "Campus Sustainability in the Media" (21 percent) Bulletin categories.

Courtesy of the University of Louisville.

Food security efforts on higher education campuses made up the largest percentage of the "Public Engagement" (33 percent) and "Dining Services" (64 percent) categories of the Bulletin. Taken together with the "Funding" and "Grounds" categories, these four categories yielded 79 food security initiatives in 2011, on campus and off. This emerging trend is finding its voice in student activists and forward-thinking presidents like Paul Quinn College (Texas) President Michael Sorrell.

After grocers told Sorrell that they didn't want to invest in the underserved Dallas neighborhood where Paul Quinn College is located, he contacted the Sustainable Food Project at Yale University (Connecticut) for a crash course on organic agriculture and educational programs that emphasize the importance of local, healthy food. In early 2011, the college planted the first seeds in a former football field that now serves the college as a student-run, two-acre urban farm. Part of the harvest is donated to nonprofit groups that feed the hungry.

While administrators can be the catalyst for higher education food security initiatives, these efforts often involve several sectors of the campus community. Popular student-led initiatives, for example, toward food secure communities in the Bulletin include campus-community food gardens, farmers markets, campus co-ops and sustainable agriculture community outreach.

An October 2011 USA Today article reported that students at 216 campuses in 46 states and five countries are asking their campuses for healthier and sustainable foods as part of the national Real Food Challenge. The movement calls for institutions to serve more organic, locally grown foods that don't come from industrial farms and has issued a challenge to institutions to spend 20 percent of their food purchasing budget on "real foods."

From the growth of sustainable agriculture curriculum to the student push for "real" food, the topic of campuses working toward food security appeared the most often (with 21 percent of the total stories) in the "Campus Sustainability in the Media" Bulletin category. "I think our generation or just people in general are becoming more conscious about the quality of what they eat, where it comes from and if it's sustainable," a Wesleyan University (Connecticut) sophomore said in an Associated Press story about higher education students' leanings toward sustainable, locally produced food. This article was picked up by media outlets nationwide including The Washington Post, MSNBC Today, Boston Globe and the San Francisco Examiner.◊

Photo: Solar training facility at Metropolitan Community College in Nebraska.

Sustainability in the Curriculum

Nearly 60 percent of all new academic programs or training opportunities were focused on training students for renewable energy and green careers. Compared to 2009, green job training efforts have skyrocketed, with a 142 percent increase.

New Academic Programs

The development of new academic programs on sustainability continued at a steady pace in 2011. A total of 137 new programs (either planned or launched) were captured in the Bulletin in 2011, compared to 146 such programs in 2010. Of these 137 efforts, 45 were degree programs, including:

- 14 graduate programs
- 29 undergraduate programs
- 2 associate degree programs

continued on the next page

Popular non-degree training opportunities included sustainable agriculture, green business and, with the largest percentage (83 percent), green job training.

Nearly 60 percent of all new academic programs or training opportunities were focused on training students for renewable energy and green careers. Compared to 2009, green job training efforts have skyrocketed, with a 142 percent increase. Community and technical colleges are at the helm of the green job training movement with more than half of the new programs and opportunities taking place on two-year campuses.

Funding for green job training was a stand-out theme in 2011 with $543 million recorded in the Bulletin toward green job training and curriculum. Major funding initiatives targeted two-year campuses including a $500 million grant from the U.S. Department of Education and U.S. Department of Labor to 32 community colleges and consortia for job training and workforce development.

Also notable, the Sustainability Education and Economic Development (SEED) initiative of the American Association of Community Colleges received $1.3 million from the Kresge Foundation to host green job training workshops and an awards program for community colleges.

Twelve new renewable energy campuses and training centers (created or planned) were announced in 2011. The green job movement shows no signs of slowing in coming years, as evidenced by the $8 billion "Community College to Career Fund" proposed in President Barack Obama's budget for the 2013 fiscal year. The fund would provide money to community colleges and states to form partnerships with businesses to train an estimated two million workers in high-growth and in-demand areas.

{*For more information about the community college's role in green workforce development, see "A Deeper Look" with Sustainability Education and Economic Development (SEED) Director Todd Cohen on page 36.*}

Curriculum Integration

The Bulletin captured 51 events and new resources dedicated to helping faculty integrate sustainability into their courses and the campus curriculum. This in fact was the most popular topic of both the "Events" and "New Resources" Bulletin categories. Also in 2011, the Bulletin ran 87 new faculty announcements whose positions specifically focused on furthering education for sustainability.

Co-Curricular Student Involvement in Campus Sustainability

The most popular hands-on opportunities for students outside of the formal curriculum were renewable energy/green building opportunities, surpassing sustainable agriculture this year with 23 efforts captured. In 2010, sustainable agriculture opportunities led this category with 33 stories. In 2011, students deepened their understanding of sustainability by engaging in such diverse activities as:

- installing solar panels;
- building campus root cellars;
- conducting energy audits;
- holding bike-powered concerts;
- spearheading farmers markets;
- creating carbon calculators;
- designing recycling apps; and
- launching campus food banks

◊

Photos: Before and after photos of Unity College's TerraHaus residence hall in Maine.

Campus Green Building

With 191 environmentally friendly building stories in 2011, there were more green buildings on campus reported in the Bulletin than ever.

With 191 environmentally friendly building stories in 2011, there were more green buildings on campus reported in the Bulletin than ever (2010 saw 180 green structures and 166 were reported in 2009).

This growth in numbers was reflected in a 115 percent increase in registered LEED square footage in the higher education sector in 2011 compared to 2010, according to U.S. Green Building Council (USGBC) data. Certified projects rose 32 percent. With nearly 390 million "registered" and 130 million "certified" square feet to date, the higher education sector continues to be one of the largest user groups of LEED, though it did experience a 2 percent dip in registered projects in 2011 and was surpassed by commercial real estate as the leading LEED user group.

continued on the next page

New Buildings
The majority of higher education green building growth – at least as reported in news stories and press releases - remains focused on new buildings. Nearly 90 percent of environmentally friendly structures reported in the Bulletin were new construction in 2011, and 16 of the 18 LEED Platinum-certified buildings were new buildings.

That said, 2011 brought new ways of thinking about sustainable building in the higher education sector. The University of British Columbia's new Centre for Interactive Research on Sustainability aims to advance research and innovation on global sustainability challenges and was built to exceed LEED Platinum and Living Building Challenge standards. The facility features an innovative engagement component with an interactive theatre that takes audiences through sustainability and climate change scenarios.

Unity College (Maine) unveiled its new TerraHaus residence hall, designed and built to Passive House standards. The 2,500-square-foot residence was modeled to use the equivalent of 50-75 gallons of oil per year for space heating, less than 10 percent of the heating load for a similar-sized residence hall in a similar climate.

Existing Buildings
While millions of dollars were spent on the construction of new green buildings on campuses, the number of registered projects in the LEED for Existing Buildings: Operations & Maintenance (LEED EBOM) category dropped 47 percent in 2011. Despite this dip in projects, registered existing building square footage leapt 179 percent from 2010.

USGBC reports an increase in the number of students supporting LEED EBOM projects on campus and predicts that the focus on existing building upgrades will be a popular theme moving forward as institutions begin to understand that "the path to climate neutrality requires that sustainable improvements be made to existing facilities."

Notable examples of building upgrades in the Bulletin included retro-commissioning efforts at Harvard University (Massachusetts) and the University of Connecticut. The existing building systems at Harvard's Laboratory for Integrated Science and Engineering were combined into a more "closed loop" controlled feedback approach that resulted in $520,000 in annual savings and a reduction of 800 metric tons of carbon dioxide equivalent.

The University of Connecticut's Smart Building Smart Grid Workgroup, driven by eight School of Engineering faculty members, used retro-commissioned buildings as a test bed for research that will also raise campus awareness about enhanced sensors, controls and fault detection for building systems. The project is expected to improve the energy efficiency of 34 campus buildings, saving $500,000 in energy costs and cutting 3,000 tons of greenhouse gas emissions annually. ◊

{*For more information about recent trends and practices in higher education green building, see "A Deeper Look" with Ball State University's Council on the Environment Chair Robert J. Koester on page 40.*}

Photo on left courtesy of Unity College. Photo on right courtesy of the University of Colorado Boulder.

Financing Campus Sustainability

The number of green fee-funded campus sustainability projects increased 86 percent over 2010, with a total of 160 efforts.

The number of green fee-funded campus sustainability projects saw a huge increase in 2011. In 2010, a total of 86 campus sustainability projects were announced in the Bulletin with a combined total of more than $700,000 in awards from green funds. In 2011:

- The number of projects increased 86 percent over 2010, with a total of 160 efforts
- Green fund awards for campus sustainability projects leapt 220 percent over 2010, with $2.2 million recorded in the Bulletin
- The number of institutions announcing green fee-funded sustainability projects jumped 140 percent over 2010 (8 institutions in 2010 and 19 in 2011)

In 2011, the Sustainable Endowments Institute (SEI), in collaboration with AASHE and the American College & University Presidents' Climate Commitment, kicked off its Billion Dollar Green Challenge at the AASHE annual conference in Pittsburgh, Pa. The challenge encourages colleges and universities to invest a combined total of $1 billion in self-managed green revolving funds to finance energy efficiency improvements and provide an ongoing source for future conservation upgrades. A revolving fund loans money to specific projects, which then repay the loan through an internal account transfer from savings achieved in the instiution's utilities budget (Source: SEI website). By the end of 2011, 32 institutions committed a combined total of $65 million. ◊

{For more information on higher education's use of green funds, see "A Deeper Look" with Mieko Ozeki, projects coordinator at the University of Vermont's Office of Sustainability, on page 43.}

Energy-Related Campus Efforts

Higher education efforts in the areas of energy conservation, energy efficiency and renewable energy continue to skyrocket in 2011, with 284 initiatives announced in the Bulletin. This was a 28 percent increase from 2010, which reported 221 initiatives.

From solar installations to campus energy competitions, higher education efforts in areas of energy conservation, energy efficiency and renewable energy continued to skyrocket in 2011 with 284 initiatives announced in the Bulletin. This is a 28 percent increase from 2010, which reported 221 initiatives. 2009 yielded 183 stories and 2008 featured 129 stories in this category. In 2011 there were:

- 97 new or planned solar installations
- 34 completed or planned campus energy overhauls
- 21 new wind initiatives
- 19 new renewable energy research centers or hubs
- 17 campus energy competitions
- 13 campus energy monitoring efforts
- 12 renewable energy plants announced/completed
- 9 geothermal projects

Solar

Solar energy research projects were the most widely reported initiative in the "Research" category of the Bulletin with a nearly $1.8 million total investment. In fall 2011, AASHE released a new database of hundreds of campus solar photovoltaic installations that showcased higher education's rapid adoption of solar. The database revealed a 450 percent growth of installed solar capacity in the higher education sector over the previous three years.

Perhaps most notably in this area, Butte College (California) became the first institution in the U.S. to go "grid-positive," producing more than 100 percent of the electricity it uses from its on-site solar arrays. The solar arrays total 4.5 megawatts and will generate more than 6.5 million kilowatt hours per year. By eliminating its electricity bill, getting paid for excess electricity production and avoiding future electricity rate increases, the college estimates that it will save between $50 million and $75 million over 15 years.

Solar energy research projects were the most widely reported initiative in the "Research" category with a nearly $1.8 million total investment.

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Courtesy of Royal Roads University in British Columbia.

Campus Energy Overhauls

With the hope that it will be a major job generator in the construction sector, the White House announced in 2011 that a variety of college and university buildings would be part of a $4 billion program to improve energy efficiency over the next two years. Institutions include Allegheny College (Pennsylvania), which plans to reduce energy consumption by 20 percent in 1.3 million square feet of space by 2020, and the University of California, Irvine, which has committed to cutting energy consumption by nearly 9 percent in seven million square feet of space. Government agencies will contribute $2 billion to the initiative and institutions, cities, private companies and other entities will collectively contribute the other $2 billion.

Thirty-four institutions announced completed or planned campus-wide energy efficiency initiatives...representing an annual campus energy reduction average of 20 percent.

Thirty-four institutions announced completed or planned campus-wide energy efficiency initiatives in the Bulletin. Those completed or in progress represent an annual campus energy reduction average of 20 percent. Reports from just five of these institutions collectively totaled $6.5 million in energy cost savings. ◊

Institutionalizing Campus Sustainability

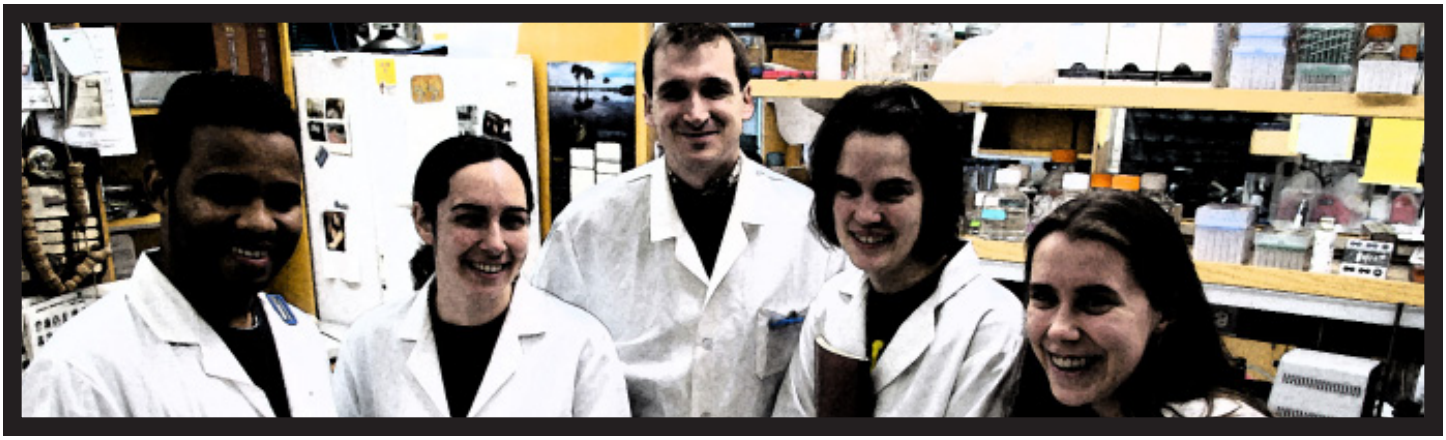
The institutionalization of sustainability in higher education made great strides in 2011, with a 40 percent increase in stories in the "Coordination & Planning" category from the previous year.

The institutionalization of sustainability in higher education made great strides in 2011, with a 40 percent increase in Bulletin stories in the "Coordination & Planning" category from the previous year. Specific initiatives included:

- 30 new sustainability personnel appointments
- 24 outreach/awareness initiatives to promote overall campus sustainability
- 18 sustainability strategic plans announced
- 14 green certification programs
- 14 sustainability progress reports released
- 10 sustainability centers/institutes/hubs announced

AASHE's Sustainability Tracking, Assessment & Rating System (STARS) hit a milestone in August 2011 when it passed the 100-institution mark for rated institutions. By the end of 2011, a total of 23 institutions received a gold rating, 76 earned a silver rating, and 34 received a bronze rating. Ten institutions also submitted their data as a STARS Reporter, indicating that they were not seeking an overall score but wanted to make their data public.

Due to growing interest at the international level, AASHE also implemented a pilot program that runs through December 2012 for international institutions to participate in STARS. The institutions will share feedback and make suggestions for improvements to the system, which will be used to determine the eventual role of STARS in a global context. ◊



Courtesy of Michael Marsland/Yale University.

Higher Education & Climate

Climate-related research was the most heavily funded research category reported in the Bulletin with a total of $2.63 billion and an additional $1 million toward climate curriculum.

Funded Research

Thanks in part to a $2 billion investment by the Alberta government toward carbon capture and sequestration efforts, climate-related research was the most heavily funded research category reported in the Bulletin with a total of $2.63 billion and an additional $1 million toward climate curriculum.

One notable research project included five teams made up of Canadian institutions and universities that are participating in the International Research Initiative on Adaptation to Climate Change (IRIACC). Each team is receiving $2.5 million over five years to study how best to protect people, communities and vital economic sectors like agriculture and tourism, that are most at risk from the effects of climate change. Two teams will focus specifically on vulnerable indigenous populations. Together the research projects, which will take place in Canada and in developing countries across four continents, aim to address how to anticipate, manage and reduce climate risk vulnerability through adaptation.

Higher Education Climate Leadership

University leadership was factored into the inaugural 2011 list of top 10 climate-ready cities in the U.S. by new media company Triple Pundit. The list looked at which large U.S. cities are mitigating their impact on climate change as well as investing in appropriate climate change adaptation solutions. Examples included San Francisco, Washington, D.C. and Denver.

Syracuse University (New York) became one of the first institutions in North America to achieve Climate Registered™ status with The Climate Registry, a non-profit organization. As one of the founding reporters of the Registry, the university voluntarily committed to measure, independently verify and publicly report its greenhouse gas emissions (GHG) on an annual basis using the Registry's General Reporting Protocol. The protocol is based on the internationally recognized GHG measurement standards of the World Resource Institute and World Bank Council for Sustainable Development. The protocol is also used by the American College & University Presidents' Climate Commitment. ◊

Photo: Super Sunday information fair hosted by the Kentucky Community and Technical College System.

Diversity & Inclusion Efforts

From campus diversity advisory groups to gender neutral housing, 2011 Bulletin stories in this category nearly tripled with 30 stories compared to 2010.

Meeting the needs of underrepresented minorities is becoming an increasingly important conversation in higher education. From campus diversity advisory groups to gender neutral housing, 2011 Bulletin stories in this category nearly tripled with 30 stories compared to 2010, which yielded only 11 stories. With a 24 percent spike in college enrollment, Hispanic 18- to 24-year-olds became the largest minority group attending college in the U.S. according to an August 2011 Chronicle of Higher Education article.

At the federal level, the U.S. Departments of Education and Justice jointly issued guidance in December 2011 stating that diversity is an important educational goal and that colleges should be able to use a variety of methods, including the consideration of race and ethnicity in admissions, to achieve diversity. Currently, however, the U.S. Supreme Court has agreed to hear a new challenge to affirmative action, reported March 2012 Chronicle of Higher Education and New York Times stories.

On a state level in 2011, The Teagle Foundation awarded a $300,000 grant to Lafayette College, Bucknell University and Dickinson College (all in Pennsylvania) for a cooperative project that aims to advance diversity and diversity education. The funds will be used to incorporate diversity throughout the curriculum and to improve students' academic and co-curricular experiences on campus. The institutions will focus on their own topics but meet periodically as a group to share resources, expertise and outcomes. ◊

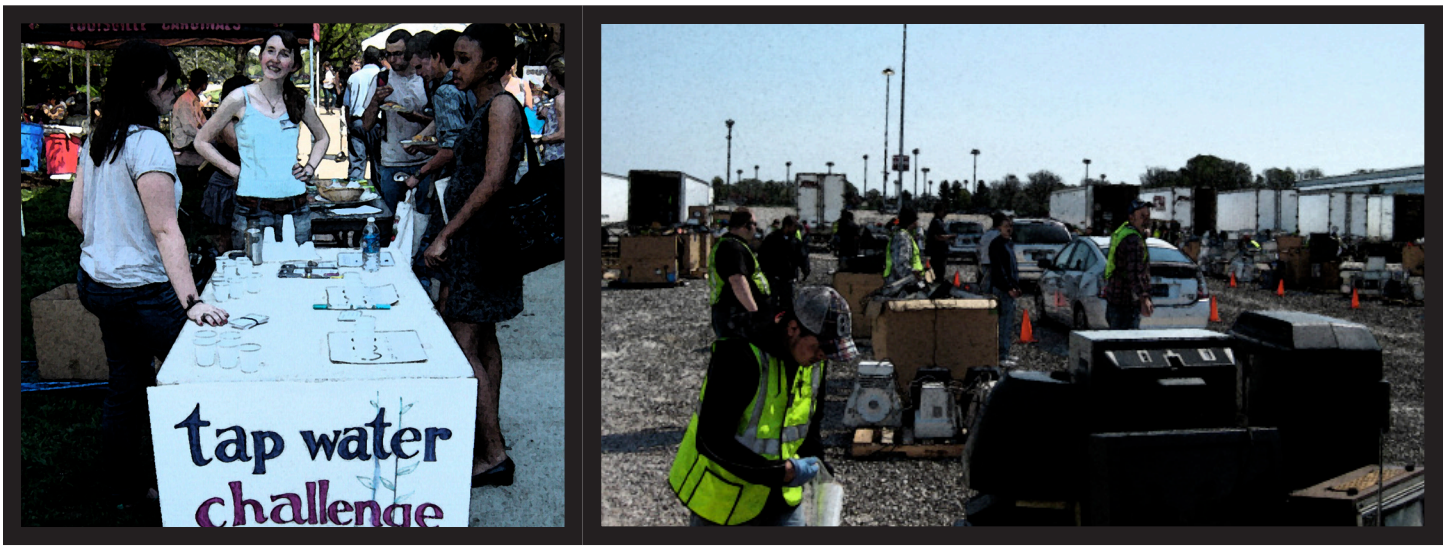


Photo on left courtesy of Justin Mog at the University of Louisville. Photo on right courtesy of Indiana University.

Campus Waste Reduction

The most popular initiative in this category was the move to ban or reduce plastic water bottle use on campuses.

With 128 stories, waste reduction initiatives on campus continued at a steady clip in 2011 with a slight increase from 2010 (126 stories) and a 25 percent increase over 2009 (102 stories). While only four campuses announced new recycling programs, 17 campuses reported expanded recycling programs; indicating that the trend has moved beyond the creation of recycling programs to the debut of new and improved programs.

The most popular initiative in this category was the move to ban or reduce plastic water bottle use on campuses. In 2011, 22 campuses announced efforts in this area including the installation of hydrations stations and student-led campaigns to educate the campus community about the social justice, public safety and environmental implications of bottled water. Nine campuses banned plastic water bottles altogether. AASHE's "Campus Bottled Water Bans and Reduction Campaigns" resource has captured a total of 76 institutions so far that have banned or are working to reduce the sale of plastic water bottles.

Other popular waste reduction activities in 2011:

- Electronic waste (e-waste) recycling efforts that diverted a reported total of 379 tons of e-waste from the landfills
- New and expanded composting programs
- Initiatives to reduce paper waste
- Waste reduction efforts during campus events like move-out days and tailgates
- Donation drives or "free" stores for unwanted items
- Food waste audits

◊

A student has his bicycle checked out at the Bike Station at the University of Colorado Boulder. Courtesy of Casey A. Cass.

Alternative Transportation on Campuses

Alternative transportation initiatives continued at full tilt in 2011 as one of the most reported categories in the Bulletin...campus bike-friendly efforts were the most widely reported.

With gasoline prices expected to keep rising over the next few years, institutions are looking for ways to decrease their long-term reliance on fuel, reported a June 2011 article in The Chronicle of Higher Education. Alternative transportation initiatives continued at full tilt in 2011 as one of the most reported categories in the Bulletin with 102 stories. This is a slight dip from 2010 (119 stories) but an 8 percent increase compared to 2009.

With 23 stories, efforts to make campuses bike-friendly were the most widely reported in the alternative transportation category. Nine campuses announced new bike share programs and four introduced bike repair stations. The League of American Bicyclists launched its Bicycle Friendly University program in 2011 to recognize campuses that offer a strong on-campus bicycle culture, a growing bicycle infrastructure, and cooperation with nearby towns and cities, among other criteria.

Car sharing programs also took off with 21 campuses reporting the launch of a partnership with companies like Zipcar and Enterprise's WeCar. Other popular initiatives in 2011 included:

- alternative fuels in campus fleets
- campus events, activities and resources in support of alternative transportation
- electric vehicles and electric car charging stations

◊

how they did it:

exceeding energy reduction goals at MIT

Courtesy of NSTAR.

who: Massachusetts Institute of Technology and NSTAR

what: In January 2011, MIT announced that it had exceeded campus-wide energy savings by 30 percent in the first year of its Efficiency Forward program. In partnership with investor-owned electric and gas utility NSTAR, the institute aimed for campus-wide energy savings of 10 million kilowatt-hours with the multi-million dollar energy conservation and efficiency initiative. The school achieved a 13 million kilowatt-hour reduction. In January 2012, MIT surpassed its two-year cumulative goal of saving 24 million kilowatt-hours.

MIT has committed to a goal of reducing annual electrical use on campus by at least 34 million kilowatt-hours within three years – equal to 15 percent of MIT's current electricity use. The total estimated savings over the lifetime of the efficiency measures is estimated in excess of $50 million.

where: The initiative is focused on energy efficiency efforts on campus, but the university and NSTAR also leveraged the success of the effort to hold a community forum that included a workshop for local business and community leaders to support broader adoption of large-scale, energy efficiency programs in the state.

when: The three-year Efficiency Forward initiative was launched in May 2010.

why: MIT and NSTAR designed Efficiency Forward to create a new model for enhanced utility efficiency programs to support the Massachusetts Green Communities Act and the state's desire to make efficiency competitive with new-source generation. It is also a chance for the institute to achieve aggressive goals for confronting climate change.

how: The program is investing nearly $14 million over three years, with a funding strategy that leverages funds from MIT, NSTAR incentive payments, and reinvestment of energy savings. Two gifts from MIT alumni totaling $1.5 million enabled the implementation of pilot energy conservation measures. Making an institute-wide commitment with high-level management involvement were key ingredients for success.

Since the program's initiation, MIT has created a campus-wide lighting retrofit project with occupancy sensors; implemented a project to reduce a dorm's fan energy by 40 percent; included energy efficiency measures in major renovations; and completed two high-performance, low-energy-use capital projects. The Koch Institute for Integrative Cancer Research and the new Sloan School of Management incorporate innovative heat-recovery strategies, high-efficiency building envelopes and heating and cooling methods that significantly reduce energy consumption.

AASHE: What were some of the biggest barriers in getting this accomplished?

MIT Deputy Director for Sustainability Steve Lanou: Initial barriers for energy efficiency work included securing adequate capital funding for large-scale implementation; establishing buy-in from senior financial and administration leadership; and coordinating between multiple partners and stakeholders.

AASHE: How did you overcome these barriers?

Steve Lanou*:* To address the funding challenges, MIT undertook comprehensive building energy audits to develop a portfolio of cost-effective measures and build the necessary business case for senior leadership to support. MIT was then able to partner with its utility to share in some of the long-term funding. MIT also agreed to reinvest savings to support future energy projects. To facilitate close collaboration among the many partners and stakeholders and keep implementation focused, MIT assigned a project manager. ◊

how they did it:

institutionalizing green lab practices at Yale University

Courtesy of Michael Marsland/Yale University.

who: Yale University's Office of Sustainability and Department of Environmental Health and Safety

what: The Connecticut-based university's Green Laboratory Certification program is designed to recognize efforts to minimize environmental impact and encourage sharing of creative solutions in issues of waste, energy and materials consumption. To date, 85 campus labs have stepped up to the challenge of making their everyday operations more sustainable.

where: Laboratories campus-wide.

when: The initiative was launched in January 2011.

why: Labs at the university are often associated with large amounts of material waste and energy use. This initiative is a long-term, collaborative solution to tackling environmental issues in everyday lab operations.

how: Under the program, laboratories accumulate points by performing various action items on an extensive checklist—everything from participating in a chemical recycling system to printing double-sided—and work towards four levels of achievement: Y, A, L and E.

Lab staff have the opportunity to write in their own initiatives that pursue workplace sustainability, from taking reusable containers to a vendor cart to stopping the use of nitrogen purge boxes so as to eliminate nitrogen gas use. Operating under the idea that the people who work in a laboratory are in the best position to identify areas for improvement in sustainability, these write-in submissions can then be tweaked by and incorporated into other laboratories. An example is a plastic pipette tip recycling program suggested by the Keck Foundation Biotechnology Resource Laboratory that has now been implemented in other labs on campus.

AASHE: What were some of the biggest barriers in getting this accomplished?

Yale Environmental Health and Safety Affairs Manager Brenda Armstrong:

- Advertising and awareness that the program exists, and showing that there are benefits to filling out the checklist
- Getting researchers' time to get involved
- The Health and Safety staff time needed to follow up on labs that are certified, and assist them in ways that they can earn greater levels of certification through lab walk-throughs and discussions

AASHE: How did you overcome these barriers?

Brenda Armstrong*:* By promoting our program through newsletters, posters, emails, websites and word of mouth, which we continue to do. We also celebrate those labs that earn full certification through an annual luncheon that honors and congratulates those making efforts in their work practices. We are currently redoing the format of the checklist to improve on the information and provide greater detail on categories with links for more information on how lab staff can get involved. ◊

how they did it:

achieving clean air 'excellence' at New York University

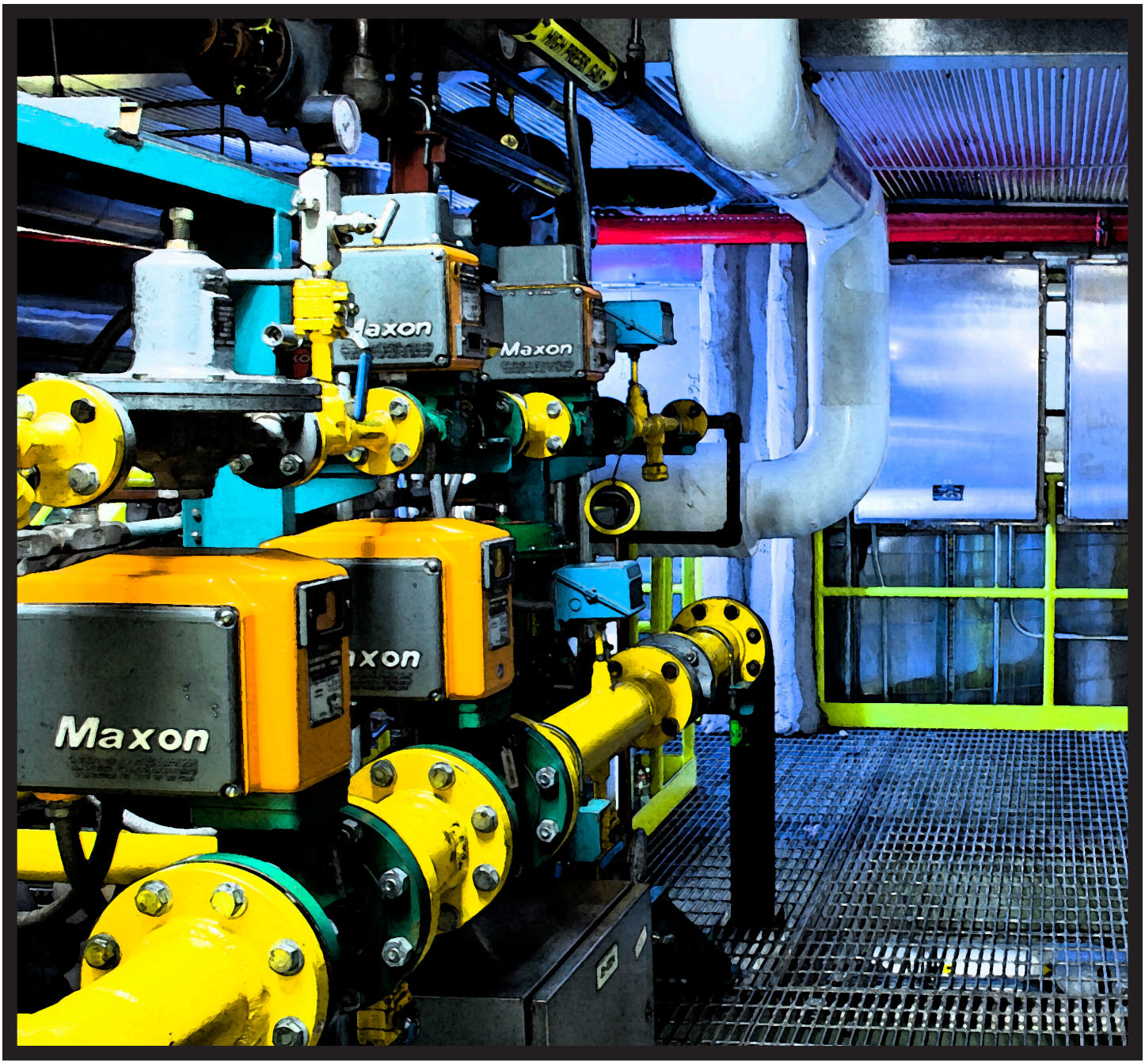


Photo: Cogeneration plant at New York University. Courtesy of NYU Photo Bureau.

who: New York University

what: In June 2011, the university was honored by the U.S. Environmental Protection Agency (EPA) for its Climate Action Plan (CAP) as part of the 11th annual Clean Air Excellence Awards. The university was recognized in the Community Action category for directly reducing pollutant emissions, demonstrating innovation, offering sustainable outcomes and providing a model for others to follow.

The CAP frames the university's myriad initiatives that have already begun to reduce campus-wide greenhouse gas and criteria air pollutant emissions–accomplishing cuts of 7 percent per year, or 30 percent since 2006. The university has created an advisory body of students, faculty and staff—the Sustainability Task Force—to conduct rigorous research and propose recommendations for making the university a more sustainable campus community.

where: The CAP was created at New York University, with the supervision and coordination of the Office of Sustainability.

when: The CAP was released in March 2010. As part of New York City's Mayoral Challenge, the university has pledged to reduce campus-wide emissions by 30 percent from 2006 levels by 2017.

why: The university is deeply embedded in New York City, and the campus community extends beyond the campus borders into the city at large for a close and productive partnership with the local government and other neighboring universities within New York City.

The CAP was developed to get–and keep–the university on an efficient, effective path to achieving the Mayoral Challenge and other goals. The CAP has also come to serve as a heuristic engagement tool, used by a variety of stakeholders on campus–from Office of Sustainability staff to sustainability-minded faculty to student leaders.

how: The CAP contains a plan for the university's $125 million cogeneration plant with detailed expectations for its environmental, economic and social benefits. In operation since spring of 2011, the plant now provides heating, cooling and/or electricity to 40 campus buildings and produces twice the power of the old facility, while cutting EPA Criteria Air Pollutants by 68 percent. This plant serves as an educational tool for the campus and surrounding community.

The CAP has also served as a roadmap for many outreach and engagement initiatives, such as the Green Grants program, which has awarded $400,000 to date in seed funding to campus greening projects, as well as NYU Bike Share, the first program of its kind in NYC to offer free bike rentals, and a model for the city's own bike share plans.

A key tenet of the university's approach has been to foster a high level of participation as well as transparency, creating capacity for student leadership (as in the Task Force and Green Grants) to anticipate and adapt, not just react, to challenges.

AASHE: What were some of the biggest barriers in getting this accomplished?

New York University Sustainability Initiatives Manager Jeremy Friedman: The university's hyper-urban setting, integrated and dispersed as it is throughout New York City, harbors challenges that other open campuses do not necessarily face. For instance, tracking and accounting for emissions, as done during the

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greenhouse gas emissions inventory for the CAP, required concerted, strategic planning and coordination so as to ensure the accuracy of the baseline emissions.

AASHE: How did you overcome these barriers?

Jeremy Friedman*:* The CAP has come to be a tool to help the university overcome this very barrier of decentralization. As a comprehensive documentation of the university's goals, objectives and strategies for achieving climate neutrality, the CAP brings together the university community, from all parts of the city, around the shared purpose of fostering the ecological health, prosperity and vitality of our university. ◊

Courtesy of NYU Photo Bureau.

how they did it:

creating an inclusive community in the Kentucky Community and Technical College System

Courtesy of KCTCS.

who: Kentucky Community and Technical College System (KCTCS)

what: In 2011, the system received national recognition for its equity and inclusion efforts from the Association of Community College Trustees. The anchor diversity initiative was the 2010-16 KCTCS Diversity Action Plan. Two key components of the Action Plan are the KCTCS Super Sunday and KCTCS Supplier Diversity Initiatives These efforts are designed to create an inclusive community of learners, increase the college-going rate of underrepresented populations and maximize diversity within the faculty and other leadership positions.

Already, diversity among the student body has grown significantly during the past five years at the 16 KCTCS colleges. Between 2005 and 2010, total student enrollment grew by almost 26 percent, while the enrollment of diverse students grew by more than 76 percent.

where: System-wide at the 16 KCTCS colleges and 68 campuses located within a 30-minute drive of 95 percent of the state's population.

when: KCTCS Beyond the Numbers: Diversity Action Plan for Inclusion, Engagement, and Equity (IE2) will be in effect through 2016. The KCTCS Board of Regents adopted the resolution to endorse IE2 in September 2011.

why: While KCTCS is an open access system of colleges with an inherently diverse student enrollment, it is striving to maximize diversity not just among the student population but also within the faculty and other leadership positions. It has a strong commitment to achieving equity in all of its educational programs and services.

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how: Beyond the Numbers is designed to enhance the organization's capacity to positively impact the overall economic viability of Kentucky by enhancing the access and success of diverse students as well as the recruitment, hiring and retention of employees from diverse backgrounds. The initiative includes priority areas that were used to construct action plans at each of the 16 colleges and the System Office including student access and success; education, scholarship and service; campus climate; and institutional leadership and transformation.

AASHE: What were some of the biggest barriers to creating a system-wide action plan for enhancing inclusion, engagement and equity?

KCTCS System Director for Cultural Diversity Natalie Gibson*:* Given multiple and sometimes competing priorities facing KCTCS staff and faculty, as well as calls to do more with less, some of our major challenges or opportunities involved aligning the KCTCS diversity action planning process with the KCTCS strategic planning process and the state-wide diversity planning process led by the Kentucky Council on Postsecondary Education (CPE), the state's higher education coordinating body.

Another consideration was the need to create a broad, shared vision of diversity that would be aspirational and activate our stakeholders. Ultimately we want to promote and facilitate integrated action across department and college lines.

AASHE: How did you overcome these challenges?

Natalie Gibson: In response to the challenges, an inclusive process was designed and implemented that engaged internal and external stakeholders in a dialogue. We utilized the "Appreciative Inquiry" process; the dialogue was inquiry based, which served to keep us informed about the status of other planning processes. In response, we sought to integrate and align our timelines and outcomes and were able to construct a plan that aligned with other planning activities, as well as create a shared vision of the future of diversity at our colleges and across our system.

Another outcome of this appreciative inquiry process was the implementation of several important initiatives while the planning process was still underway. One of those initiatives, Super Sunday, is an annual student recruitment initiative that targets African-American students and their parents with admissions and financial aid/scholarship information. The inaugural event was held in February 2011. On February 12, 2012, KCTCS partnered with 34 African-American churches across the Commonwealth to host college information fairs. It is important to note that the planning and execution of this annual initiative involves staff and faculty at all 16 KCTCS colleges and the system office.

AASHE: How do you plan to overcome any challenges to accomplishing Beyond the Numbers by 2016?

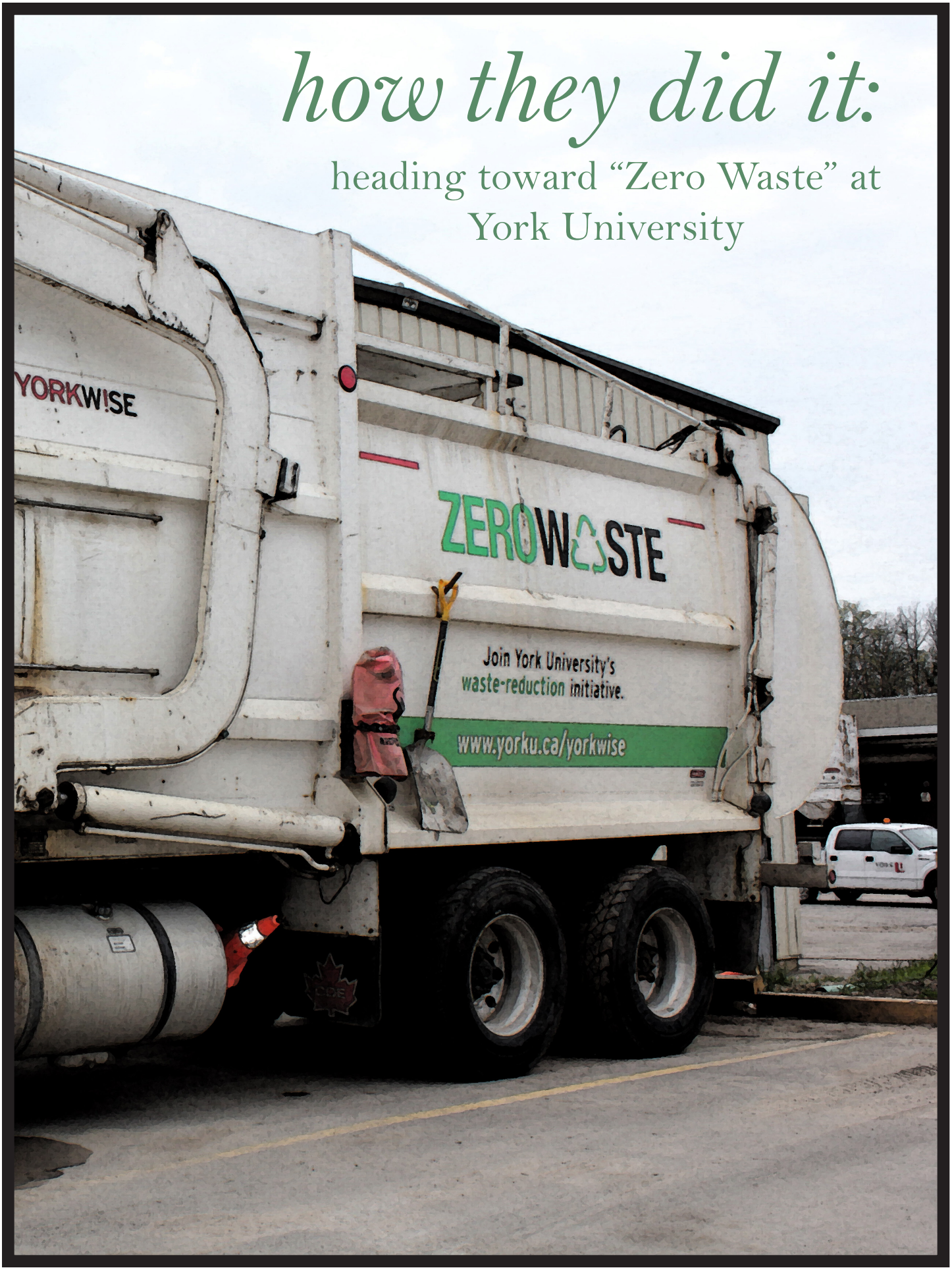
Natalie Gibson: The planning process was a long-term endeavor that required lots of energy. Now that the plan is complete, our primary challenge or opportunity is to maintain a high level of energy around the planning initiative and focus on implementing the action plan.

Utilizing a change management strategy, our goals are to build stakeholder awareness about the plan through communications; increase the desire or likelihood that stakeholders will implement the plan; and execute the action steps. We will continue the appreciative dialogue in order to gain an understanding about what people need in terms of training and education to enable us to build the capacity and skills needed to advance plan execution.

Finally, we believe using these strategic communication techniques will help us listen for and respond to the natural resistance that occurs whenever plans are implemented. ◊

how they did it:

heading toward "Zero Waste" at York University



Courtesy of York University.

who: York University's (Ontario) Campus Services & Business Operations (CSBO)

what: In June 2011, the university announced a 23 percent reduction in campus waste and a 46 percent decrease in paper waste as a result of its ZeroWaste Program.

where: The university's Keele and Glendon Campuses

when: Launched in 2010, the initiative aims to divert 65 percent of total campus waste by 2013.

why: To reduce waste going to landfill, along with the costs associated with this waste, and to enhance the sustainability of university operations at the institutional level.

how: CSBO staff continue to develop new and inventive ways to increase whatever materials can be diverted from landfills. Paper waste declined with an increased emphasis on double-sided printing and paperless practices, and bottle and can garbage decreased with the installation of chilled water stations and the replacement of all indoor and outdoor garbage bins on campus with labeled and color-coded tri-bins for garbage and recycling.

The program expanded after its first year to include the recycling of batteries, small electronics, appliances and ink cartridges. Paper towel dispensers are gradually being removed from campus bathrooms in high use areas and replaced with hand dryers.

The initiative also incorporates behavior awareness campaigns and involves students through activities like formal e-waste drives during residence hall move-out days.

AASHE: What are some of the biggest barriers to achieving York's ZeroWaste goal?

Office of the President Sustainability Project Coordinator Andrew Plunkett:
Getting all campus users to "buy in" to the program. York community members come from a wide variety of places, and therefore arrive on campus with their own habits and knowledge when it comes to waste. In addition, several municipalities in the Greater Toronto Area each have different rules regarding what can be recycled and composted. So it can be a challenge to educate people on the specific rules regarding waste separation in a large campus community like York.

AASHE: How are you overcoming these barriers?

Andrew Plunkett*:* By increasing public awareness programs. We have recently developed a Sustainability Ambassadors program, where leaders across the university (students, faculty and staff) are volunteering as peer mentors to assist others in learning about sustainability and participating in our sustainability initiatives.

In addition, we have also recently launched a Green Office Program, where offices across campus complete a checklist of sustainable actions that they are participating in. This program has a large waste management component, and we hope that it, along with the Sustainability Ambassadors initiative, enable us to get accurate information on waste to our community.

We are also in the process of putting together a "Green Campus Map" that will show users where they can find facilities for recycling and composting, and we would like to expand our use of social media to reach out to greater numbers of the campus community. ◊

how they did it:

reducing student vehicle emissions at the University of Colorado Boulder

A student rides her bicycle through the Norlin Quad at the University of Colorado Boulder. Courtesy of Casey A. Cass.

who: University of Colorado Boulder's Environmental Center and administration

what: A program to reduce the number of first-year students having cars on campus. In 2011, the university saw a 20 percent drop in the number of first-year students buying parking permits from the previous school year. Of the 5,215 first-year students in the 2010-2011 class, only 852 purchased parking permits. In 2005, the number was more than 1,400.

where: Campus-wide

when: The campus flirted with the idea of imposing a ban on first-year students bringing cars to campus in 2009 but decided instead to focus on alternative transportation awareness campaigns for the 2010-2011 school year.

why: The Denver Metropolitan Area (including Boulder) is classified as an ozone nonattainment area. Says Brandon Smith, the university's transportation manager, "As population increases along the front range of Colorado, it's important to reduce our vehicle emissions. Due to our geographic location we also get inversions, which trap air pollution.

"It has long been the goal of our program to reduce the use of single occupancy vehicles (SOVs). The massive amount of natural, fiscal and social capital that is expended to support the SOV is unsustainable at present levels. Our transit, bike and pedestrian programs coupled with infill residential planning offers solutions at a fraction of the total costs of supporting an SOV-centric development pattern.

"In addition to vehicle emission concerns, if we don't reduce parking demand while enrollment increases, the university will need to construct more parking capacity. With a limited availability of space, this means that we will be replacing surface parking lots with structured parking, which is aesthetically unpleasant and very expensive. Another undesirable option would be to pave over our popular green spaces on campus."

how: When students take tours of the campus, they are encouraged by their guides to not bring cars during their first year. When university leaders recruit out-of-state students at college fairs and presentations, they discuss the many alternative options to driving. The student-funded Environmental Center also helps spread the word.

On the infrastructure end, student fees pay for bus passes; mobile mechanics will help service students' bikes; students can rent bikes for free; and the university offers a carpool matching service. As a result of these efforts, it is often easier and faster to use alternative routes of transportation to many parts of campus than it is to drive.

AASHE: What are some of the biggest barriers you face in reducing student vehicle emissions?

CU-Boulder Transportation Manager Brandon Smith: We've been successful at reducing emissions from students who live in the vicinity of campus and convenient public transit routes, but many students live in increasingly developed and less expensive suburban areas, making walking or biking a less feasible commute solution. Based on our 2011 Student Transportation Survey, 38 percent of students who live outside of Boulder drove alone to campus compared to 6 percent who live within Boulder. [The study also revealed that] when personal vehicles are left at home, the popular alternative for non-Boulder residents is using public transit.

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Another potential barrier we face with public transit is the ever-increasing rates charged by the local transit provider due to increasing fuel prices and operations costs and lower-than-anticipated tax revenues on their end. This results in constant student fee increases to pay our bus service contracts. However, our pricing structure allows students to ride the bus as often as they would like without ever paying a farebox fee to board as long as they have paid their mandatory bus and bike program fee.

AASHE: How are you overcoming these barriers?

Brandon Smith: We work very closely with our multiple public transit providers and due to our size, location and ridership numbers (2,506,876 on our main bus provider) we are provided with numerous route options. However, we are also adversely affected by service cuts when service providers must make budget cuts.

Two areas that we have not been as successful in and will be working towards improving are vanpooling and carpooling. These commute solutions help serve those who are outside of convenient bus routes or don't like the bus-riding experience, and can reduce our dependence on third party transit providers, which we have little control over. ◊

A bicyclist rides through campus at the University of Colorado Boulder. Courtesy of Glenn Asakawa.

Courtesy of Harvard University. Credit: Kris Snibbe/Harvard Staff Photographer.

an interview with
James Applegate

a deeper look

higher education
access, affordability & success

AASHE talks with James Applegate, vice president of program development at the Lumina Foundation, about why higher education access and affordability became such a galvanizing issue in the past year, and what strategies are addressing college attainment in the coming years.

AASHE: The North American conversation around higher education access and affordability heated up in 2011 with students protesting rising tuition costs, massive student debt and weak job prospects in solidarity with Occupy Wall Street. Why is this such a galvanizing issue for students now?

James Applegate: National polls are showing that the public is generally better at recognizing that without a high quality postsecondary degree or certificate, they will have a very difficult time living any kind of middle class life. At the same time, due to declining state support for higher education and rising tuition costs, people are more concerned than ever about whether they will have an opportunity to obtain this economically necessary degree. Loan burdens are also adding to the frustration, especially when confronting a down economy.

Concern about employment has led to greater concern about whether higher education is providing an education that is aligned with 21st century needs. Lastly, we are seeing wages and education aligning with increasing strength. Thirty years ago the wage premium for a college degree was around 40 percent compared to a high school degree. Today, that is nearly 80 percent and climbing.

Income inequality is increasingly the result of education opportunity inequality. All in all, people understand that a high quality college degree aligned with 21st century needs is essential to their economic well-being while becoming increasingly frustrated with the political and education system's inability to provide that degree to those who need it most and thus aggravating economic inequality generally.

AASHE: To what extent has the economic situation affected your work and the scope and scale of the issue?

JA: We have focused more strongly on the connection between college, college degrees and success after graduation. College may not "just" be about employment and a living wage, but to say it is not about that as well is crazy talk; especially in this changing economy where skill gaps are contributing to unemployment.

In some unexpected ways these very tough times for higher education itself have increased engagement in some of our work. For several years we have been working in states and higher education systems across the country to drive greater productivity: better use of resources to more efficiently and effectively provide more students quality degrees.

As it has become clear that "hunkering down" to wait for good times to return or making cuts at the margin is a losing strategy for the foreseeable

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future, we are finding more partners willing to take on the tough task of defining core missions, containing cost drivers and redesigning delivery of learning in ways that increase capacity, reduce costs and increase student success. In the long run this will serve students and our higher education system well, even if times do get better.

AASHE: What do you think of President Obama's proposed financial aid overhaul? Is he focusing on the right goals toward higher education attainment?

JA: We have been very encouraged by the president's focus on dramatically increasing college attainment in the U.S. His goals are very much aligned with the Lumina Foundation's "Goal 2025" adopted in 2007. Our goal is to increase the percentage of working age Americans with a high quality college degree or credential from the current 40 percent (where we have been stuck for decades) to 60 percent by 2025. The health of our economy and our international competitiveness depend on achieving this goal. Tony Carnevale, the labor economist at Georgetown University, predicts that even by 2018, 63 percent of the new and replacement jobs in this economy will require a postsecondary education. So yes, we believe the president's goals are on target and we should all work together to achieve dramatic increases in college attainment.

In recent years we have seen the move to direct loans, changes in the Pell program that have dramatically increased the number of Pell students going to college and, most recently, a proposal to tie access to federal loans to institutions' ability to hold down tuition AND improve student success on their campuses. In general we are supportive of approaches that direct more aid to low-income students and encourage institutions to hold down costs and do better at getting students to degrees that matter (remember our productivity work).
We would like to see even more redesign or "overhaul" at the federal level so that federal financial aid, loan, tax credit, workforce development and other programs that offer support for low-income families to earn college degrees (e.g., SNAP) are simpler to access, and integrated around the goal of education attainment. We must make it easier for these families to access the support they deserve to achieve the college education they so desperately need to improve their lives.

AASHE: As Lumina's VP of program development, you work to increase educational attainment with a focus on low-income, minority and nontraditional students. What are some of the biggest challenges to achieving access for these students?

"College may not 'just' be about employment and a living wage, but to say it is not about that as well is crazy talk; especially in this changing economy where skill gaps are contributing to unemployment."

JA: 2010 data released by Postsecondary Education Opportunity show that among 24-year-olds in the top income quartile, 79 percent have four-year college degrees. Among 24-year-olds in the bottom quartile, that percentage is 11. Though we have made some strides in college access across racial and ethnic groups in college access, our graduating classes do not reflect such progress. These college success gaps among our fastest growing populations bode ill for all of our economic futures.

Adults currently in the workforce with some college but no degree make up 22 percent of our current workforce (they made it to a campus - and millions have 60 hours or more - but left with nothing except possibly debt.) Add those with only high school and those without even a high school credential, and you have the large majority of our current workforce. If we are to dramatically increase our education levels, these are the students to whom we must attend.

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Yet despite this reality, a major barrier to this change is a culture and a policy climate that still has a mid-20th century higher education map guiding actions. Our financial aid policies, our admissions policies, the way we deliver programs, our approach to education quality (e.g., smaller faculty student ratios as a proxy for quality), our data systems and policies, our advising and faculty development systems, our reward systems at every level are all still highly attuned to the declining minority of full-time, parent supported, residential students.

Until we realign our vision, our policies, and our practice around the 21st century student and design a 21st century system to serve that student, we will be swimming upstream in every specific reform effort.

There are many specific reforms that are needed to improve college preparation, college success and college productivity, and we are working diligently on those at every level. But until we redraw our maps and start to focus and care about these students, making these changes will be exceedingly hard.

"Until we realign our vision, our policies, and our practice around the 21st century student and design a 21st century system to serve that student, we will be swimming upstream in every specific reform effort."

AASHE: What strides have been made in these areas to date?

JA: Ah, a chance to be positive. Thank you. We are seeing progress on many fronts and these give us hope that Goal 2025, as audacious as it is, is attainable. Just to highlight a few:

1. A sea change in the landscape such that college success is now the Holy Grail. That is not to devalue college access, but to always see it as a necessary step on the road to success. This sea change is in part driven by the recognition that individual well-being and the health of the country's economy and democracy are dependent on increased college attainment.

2. A broad recognition that the goal of a K-12 education is college and career readiness. The adoption of the Common Core and the development of rigorous high quality tests that go beyond bubble tests to assess the Core offer a once-in-a-generation chance to make a giant leap forward in this area.

3. An accelerating integration of cutting edge technology as a means for delivering high quality learning to many more who need it.

4. A greater focus on the learning that must be at the core of our work and drive our thinking about how to redesign the credit hour, the course and the semester.

5. A growing recognition that the adult learner must be in our wheelhouse. Lumina's work in this area has drawn a level of engagement from across the country that frankly surprised us once we even started to raise the challenge. Adult learner programs going to or at scale are developing in state after state.

6. Improved data systems that can provide the information we need to better serve all students. (Though in many cases where the systems have improved, much more needs to be done to support data use to drive further improvement.)

7. Greater awareness by political, business and education leaders that workforce development and increased college attainment are increasingly isomorphic in a 21st century economy – in other words, they rise and fall together.

8. Increasing motivation for regional collaborations (within states) to achieve a positive collective impact on quality of life between political,

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business, education, nonprofit and advocacy organizations. As one mayor put it: "It's a survival strategy for our city and our people."

AASHE: As the Occupy protests shift strategies, how can we keep up the collective momentum toward accessible, affordable higher education opportunities?

JA: Keep the focus on the essential role of college success in supporting economic success for individuals and the country as well as a healthier democracy. The data is clearly on our side on this one (see again the work of Tony Carnevale at the Georgetown Center on Education and the Workforce). That of course means joining access and affordability to success.

We devote a significant part of our effort to the quality issue defined in this way. It is all about the learning. People might review our work on "degree profiles" and "tuning" as one example.

AASHE: Are there any prospects for higher education accessibility that we didn't touch on to keep an eye on in 2012 or beyond?

JA: I would encourage everyone, from this point forward, to never use the word "access" in a sentence without tying it in that sentence to "success." Access is obviously important and necessary to success, but access without success is, well, let me see, "an empty promise," "a bait and switch," "an invitation to debt with little chance of repayment" or, perhaps most poignantly, a personal tragedy imposed on vulnerable people by a dysfunctional system. The real tragedy is that the student is more likely to see it as a personal failure that will burden them for years to come both personally and economically.

"I would encourage everyone, from this point forward, to never use the word 'access' in a sentence without tying it in that sentence to 'success' ..access without success is, well, let me see: an empty promise, a bait and switch, an invitation to debt with little chance of repayment or, perhaps most poignantly, a personal tragedy imposed on vulnerable people by a dysfunctional system."

AASHE: Related to access are issues of student success, which has in some conversations led to questions about the quality of education. How does Lumina address the ultimate success of students in the context of its access issues?

JA: Success by our definition is attainment of a high quality degree or credential. We define quality along two dimensions:

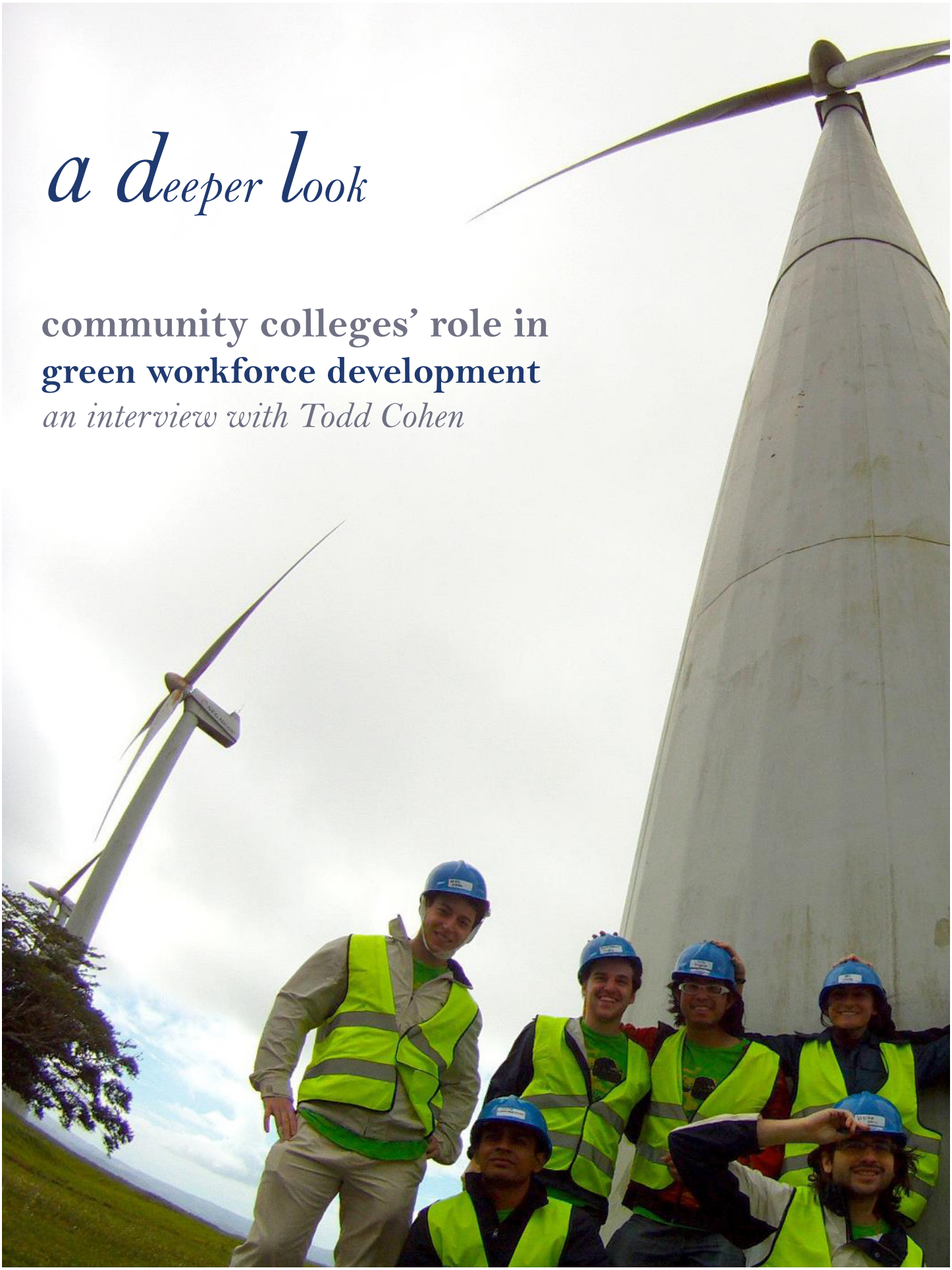
- transparent definition of learning outcomes within any degree program aligned with 21st century needs, with data to show how students achieve those outcomes, and;
- demonstrated impact on student success after graduation either in further educational pursuits (graduate school) or in employment and wages.

James L. Applegate serves as vice president for program development at the Lumina Foundation. He leads the development of the foundation's funding programs, supporting achievement of Lumina's "Big Goal" to dramatically increase educational attainment in the U.S, especially for low-income, first generation, minority and adult students. ◊

a deeper look

community colleges' role in green workforce development

an interview with Todd Cohen



Courtesy of GREEN Costa Rica program.

AASHE talks with Todd Cohen, director of the Sustainability Education and Economic Development (SEED) Center (an initiative of the American Association of Community Colleges), about the role that two-year colleges are playing in helping to accelerate the green economy in the U.S. and prepare skilled workers for renewable energy, energy efficiency, green building and sustainability jobs.

AASHE: There seems to be a struggle for a standard definition of what constitutes a "green job" or what a "green economy" looks like. How does the SEED Center define these two terms?

Todd Cohen: For community colleges, it's becoming less about defining a green job and more about providing the skills necessary for students to succeed in high-growth industries that in some way lead to healthier communities. In some regions this means training wind technicians. In other places, it may be energy auditors. In those communities where there is not yet great demand for what we might consider conventional green jobs, colleges are working to green existing occupations.

Colleges are partnering with the health care industry, for example, to educate a range of workers to improve waste recycling and water consumption practices—a major challenge for hospitals across the country.

AASHE: While four-year institutions are debuting new green job training programs, community colleges have really been at the forefront of this movement. Why are two-year colleges uniquely positioned for success in green job training?

TC: For two important reasons: First, community colleges are agile institutions tied closely to industry. That is paramount for the green economy where technologies (whether you're talking about photovoltaics, hybrid vehicles, or smart grid systems) are changing so rapidly and a variety of training needs are just emerging.

Secondly, explicit in the community college mission is this commitment to sustainability—building healthy and economically viable communities. Community colleges are heavily invested in their local regions, where college administrators often sit on various local and state boards, and where a diverse array of graduating students typically stay within the region. This college tie to "place" fits nicely with the higher education sustainability movement.

AASHE: There seems to be a lot of faith that community colleges – through green job training – will help revitalize local economies, provide an affordable education and bring the U.S. job economy back to life. Where is the green job training movement in terms of these expectations?

TC: Developing a flexible and educated workforce to meet skill demands is what colleges do best and what will ultimately support a robust green economy. In addition, because colleges provide that necessary pathway to a better life for students of all

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socioeconomic backgrounds (and do so without encumbering students with unmanageable debt), it will allow more people to benefit from the good jobs we hope will emerge.

However, in talking about a strong green economy, there is still much to do on the demand side. The industries will grow most rapidly when some local and state public policy changes are in place that grow the market, and when consumers, investors and business owners start to really demand new clean technology and new green products. Community colleges, by the way, are playing a major role on that side of the equation as well.

are other colleges that we have highlighted in this realm. There are some important national programs right now, like Aspen Institute's Skills for America's Future, focused on building college-employer partnerships. We will continue to work closely with them on how that model can succeed in greening industries.

AASHE: Are community colleges able to keep up with the industry demand for green jobs?

TC: In some regions, yes. In others, I believe they could be prepared with the right partnerships and labor market information. We recently highlighted a great example in San Diego where the regional government and various transit, waste hauler, and trucking companies could not keep new advanced fuel and technology vehicles on the road because technicians at these companies did not have the full skill set to repair the vehicles.

"Community colleges are heavily invested in their local regions, where college administrators often sit on various local and state boards, and where a diverse array of graduating students typically stay within the region."

AASHE: SEED Center professional development webinars often focus on community college-employer partnerships. What is your strategy for helping to form partnerships between employers and colleges with unique locations and cultures?

TC: Where we can have some real impact through AACC and SEED is to highlight those colleges that have dynamic and innovative employer engagement models and disseminate that information in a way that leads to change in other places. For example, we are conducting a series of webinars with Georgia Piedmont Technical College. The first highlights the relationship between the college and a number of Fortune 500 and small supplier companies in the increasingly-green building automations industry. Together, they identified industry-wide skill needs and developed an associate degree program to fill gaps.

Subsequent webinars will include more in-depth and detailed conversations with the college and the businesses about how this model can be applied in other geographic areas. Los Angeles Area Trade Technical College, Northern Maine Community College, and Gateway Technical College (Wisconsin)

"...explicit in the community college mission is this commitment to sustainability—building healthy and economically viable communities."

In response, San Diego Miramar College led the implementation of a four-day incumbent worker training program on diagnosing and inspecting hybrid vehicles. In addition, the college is training faculty at colleges across southern California to develop curriculum for their own diesel technology programs to include natural gas

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modules. In a short time, 150 workers have already been trained with many more planned as both programs continue to grow.

AASHE: What do you see as the role of community colleges in achieving President Obama's goal of generating 80 percent of U.S. electricity from clean energy sources by 2035?

this national movement. In addition, as more colleges embed sustainability principles throughout their entire curriculum (not just on the technical side), we will see the next generation of leaders better embrace and demand cleaner and more efficient energy. With 12 million community college students across the country armed with this information, this can be a very powerful force.

"Colleges...are holding forums to educate homeowners about weatherization techniques and small business owners about adapting green business models."

TC: We are seeing some colleges take this head on, essentially moving beyond a traditional workforce development role and actively pushing for more clean and efficient energy generation.

Colleges like Indian River State College in Florida and Wilson Community College in North Carolina are holding forums to educate homeowners about weatherization techniques, and small business owners about adapting green business models. Santa Fe Community College has led multiple local and state legislative efforts to advance renewable and energy efficiency regulations. Butte College in California is the first college in the country to be grid positive, where it generates more electricity from its campus solar panels than it consumes, delivering power back to the grid and providing a financing model for others to follow.

"I think most experts agree that even if the green jobs are not here en masse yet, it's really a matter of when, not if."

Efforts like these are almost all driven by college leadership and, scaled up, can have a real impact on

AASHE: How do you think the green jobs training movement will change the U.S. economic landscape in five years?

TC: I think most experts agree that even if the green jobs are not here en masse yet, it's really a matter of when, not if. As more college graduates gain the skills to master emerging clean technologies and the know-how to persuade others to be more sustainable, it is only natural that we will see more investment in this area and new green-focused businesses emerge. As that happens, community colleges are going to be as prepared as ever to keep the pipeline of talent stocked so that a green economy can become a long lasting reality.

Todd Cohen directs the American Association of Community College's SEED initiative, designed to support the community college sector in ramping up their programs to educate America's 21st century green workforce. Todd has significant experience leading large-scale strategic planning initiatives around the country aimed at enhancing the competitiveness of regions through post-secondary, workforce and economic development collaboration. Through his leadership, SEED has become, in less than two years, a 445-member community of colleges sharing and implementing sustainability and green promising workforce practices. ◊

Courtesy of GREEN Costa Rica program.

by Robert J. Koester

a deeper look

higher education green building trends & practices

Whether in new building construction or facility renovation, higher education is embracing high-performance design as a long-term financial strategy, especially as it becomes clear that the opportunity for future cost avoidance is substantial. Nevertheless, initial cost is still a factor in design decisions, particularly in an era of budget cuts.

New Construction

It is easier to achieve a high performing building when conservation strategies are integrated at the start of the design process and carried through the construction and building occupancy stages. For this reason – and for their ability to attract donors – new high performance building projects remain popular on campuses. The number of LEED-certified or registered new construction projects remained strong in 2011, and promises to continue in 2012.

Existing Buildings

All too often, higher education institutions try to circumvent financial difficulty by deferring maintenance on their existing building stock. This can have multiple ramifications, however. Systems failures and building deterioration can foster reactive, one-off "fixes" that make the cost-effective strategy of "bundling" (mixing isolated returns on investment to yield a hybrid value) all the more complicated, as compared to new construction.

Deferred maintenance actually defers the benefit of potential savings. As noted so often by energy expert Amory Lovins, the "bundling" of performance strategies provides the best way to break through the cost/price barrier.

For example, in a renovation, a design for effective use of daylighting can offset the need for electrical lighting, which can reduce the amount of operational waste heat produced by that lighting. This results in a reduced need for space cooling capacity as the upfront cost of the more effective daylighting can be 'paid for' by the savings from installing the smaller-cooling-capacity equipment.

Moreover, during the operational life of the facility, this will yield not only a high return on investment, but also a buffer against the long-term uncertainties of the energy marketplace.

Observations

Looking at AASHE Bulletin and USGBC data from 2011, I would contend that the LEED registration and certification process of new buildings and existing buildings will help to foster ever more appreciation for the bundling of performance strategies, as noted above.

Most importantly, this should facilitate a more complete campus-wide sense of responsibility for the energy and resource conservation challenge as these highly-integrated buildings and building retrofits become better understood by occupants.

Moreover, such distributed "ownership" of the operational energy use is best achieved by monitoring, assessing and evaluating all campus facilities, no matter their varying vintage.

Strategies for Green Building Success

So what does the near future hold? I believe we will see a growing collaboration between facility and academic personnel. As campus communities as a whole share in the responsibility for conservation they also will share in the opportunities. And those are many.

Behavior Awareness

Since occupant behavior shapes the "actual" versus "estimated" performance of building energy use, the real-time monitoring, assessment and shaping of that use can have lasting impact. Fostering occupant 'ownership' can take many forms, including: residence hall and academic building competitions, building dashboards for transparent real-time performance reporting, and performance benchmark reporting against campuses within the same region, which normalizes the climate influence.

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Green Funds
Self-levied taxes by students can accumulate funds that are often managed by student groups and yield projects that further green buildings on campus including energy conservation measures, on-campus renewable energy supply and/or grid-based green power initiatives.

{For more information on higher education's use of green funds, see "A Deeper Look" with Mieko Ozeki, projects coordinator at the University of Vermont's Office of Sustainability, on page 43.}

Revolving Loan Funds
Revolving loan funds can be used to "pay forward" to the next green building projects the accumulated operational cost-savings of energy conservation building retrofits. Some notable examples include the institutions participating in the Sustainable Endowments Institute's Billion Dollar Challenge and Institute's Billion Dollar Challenge and Harvard University's Green Campus Initiative.

Educational Opportunities
Beyond behavioral change by building users, the on-campus field-testing, assessment and evaluation of systems and building performance is fertile ground for undergraduate and graduate learning. The faculty and student teams working across disciplinary boundaries, confronting the day-to-day practices of building users and facilities managers, and monitoring and instructing cohorts regarding their influence on energy, water and materials use, is a remarkable new educational arena.

Running a close parallel to the educational opportunities, of course, is the hands-on, field-based research on systems and/or building performance. This can be a precursor to what students will encounter in the job market after graduation. It was, after all, such day-to-day tracking of whole-building performance at Oberlin College that led to the creation of the "building dashboard" concept and ultimately yielded the private-sector Lucid Design Group, which now markets its products to campuses throughout the world.

Conclusion

Universities function as stewards of the future. We shape the values, understandings and abilities of students who will become the active citizens of an emerging green economy. On-campus new building construction and modifications to existing buildings—as well as operations and maintenance—embed important values in the day-to-day education and research experience of those future citizens.

Robert J. Koester AIA, LEED AP, serves as professor of architecture, director of the Center for Energy Research/Education/Service, and chair of the Council on the Environment at Ball State University in Muncie, Ind. ◊

Courtesy of the University of Louisville.

a deeper look

by Mieko A. Ozeki

the role of green funds on campuses

A *History of Green Funds on Campuses*

Over the past decade, "green funds" have become a popular funding mechanism for financing sustainability projects in higher education. The University of Colorado Boulder was one of the first institutions to implement a green fund in 1973 and for close to 40 years this fund has supported the operations of the university's Environmental Center.

A green fund is a dedicated fund for campus sustainability projects such as renewable energy installations, energy retrofits, educational outreach and hiring sustainability personnel. Student fees, alumni donations, department budgets and grants are the main sources of funding for green funds.

According to a "North American Campus Green Funds Index" (NACGFI) that I created in 2010 and continue to update, there are currently more than 176 active campus green funds at 154 institutions of higher education in the U.S. and Canada (this does not include a type of green fund known as "green revolving loan funds," which are tracked separately.

{*Editors Note: For more information about green revolving loan funds, see the Billion Dollar Green Challenge information in the Bulletin Lens section on page 9.*}

Most of these funds receive revenue from dedicated student fees and a large proportion of these funds are at public institutions. Green funds at private institutions are drawn from student fees, alumni donations, department budgets or third-party grants. At Swarthmore College (Pennsylvania), for example, the New York Times funds a $500 annual grant for students to design and implement campus sustainability projects.

Since 2008, I've managed the University of Vermont's green fund, called the Clean Energy Fund, and worked with our 11-person committee to select renewable energy projects on campus. A dedicated fee of $10 per student per semester generates more than $225,000 per year toward this green fund for renewable energy research, education and infrastructure on campus.

The creation of this fund was driven by students in 2005 after they learned that while the university invested a portion of its general funds toward energy efficiency projects, there was no dedicated budget for renewable energy on campus. One of our most notable green fund successes to date was the installation of 17 solar trackers in 2010 that now supplies 20 percent of the electric power needed for the renovated George D. Aiken Center, home to the Rubenstein School of Environment and Natural Resources.

The NACGFI shows a significant jump in campus green fund approvals in 2007 as the American College & University Presidents' Climate Commitment (ACUPCC) took effect on a number of campuses across the country. In 2008, however, both green funds and campus sustainability initiatives in general encountered a bump in the road due to the global recession, which put a damper on new initiatives. Approvals of new green funds dropped by 44 percent in 2008 (18 funds approved) from the prior year, when 33 funds were approved.

In 2009, the approval of campus green funds rebounded, with 36 new funds. In 2011, several Florida state colleges took part in the Florida Youth for Environmental Sustainability Coalition's Student Green Fund Campaign. The University of South Florida approved a student green fee that will generate more than $1 million annually toward a green fund for energy efficiency and renewable energy projects.

Green Fund Focus Areas

Green funds can focus on one area of campus sustainability like renewable energy, recycling, public transit, or bicycle transportation. However, most green funds support a variety of campus projects, from organic gardens, light bulb swaps, and water bottle filling stations, to the launch of Eco-Rep programs.

Bulletin stories in 2011 reveal that solar installations were the most popular green fund-supported campus sustainability project that year, followed closely by sustainable agriculture and food security initiatives.

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Some institutions have multiple green funds, including the University of Colorado Boulder; University of Illinois at Urbana-Champaign; University of California, Santa Cruz; and University of Kansas. These funds address different areas of campus sustainability as well as student projects.

The Role of Green Funds

Green funds have a beneficial impact on college campuses, both as a learning tool (e.g., lessons learned from their establishment and management) and as an economic stimulus to the institution. This financial mechanism can also have a cumulative impact in a region or state when multiple campuses participate.

A presentation at Ball State University's (Indiana) Greening of the Campus IX Conference in March 2012 provides a good example: Seven public institutions and two private institutions implemented campus green funds in Tennessee. Most of the funds are sourced from student fees and since the inception of the first fund in 2004 at Sewanee: University of the South, roughly $10 million has been generated for sustainability projects on college campuses in Tennessee. A majority of the funds went toward three categories of sustainability projects: green power purchases from local utilities, energy efficiency investments, and on-site renewable energy installations.

A vast majority of the green funds have an annual budget of less than $400,000. This means most projects are small, one-time investments or programs with minimal operations costs. Green funds are not always designed to be permanent funding streams for sustainability projects. They may play a useful role for campus communities to implement pilot projects and learn about new technologies or opportunities, but may not necessarily be intended to be long-lasting funds. Eventually some will sunset or become a budget line item in an institution's general fund.

At the University of Vermont, our solar photovoltaic installation project taught campus members about renewable energy rebates, net metering and accounting for savings derived from energy production. The campus community also learned about developing processes and procedures for situations that fall outside business-as-usual operations. The Clean Energy Fund is currently undergoing a programmatic review for the Board of Trustees to assess the efficacy of this fund. We anticipate the CEF to continue operation with a strategic approach toward implementing renewable energy projects upon completion of a comprehensive campus renewable energy feasibility study in summer 2012.

Implementation

In interviews with sustainability officers who manage student green fund programs, I learned that successful implementation of green funds depends on the following factors:

- Fund Design
- Fund Management
- Education and Outreach
- Program Evaluation

Fund Design

The approval of a green fund does not ensure success; in fact it opens possibilities for misunderstanding by the campus community. Mischaracterizations of a fund's intent, whether by title or by award criteria, can result in a perception of "greenwashing." The purpose of the fund must be clearly defined for stakeholders to engage, trust, and support sustainability efforts on campus. In the long term, it would be best to align funded projects with the academic, operational, and strategic planning goals at an institution (i.e., climate action plans and/or sustainability plans).

Fund Management

A management plan and fund manager are necessary for the continuity and longevity of a green fund program. Green funds are an unusual funding structure for institutions, either as a revenue collection source (especially from student fees) or an internal grant program, because the mechanism does not align well with basic accounting practices. Careful management and monitoring of project funds are important, as the campus community will scrutinize the outcomes and spending from these grant programs. A fund manager helps navigate

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institutional structures to make project implementation possible, in addition to holding institutional knowledge of the fund.

Education and Outreach
Education and outreach about green funds facilitate student, faculty and staff involvement in sustainability on campus. Many students are unaware that they pay a green fee. This can be a challenge for green fund committees interested in soliciting project ideas from students. Education and outreach efforts are key to making campus stakeholders aware of the green fund's purpose and how to apply for funding, as well as updating people on projects. Outreach should be consistent and can be done through presentations, teaching, tabling, social media and website campaigns.

Project and Program Evaluations
Periodic progress reports from project leaders are an important evaluation tool to measure the impact of a green fund on an institution's sustainability efforts. Institutions should audit the use of these funds and review the portfolio of projects they have funded. Frequent evaluations allow institutions to adjust funding structures to meet with logistical, economic and political realities on campus, as well as align projects to institutional priorities.

As a practice, given the ad hoc nature of their formation and existence, campus green funds bring awareness to the lack of stable funding for sustainability efforts. Green funds are an excellent financial mechanism to get students, faculty and staff engaged in sustainability efforts at their campuses, and the passage of student green fees creates opportunities for the campus community to work on sustainability projects that would not otherwise receive general operating or department funding.

At some point, however, the funding needs to be made permanent. Green funds do show administrators that the campus community cares about these issues in the most visible and tangible way, and they invigorate the call for higher education to take the next step toward sustainability and climate mitigation and adaptation.

Mieko A. Ozeki has served as sustainability projects coordinator for the University of Vermont since 2008. As a fulfillment of requirements for a Master of Liberal Arts in Sustainability and Environmental Management from Harvard Extension School, she reviewed the national context and institutional characteristics of 80 colleges and universities in the U.S. that currently collected at least one student green fee for the 2010 research paper, "Student Green Fund Implementation in U.S. Colleges and Universities from 1973-2010." She expanded on this research to create the North American Campus Green Funds Index. ◊

what's next:

innovative campus-community sustainability partnerships

by Judy Walton, AASHE's Director of Resources and Publications

One of the more interesting directions evolving from the campus sustainability movement is **increased engagement with local communities** (and distant communities) around sustainability. Arguably such efforts are in a nascent stage, with perhaps an over-emphasis in the media on energy audits, home weatherization, and similar energy outreach work. But a few campuses and communities are **thinking quite comprehensively and long-term**,working together to create resilient, secure, sustainable communities. This section profiles four innovative partnerships worth **keeping an eye on** in coming years.

University of Oregon

Sustainable City Year Program

U.S. Congressman Earl Blumenauer checks out SYCP plans for Gresham, Ore.

Sustainable City Year Program (SCYP) describes itself as a "simple yet radical re-conceptualization of the public research university as catalyst for sustainable community change." Through an innovative service-learning model, SCYP helps small and medium-sized cities in Oregon transition toward sustainability. It directs classes from across a dozen academic departments toward the service of a single city over an entire academic year.

Students and professors work on topics developed jointly by instructors and city staff in a multi-disciplinary effort to assist each partner city with its sustainability-oriented goals and projects. The focus on direct engagement, knowledge transfer and visioning makes SCYP stand out among service-learning programs around the country. In an August 23, 2010 article, the New York Times called the program "perhaps the most comprehensive effort by a U.S. university to infuse sustainability into its curricula and community outreach." SYCP is part of the university's larger Sustainable Cities Initiative, begun in 2009.

Benefits

Direct investment in university-based service-learning efforts at the scale of SCYP promises to accelerate the effective application of university research about sustainable and livable communities. The model combines

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faculty expertise and research with student energy and enthusiasm to offer cities a vision for the future. Cities benefit from fresh thinking, improved livability and invigorated city staff as they gain the knowledge and inspiration needed to transform their communities. Students find it incredibly motivating and satisfying to connect their coursework to municipal projects, and faculty benefit from the synergies of engagement with city staff and with colleagues from across campus. For the University of Oregon, SCYP embodies its mission of serving the public good as a public institution of higher education.

City of Salem staff talk with University of Oregon students.

University of Oregon students visit Salem, Ore.

Notable Accomplishments

Over the course of three years (2009-2011), SCYP has involved:

- 2 universities:
  Portland State University and University of Oregon
- 3 Oregon cities as special-focus cities:
  Gresham, Salem and Springfield
- 13 departments
- 40 projects including:
  nurturing green business clusters, reusing industrial by-products, designing energy-efficient buildings, and connecting parks with bicycle paths
- 75 courses including:
  architecture, landscape architecture, product design, interior architecture, planning and public policy, journalism, law, arts administration, civil engineering, business, historic preservation, and economics
- 1,300 students
- 200,000 hours of student work

Looking Forward

In an attempt to help other universities create their own versions of SCYP, the Sustainable Cities Initiative has developed a "replication workshop" and "starter kit" covering all aspects of developing SCYP. Inspired by the workshop, a number of institutions are now planning to replicate the model in their own regions. ◊

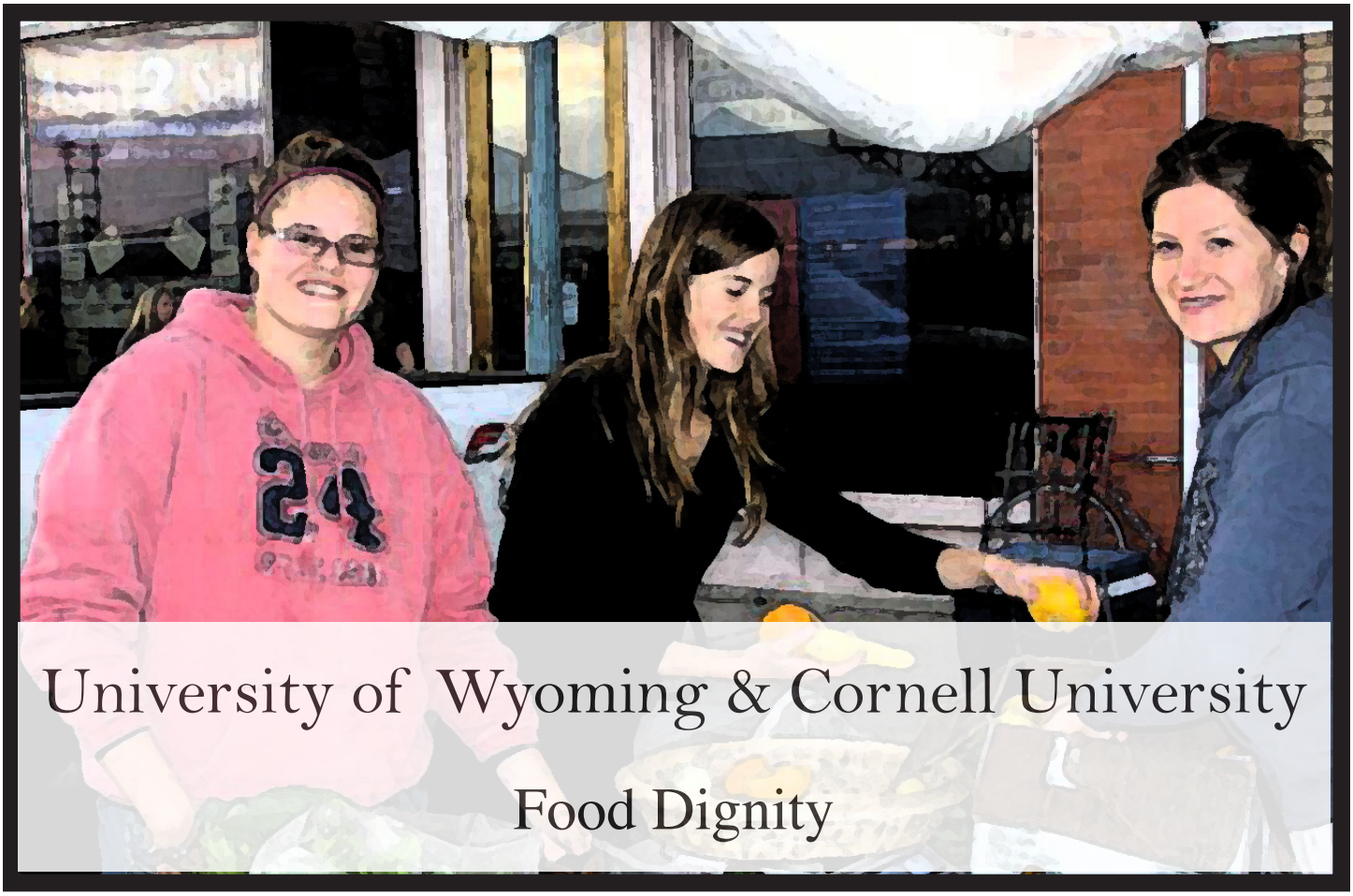

Photo: University of Wyoming student volunteers at the Laramie Farmers Market weigh donated food that will be distributed through the Sharing the Bounty initiative of FLV. Courtesy of Gayle Woodsum, Feeding Laramie Valley, 2011.

Action Research on Engaging Food Insecure Communities and Universities in Building Sustainable Community Food Systems

Launched in April 2011, Food Dignity is a 5-year initiative to trace the paths taken by five U.S. communities to build community food systems that aim to nourish everyone in current and future generations. Its goal is to collaboratively map and travel down the most appropriate and effective roads forward for creating sustainable, secure community food systems. The Food Dignity team includes dozens of people at two universities, one "action-think" tank, one college, and five community-based organizations. In addition to Wyoming, participating states include California and New York.

Funded by the U.S. Department of Agriculture's (USDA) Agriculture and Food Research Initiative (AFRI) Competitive Grant program, the $5 million, multi-state project is led by Christine M. Porter, assistant professor at University of Wyoming's College of Health Sciences, Division of Kinesiology and Health. The AFRI grant is the largest USDA grant the University of Wyoming has received, according to officials. The project has three facets: extension, research and education.

The project's extension portion includes five community food initiatives. Each has a local steering committee to disperse small grants that invest in citizen solutions to their own food system issues. The research portion focuses on developing case studies of what each community has already done and over the five-year period

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will make clear what factors influence their successes and failures as they work to create sustainable community food systems. The education component aims to create new, cross-disciplinary undergraduate minors in sustainable food systems to prepare University of Wyoming and Cornell University students to engage in this work. In addition, Ithaca College is leading research about student engagement with community food system action.

Benefits

The project offers enormous opportunities to help advance local, sustainable community food systems, and for scholars and academics to better understand how community food systems work, how they get built and the challenges involved. Growing and selling food is just one part of such food systems that the project may impact. Issues related to jobs, social justice, community building, leadership, and cultural and economic development all stand to gain from the five-year effort. According to project lead Christine Porter, "The goal is to invest in citizen solutions to food system issues and to learn from them."

At the research level, the project contributes to a growing body of "action research" (as opposed to strictly scholarly research) – in this case, researchers will learn from the wisdom "on the ground," then help support and connect existing movements, identify what's missing, and use this information to help land-grant universities be better partners in support of this work. The collaborative nature of the project connects social and natural scientists and agroecologists around community food systems. Scholars also aim to assist community members with their own research if needed.

The new undergraduate minor in sustainable food systems will prepare students to engage in such efforts around the world. A final benefit is the small grants administered through these initiatives, which invest in citizen solutions to their own food system issues.

Notable Accomplishments

- 5 projects in 3 participating states (Wyoming, New York and California):

  • *Feeding Laramie Valley*: Led by Action Resources International in Albany County, Wyoming

  • *Wind River Indian Reservation Initiative*: Organized by Blue Mountain Associates, Inc.

  • *Dig Deep Farms and Produce*: A project of the Deputy Sheriff's Activities League in the unincorporated Ashland and Cherryland areas of Alameda County, California

  • *Whole Community Project*: Headed by Cornell Cooperative Extension in Tompkins County, New York

Looking Forward

The project will continue through 2016, issuing briefings and updates along the way. As the project's vision states, the aim is a society where each community exercises significant control over its food system through radically democratic negotiation, action and learning in ways that nurture all people and sustain the land for current and future generations, and where universities and cooperative extensions are supportive partners in this process. The five initiatives will serve as case models for how extension can be done more effectively with food security and sustainability as the goal. ◊

Santa Clara University

Frugal Innovation Lab

Photo: As part of the Border Green Energy Team (BGET) in Cambodia, a group of Cambodian students study a water filtration plan developed by Santa Clara University students. Courtesy of BGET.

In 2009, Santa Clara University launched a new core curriculum that engages students in sustainability, sustainable building design, and using the campus as a living lab. As a follow-on in 2011, the university created the Frugal Innovation Lab, which fosters development and application of technologies in clean energy, clean water, public health, and mobile applications, in ways that meet the needs of marginalized communities worldwide.

Frugal Innovation addresses the fact that traditionally these products and services are often prohibitively expensive, difficult to use and maintain, and not well-suited overall to the regions for which they are intended. Ruggedization, simplification, sparing use of low-cost raw materials, an emphasis on earth-friendly practices, and a philosophy that favors "good enough" over "perfection" in creating compassionate, utilitarian design are the program's primary goals. The School of Engineering and Center for Science, Technology, and Society (CSTS) jointly run the program.

Frugal Innovation Labs distinguishes itself from many other innovation programs by closely integrating the classroom curriculum with hands-on student work with SCU's network of alumni from its "Global Social Benefit Incubator" and its "Tech Award" laureates. Students learn the necessity of frugal innovation by analyzing specific design constraints of an entrepreneur's engineering challenge. Partnerships between social entrepreneurs and Frugal students often continue beyond the classroom to become student research and senior design projects.

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By developing technologies that promote sustainable development and promise a better life for some of the world's most impoverished populations, and simultaneously addressing the economic feasibility of adopting and using these technologies, Frugal Innovation works to address all dimensions of sustainability (environmental, social, and economic).

Benefits

As director Radha Basu points out, the Frugal Innovation Lab is spearheading Santa Clara University's participation in the global field of mobile health – by aggregating best-of-breed applications, building new engineering solutions and hosting interoperability platforms. FIL also fosters unprecedented collaboration among engineers, social entrepreneurs, students and faculty to incubate and scale development projects for social impact.

Frugal Innovation engages all dimensions of Santa Clara University's academic mission by embedding special courses within engineering, business, public health, and environmental science. Each course trains students for best practices in a developing world context. Grant programs fund faculty and student research. The Lab space itself is a collaborative space for students and faculty to engage industry partners and NGOs to research and implement innovative technologies for underserved communities. The lab environment, along with expert faculty guidance, facilitates the challenging transition from theoretical learning to practical skill application.

"In all our initiatives, Santa Clara University looks at sustainability not just through an environmental lens but also in a framework of social justice, examining how sustainability can be just and economically viable."

- SCU President Michael Engh, S.J.

Photo: SCU design thinking workshop. Courtesy of Katrina Jazayeri.

Looking Forward

With its location in the Silicon Valley, Santa Clara University's interest in educating for a just world makes it a natural place for growing more initiatives such as Frugal Innovation that embody the idea of "business for a better world." The institution continues to seek ways to educate its students on and off campus to help them develop a deeper understanding of sustainability.

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Photo: The Border Green Energy Team (BGET) in Cambodia. Courtesy of BGET.

Notable Accomplishments

- Courses developed for the program include "Engineering for the Developing World," "Mobile Applications and Instrumentation," "Clean Energy for the Developing World," "Android for Social Benefit," and the newest course, "Frugal Habitat," still under development. Courses highlight the Frugal Innovation Lab core competencies and use case studies to examine what works and what doesn't with respect to innovative approaches to development.

- The Frugal Lab opened in the School of Engineering and became home to a Mobile Health Lab that hosts several leading online interoperability solutions including OpenXdata, DHIS2, and Open MRS for data collection, health checking, regime adherence, and monitoring.

- Over 30 student projects are in progress or completed including:

  • Pathogen detection using a micro-fluidic device
  • Renewable energy and sustainable technologies including efficient solar cook stoves, bio-digesters, and water purification (as part of the Border Green Energy Team (BGET) in Cambodia)
  • "Milagro Water Wheel," a novel water transport product that is simple and rugged and facilitates access to clean water while offering a 40:1 reduction in the effort to carry it

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Grand Rapids Community Sustainability Partnership

Grand Rapids Community College, Grand Valley State University & Aquinas College

Photo: Grand Valley State University students at "Make a Difference Day." Courtesy of Grand Valley State University.

In 2005, the leaders of Aquinas College, Grand Rapids Community College, Grand Valley State University, Grand Rapids Public Schools, and the City of Grand Rapids formed the Community Sustainability Partnership, known as the "CSP." Through collaboration, sharing of experiences, and mobilizing local resources, the CSP aimed to transform the greater Grand Rapids region through the development of sustainable neighborhoods and communities. Members of the Partnership – including private, public, service, and academic organization – have committed to work together to restore environmental integrity, improve economic prosperity, promote social equity, and elevate the value of education. The goal is to create and sustain a positive quality of life for future generations.

Since its inception the CSP has grown from the five original partners to more than 200 endorsing partner organizations that continue to develop and implement sustainable development best practices. Additional CSPs have been formed in Muskegon; Holland and Zeeland; Spring Lake and Grand Haven; Portage, Battle Creek, and Kalamazoo; and Toledo, Ohio. Academic partners in addition to the three original institutions include Calvin College, Hope College, Kendall College of Art and Design of FSU, Muskegon Community College, Oakland Community College, Western Michigan University, and Cornerstone University.

Benefits

In October 2011, leaders presented an update on the CSP's work, which demonstrated that many expected outcomes of the CSP were already being realized to varying degrees:

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- "Triple bottom line" sustainability goals and indicators
- Operational efficiencies for partner organizations
- Improved educational system for children and students
- Measurable reduction in environmental impact
- Improved quality of life for the community
- Improved social capital and social equity
- Increased economic vitality for the city and region
- Stronger and more sustainable businesses

For college and university partners, the opportunity to help shape the sustainable direction of the communities of which they're a part is invaluable. A large component of CSP is networking and collaboration. "This diverse group is unique because while members all share common aspirations, they range from municipal to academic to private organizations," said Grand Valley Provost Gayle Davis. "So there's constant networking and idea sharing taking place." The CSP facilitates sharing of information among members, combining of strengths, and the ability to take advantage of new opportunities.

Photo: Farmers market at Grand Valley State University.

Notable Accomplishments

- 7 CSP Summits have been held on topics ranging from social equity to environmental integrity
- The City of Grand Rapids and the CSP received the first U.S. designation by UN University as a Regional Center of Expertise (RCE) in Education for Sustainable Development
- Many CSP members have completed "triple bottom line" indicator reports
- Grand Rapids:
  - ranked among the top 25 cities on Kent Portney's Sustainable Cities Index
  - had the highest number of LEED buildings per capita in the U.S. in 2011
  - established a sustainability webpage

Looking Forward

"We're taking this organization to the next level," declared Grand Rapids Mayor George Heartwell at a 2011 Summit at which new goals were set to continue to move the region forward to sustainability. Members celebrated Grand Rapids' ranking as the most sustainable mid-size city in the U.S. by the U.S. Chamber of Commerce's Civic Leadership Center and Siemens Corporation. This dynamic and growing community-campus partnership is worth keeping an eye on in the future. ◊


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