Generation E

Students Leading for a Sustainable, Clean Energy Future

35 Ways students are creating a sustainable future at U.S. colleges and universities – cutting carbon emissions, saving resources and equipping the coming generation for a green energy economy.

This idea-filled guide is for:

STUDENTS ... committed to sustainability and seeking innovative ideas from their peers

FACULTY AND STAFF ... looking for ways to better inspire and support their students

COMMUNITY AND BUSINESS LEADERS ... seeking insight into the priorities and interests of today’s students

EVERYONE ... who desires a deeper understanding of the upcoming generation

By Christina Erickson and David J. Eagan, with a foreword by Julian Keniry
Students Leading for a Sustainable, Clean Energy Future

35 Ways students are creating a sustainable future at U.S. colleges and universities – cutting carbon emissions, saving resources and equipping the coming generation for a green energy economy.

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If you have questions please call National Wildlife Federation at 703-438-6000 or 1-800-822-9919 or email Campus@nwf.org.
And keep up with the latest at www.CampusEcology.org

COVER IMAGES

TOP: Waste separating station for the Whole Earth Festival at the University of California, Davis. Photo by Derek Downey

MIDDLE: Waynesburg University student group, the Green Samaritans, helping to construct and renovate hiking trails at Mammoth Caves National Park. Photo by Janet Paladino

BOTTOM: Students at Northland College installing a 2.1 kilowatt sun-tracking photovoltaic array for the college president’s home. Photo by Northland College.

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Design and production by Linda Rapp

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## CONTENTS

<table>
<thead>
<tr>
<th>Acknowledgments</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreword</td>
<td>4</td>
</tr>
<tr>
<td>Overview</td>
<td>6</td>
</tr>
<tr>
<td><strong>I. Student Leadership in Campus Climate Action</strong></td>
<td>8</td>
</tr>
<tr>
<td><strong>II. Students in Action on Campus</strong></td>
<td>13</td>
</tr>
<tr>
<td><strong>RENEWABLE ENERGY</strong></td>
<td>14</td>
</tr>
<tr>
<td>1. Energy Policy</td>
<td>14</td>
</tr>
<tr>
<td>2. On-Campus Demonstration Projects</td>
<td>15</td>
</tr>
<tr>
<td><strong>BEHAVIOR CHANGE</strong></td>
<td>16</td>
</tr>
<tr>
<td>3. Resource-Saving and Efficiency Campaigns</td>
<td>16</td>
</tr>
<tr>
<td>4. Pledges</td>
<td>17</td>
</tr>
<tr>
<td><strong>CLIMATE PLANNING AND PERSONNEL</strong></td>
<td>19</td>
</tr>
<tr>
<td>5. Greenhouse Gas Inventories &amp; Climate Action Plans</td>
<td>19</td>
</tr>
<tr>
<td>6. Sustainability Positions</td>
<td>20</td>
</tr>
<tr>
<td><strong>EDUCATION AND OUTREACH</strong></td>
<td>21</td>
</tr>
<tr>
<td>7. On-Campus Awareness and Education</td>
<td>21</td>
</tr>
<tr>
<td>8. Community Outreach</td>
<td>22</td>
</tr>
<tr>
<td><strong>ENERGY CONSERVATION AND EFFICIENCY</strong></td>
<td>24</td>
</tr>
<tr>
<td>9. Compact Fluorescent Lightbulb Distribution</td>
<td>24</td>
</tr>
<tr>
<td>11. Metering and Feedback Systems</td>
<td>26</td>
</tr>
<tr>
<td><strong>FOOD AND DINING</strong></td>
<td>26</td>
</tr>
<tr>
<td>12. Student-Grown Food</td>
<td>26</td>
</tr>
<tr>
<td>13. Local Foods in Dining Halls</td>
<td>27</td>
</tr>
<tr>
<td><strong>FUNDING</strong></td>
<td>28</td>
</tr>
<tr>
<td>14. Student Fees</td>
<td>28</td>
</tr>
<tr>
<td>15. Revolving Loan Funds</td>
<td>30</td>
</tr>
<tr>
<td>16. Class Gifts</td>
<td>31</td>
</tr>
<tr>
<td><strong>GREEN BUILDING</strong></td>
<td>31</td>
</tr>
<tr>
<td>17. Building Design and Construction</td>
<td>31</td>
</tr>
<tr>
<td><strong>GREEN PURCHASING</strong></td>
<td>32</td>
</tr>
<tr>
<td>18. Purchasing Policies</td>
<td>33</td>
</tr>
<tr>
<td><strong>HABITAT MANAGEMENT AND RESTORATION</strong></td>
<td>33</td>
</tr>
<tr>
<td>19. Landscape Management and Restoration</td>
<td>33</td>
</tr>
<tr>
<td><strong>MIXED MEDIA</strong></td>
<td>34</td>
</tr>
<tr>
<td>20. Sustainability Resources and Tools</td>
<td>34</td>
</tr>
<tr>
<td>21. Films, Games and Art</td>
<td>35</td>
</tr>
<tr>
<td><strong>RECYCLING AND WASTE REDUCTION</strong></td>
<td>35</td>
</tr>
<tr>
<td>22. Recycling Programs</td>
<td>35</td>
</tr>
<tr>
<td>23. Composting Programs</td>
<td>36</td>
</tr>
<tr>
<td>24. Zero Waste Events</td>
<td>37</td>
</tr>
<tr>
<td>25. Trayless Dining</td>
<td>38</td>
</tr>
<tr>
<td>26. Move-Out Programs</td>
<td>39</td>
</tr>
<tr>
<td>27. Source Reduction</td>
<td>39</td>
</tr>
<tr>
<td><strong>RESIDENCE HALLS</strong></td>
<td>40</td>
</tr>
<tr>
<td>28. Student Eco-Reps</td>
<td>40</td>
</tr>
<tr>
<td>29. Inter-Residence Hall Competitions</td>
<td>42</td>
</tr>
<tr>
<td>30. Model Residence Hall Rooms</td>
<td>43</td>
</tr>
<tr>
<td>31. Eco-Houses and Sustainability-Themed Residences</td>
<td>44</td>
</tr>
<tr>
<td><strong>TRANSPORTATION</strong></td>
<td>45</td>
</tr>
<tr>
<td>32. Mass transit</td>
<td>46</td>
</tr>
<tr>
<td>33. BioFuels</td>
<td>46</td>
</tr>
<tr>
<td>34. Bicycle Share Programs</td>
<td>48</td>
</tr>
<tr>
<td><strong>WATER CONSERVATION</strong></td>
<td>49</td>
</tr>
<tr>
<td>35. Water Policy and Research</td>
<td>49</td>
</tr>
<tr>
<td><strong>III. Opportunities to Engage the Campus Community</strong></td>
<td>50</td>
</tr>
<tr>
<td><strong>IV. A Vision of the Campus of the Future</strong></td>
<td>55</td>
</tr>
<tr>
<td><strong>Appendix A. Campus Sustainability Resources</strong></td>
<td>56</td>
</tr>
<tr>
<td><strong>Appendix B. Schools in Guide Listed by State</strong></td>
<td>58</td>
</tr>
<tr>
<td>Endnotes</td>
<td>60</td>
</tr>
</tbody>
</table>
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The challenge in the United States and beyond to transition quickly from a fossil fuel-based society to one built on safe, clean renewable energy—as advocated by a majority of the world’s scientists—is the crucible of our time. “Generation E” explores how young people in college today are responding to this challenge, stepping up to make a difference in a wide range of creative and powerful ways.

“E” stands for many things, including Ecology, Economy, Energy and Equity—which are among the interconnected concerns and values of sustainability that define and unite the current generation like no other issue of our time. New York Times environmental writer, Andy Revkin, recently coined the concept “Generation E” in his Dot Earth blog posts, and it resonated with our Campus Ecology team and many of the students we work with as an apt moniker for today’s sustainability-minded generation. Among Americans under 30 surveyed in May 2009, for example, the only cultural position garnering majority support was that “American’s should adopt a more sustainable lifestyle by conserving energy and consuming fewer goods” (Center for American Progress), with similar levels of support for this position among conservatives and progressives. In the “College Hopes and Worries” survey reported in the May 2009 Princeton Review, 68% of the 12,715 college applicants randomly surveyed indicated they value information about a college’s commitment to the environment.

As someone who collaborated with my undergraduate peers to establish campus recycling and environmental audits starting in the late 1980s, and who has worked since that time to design a broader response in higher education commensurate with the scale of the global environmental challenge, this story is particularly heartening. I applaud the emerging values and practices of “Generation E” and thank them for sidestepping the fate of recent previous generations labeled by the media as apathetic and self-centered and who were largely dismissed as incapable of leading change on the order of the global democracy or civil rights movements.

As this report chronicles, “Generation E” has been visible and vocal in encouraging wider societal adoption of sustainability. These young citizens have led a series of unprecedented initiatives, such as the largest convening in U.S. history, in 2009, of 12,000 student environmental leaders for the second Power Shift Conference, which focused on a transition to clean energy and creation of green jobs. Taking their concerns to the ballot box, more people between the ages of 18 and 29 voted in fall 2008 than in any federal election since 1972, and more than one-third of a million college students aligned with Power Vote, pledging to cast their ballot for clean energy and green jobs in state and federal elections.

New models for locally based community service built around ideas of economic and environmental sustainability are also emerging courtesy of “Generation E.” They range from a program at Morehouse College in Atlanta aimed at distributing one million cost-saving lightbulbs to city residents to programs that support local farmers, such as an initiative at the University of Montana at Bozeman that invests $300,000 annually in local, sustainable agriculture. For campuses that have struggled to finance clean energy and other sustainability initiatives, “Generation E” has offered solutions ranging from allocating student fees, to creating revolving loan funds, to raising generous class gifts.
Fortunately, the stakes for this and future generations are apparent to many college and university leaders, 650 of whom have signed the American College and University Presidents Climate Commitment (ACUPCC) pledging to eliminate campus global warming pollution through efficiency, clean energy and sustainable transportation initiatives.

When asked why they took this pledge, President Michael Crow of Arizona State University, explained at the June 2009 ACUPCC conference in Chicago that, “As colleges and universities, collectively we are more than 2% of the U.S. carbon footprint and we are 100% of the student footprint.” And at the “Smart and Sustainable Campus Conference” at the University of Maryland in spring 2008, President C.J. Mote of the University of Maryland explained that he couldn’t not make this commitment when it is the current generation of students who are urging a commitment to sustainability, knowing that their futures are at stake and that (to approximately quote President Mote), “if we figured out how to get to the moon, we can tackle this challenge as a society.” In my view, there is no finer example of leadership in America today than that exemplified by the ACUPCC signatories.

At the same time, a strong case can be made that we owe “Generation E” much, much more. At a “Campus Environmental Activism Conference” at Yale University in September 2009, I asked the audience of approximately 150 participants from all across the region for a show of hands of how many felt they had been educated about the essential concepts of sustainability that education pioneer Dr. David Orr writes every graduate needs to know, such as how to power society on current sunlight or rebuild local, participatory democracies. Very few students raised their hands.

Not only have the majority of college and university presidents not yet joined the ACUPCC commitment, pledging the kind of bold leadership for energy conservation and clean energy that young people deserve, but the National Wildlife Federation’s (NWF) study of environmental education in America today, Campus Environment 2008, suggests we are largely failing to prepare college-educated young people for the world they are inheriting.

Only a small minority of colleges and universities in the U.S., for example, report they teach a majority of their students about the basic functions of the earth’s natural systems, and even fewer teach about the connection between human practices and sustainability. Students studying business, health sciences, engineering and education are particularly unlikely to be offered courses on the environment or sustainability. The small percentage of colleges and universities (8% in 2001) requiring all students to take a course covering sustainability concepts has not increased and may even have dropped over the past decades.

When it comes to leading the transition to a safe, clean, renewable energy future, every generation has an equally important role to play. Yet “Generation E” stands at the crossroads, facing both the consequences of our collective choices and an unprecedented leadership challenge. This report shows how they are rising to this challenge. We owe it to them to facilitate their efforts in every way possible.
Choosing the 35 topics for this guide was easy, though the list could easily have been much longer. Without looking very hard, projects initiated by student passion and commitment to sustainability on their campuses—and beyond—is readily apparent at hundreds of schools, and the numbers keep growing.

Any initiative on campus is a team effort. It takes the right balance of administrative, staff, faculty and student input. Even changes made completely off the radar screen of students are typically made with them in mind, and over the past decades students have shown that they’re paying attention. From protesting investments with links to abusive governments and lobbying for sweatshop-free college products to standing up for sustainability principles and climate-safe campus operations, students at schools large and small have voiced their concerns—and steered both opinion and policy in better directions.

But lately it’s been different. The stakes are much higher. The call for change is both global and personal. Students have been among the first to realize that leading the way for sustainability is an investment in their long-term prospects too—in future work, in family and community life, and in both private and public realms. Students are picking up on the fact that a world safe for people and wildlife is one that will support not only their own lives and dreams, but those of countless others. They have long had a voice in what happened around them during their years of postsecondary schooling. But never has there been an organizing motivation like global warming and the related urgency to redirect society toward a clean energy future.

Colleges and universities exist to educate young people, and what better place to learn the concepts and skills they will need to thrive in both an economy and society that is rapidly shifting—by necessity—to a cleaner, greener way of thinking and acting? The topics and projects in this guide are indeed meant to serve as a “guide,” showing the myriad ways students have responded to the call to be part of the solution, to make a difference. They inspire our imagination of the possibilities that exist on almost every campus.

Topics range from renewable energy and conservation to dorm move-out programs; from campus food systems to creative funding. Examples are drawn from more than 160 schools in 46 states, from campuses public and private, urban to rural. Most of the projects featured are relatively new, which should make it easier for readers to find campus contacts and resources that will help them learn more about topics of interest.

While the focus of this guide is on case examples of students-in-action, it is written for all members of the campus community, every one of whom can make important contributions to campus sustainability efforts, including:

**STUDENTS** – Thousands are already engaged in sustainability leadership, and there are literally millions more (18 million attend postsecondary schools) who could gain valuable skills and practical knowledge by working on real-world campus projects. Students of every type—full-time, part-time, working, nontraditional, minorities—have much to offer and much to learn from the experience.
STAFF – Many employees in facilities, student housing, planning, food service, landscaping and many other fields are equally engaged in sustainability, plus they have the skills and savvy to operationalize just about any kind of project. Collaboration with students is often essential to a project’s success.

FACULTY – Professors and instructors can help provide the platforms (course projects, capstone courses, independent study, graduate student research) by which students can conduct projects, plus they offer expertise and guidance and have considerable clout within their institutions.

ADMINISTRATION – Top decision makers wield influence and reward innovations, recognizing that sustainability leadership—in which students often play a crucial role—conveys benefits in many areas: campus operations, educational opportunities, institutional reputation and the bottom line.

COMMUNITY COLLEGES – Two-year colleges are where close to half of the nation’s postsecondary students attend class and gain technical know-how, and where the number of students and programs geared toward the green collar economy is increasing steadily. At these schools, student engagement in campus and community sustainability is especially important because it provides much-needed practical job skills training for the emerging clean energy workforce.

This guide is a starting point, a snapshot of some of the best practices on campuses around the U.S. in which students have had a major role. Increasingly, the National Wildlife Federation and other voices for the environment need to hold up these examples to show how bright minds in a nurturing educational setting can bring about real change and provide leadership for others. We hope these stories spark new action on campuses everywhere.
Students have long been the heart, the brains and often the muscle behind campus greening and sustainability projects. Their involvement goes way back, from recycling programs in the 1970s such as at Western Washington University (established in 1971 and still student-run) and the University of Colorado-Boulder (which began recycling in 1976), to environmental audits like the one completed at UCLA in 1990.

But in the past few years, there has been a groundswell of individual campus actions—plus the formation of national groups and organizations that reflect a growing student movement based, in part, on a determination not to make the same unsustainable choices that now are the legacy of earlier generations. Today’s students will see and be required to deal with some of the most devastating impacts of climate change, which will arise during their lifetimes. To them “the environment” is no longer an abstraction, but a looming global calamity that has moved many to approach this issue with passion and resolve. The issues facing the campus, and indeed the world, may be daunting, but students are nevertheless taking on these challenges, initiating change and working to find solutions.

THE CLIMATE IMPERATIVE

A commitment to finding solutions to global warming has been central to the mission of the National Wildlife Federation (NWF) for many years. Wildlife (not to mention future generations of students) will need a habitable planet, which requires a stable climate. How much reduction in greenhouse gas (GHG) pollution is needed? Unfortunately, the number keeps going up because global emissions have been accelerating, not slowing down as scientists have been advising for decades.

In past reports, NWF urged a reduction in the U.S. of 2% per year, including emissions from colleges and universities. But given new understanding of the lag effect of GHGs in the atmosphere, and the likelihood of a higher-than-anticipated global temperature rise that could lead to devastating consequences, NWF is turning up the heat, so to speak, on that timeline. Our current goals:

In all sectors of society
- Emissions reductions of 4% per year over the next 10 years (higher reductions are needed at the start due to the delayed effect of GHGs on atmospheric temperatures)

Long term emissions reductions needed
- At least 35% by 2020
- At least 80% by 2050 or sooner

NWF urges readers to keep up with the latest science on climate change through its web portal and blogs (see http://www.nwf.org/globalwarming), as well as through widely available information on the internet and elsewhere.

For anyone unfamiliar with the “stabilization wedges” idea, this graphic shows how multiple actions will be needed to cut emissions. It will take a lot of people working on technical and behavioral solutions to reduce GHGs fast enough to mitigate the worst effects of climate change.

(After Pacala and Socolow, Science, 2004)
STUDENT ACTION BEYOND THE CAMPUS BORDERS

Although there have been efforts to create regional or national student organizations dedicated to campus greening—most notably the Student Environmental Action Coalition (SEAC), which formed in the early 1990s and hosted two national conferences drawing thousands—most have struggled to survive the inevitable turnover of leadership. A new model based on multiple partner organizations and with a focus on climate change has proven successful.

The Energy Action Coalition (EAC), an alliance of youth climate leaders (supported by 50 member organizations, including the National Wildlife Federation), was founded in 2004 with the broad goal of seeking “clean and just” regional and national energy policies. Its first campaign, the Campus Climate Challenge, which launched in 2006, spurred hundreds of schools to organize around renewable energy and climate neutrality. It has recently spearheaded two large student conferences in the Washington, DC, area: Power Shift 2007 and Power Shift 2009. The 2009 event was the largest of its kind in history, with 12,000 students descending on the nation’s capital to network, share ideas and meet with legislators. Another campaign, Power Vote in 2008, involved 340,000 young people who signed the online Power Vote pledge and helped raise climate change as a key issue in the national election and in hundreds of local races. EAC also sponsors the popular blog It’s Getting Hot in Here. These national collaborations have been successful in empowering students to take action on their home campuses—and in the halls of Congress.

FOCUS THE NATION also uses the coalition model, with sponsorship by many groups and prominent individuals. Its signature event, on January 31, 2008, engaged 1,900 schools that hosted on-campus events, including a national video webcast and day-long educational offerings. An estimated 240,000 students were reached. A follow-up event, the National Teach-In, “Solutions for the First 100 Days,” followed a year later on February 5, 2009. It prompted hundreds of participating schools, faith groups and other organizations to host a day of on-campus outreach and engagement around the issue of climate change. More national and international events are scheduled for 2009 and 2010.

Closer to home, students have also been organizing multi-campus and statewide networks through which to share ideas and offer support (see box on next page for a few examples).
Student Statewide Sustainability Networks and Coalitions

Realizing that there is strength in numbers, students have formed regional and state coalitions to pool ideas and resources. Here are just a few:

- The California Student Sustainability Coalition, with a core group of seven campuses and more than 30 affiliated schools, is a statewide network that collaborates on campaigns including the Food Initiative, The Green Initiative Fund (TGIF), Responsible Investments, University of California Sustainability Policy, and Education for Sustainable Living.

- Students in Ohio created the Ohio Student Environmental Coalition, dedicated to “working for a clean, safe and just future for all.” It held its second statewide student environmental summit in fall 2008.

- Launched in 2007, ReEnerize Texas is a coalition of students from more than 20 university and high school campuses, whose aim is “to fight against climate change and for the promise of a green economy.” In 2009, their efforts led to the passage of a Texas “Green Fee Bill” giving student governments the option to hold votes on self-assessed environmental green fees.

- With the goal of bringing schools in western New York together, students at Medaille College (NY) held the First Annual Leadership & Recycling Symposium in 2008 in New York to launch a collaborative network for students and others interested in campus sustainability projects.

BENEFITS FOR STUDENTS AND THE CAMPUS

Not surprisingly, the benefits to students due to their involvement in campus sustainability are many. Not only do campuses (and the biosphere) benefit by having a healthier, higher quality of life, but students hone professional skills such as teamwork, communication, project planning, statistical analysis and navigating complex systems. In addition, they may acquire technical skills like processing biodiesel fuel and measuring electrical consumption.

And while students gain a variety of personal benefits, campuses profit as well from the work they accomplish. The case examples in the 35 campus actions below illustrate the huge potential for important contributions toward improving campus operations and public relations, as well as saving significant amounts of money. And because students rarely work in isolation on campus projects, they bring a greater sense of community to their institution as they work alongside staff, faculty and administrators. Perhaps more than with any other issue, sustainability and the quest for solutions to global warming are becoming a unifying force on campuses nationwide.

“College students are flocking to sustainability degrees and careers”

That’s the title of a 2009 USA TODAY article by Jillian Berman, in which she explores how green career options and training programs are become major selling points for schools across the U.S. She notes, “With an increased interest in the environment and growth in the ‘green collar’ job sector, colleges and universities are beginning to incorporate sustainability into their programs. From MBAs in sustainable-business practices to programs that give students the technical training necessary to operate wind turbines, students have an increasing array of options to choose from.”
Commitment to sustainability is good for campus business in another way, too. It is becoming one of the key criteria students use when choosing a college. According to a 2009 survey on “College Hopes and Worries” by The Princeton Review, 66% of the respondents said that commitment to environmental issues is an important factor in determining the schools they sought admission to, with students ranking it higher than parents.\(^\text{18}\) Colorado College,\(^\text{19}\) for example, markets its beautiful natural environment, strong “sense of place” and impressive record of sustainability action right along with its challenging academic requirements. At the University of South Carolina,\(^\text{20}\) a website about one of its residence halls leads off with this line: “The West (Green) Quad is the place to live if you want to be at the cutting edge of sustainability on campus!” It offers the option of becoming part of the Green Learning Community, a special sustainability-oriented group of 25 students within West Quad. Growing numbers of students who care about this issue are investigating a school’s sustainability status as they consider where to invest their tuition dollars.

**Why Higher Education Matters\(^\text{21}\)**

By the numbers in 2008

- 18 million – Number of students (with 44% of undergraduates attending two-year schools)
- 4,300 – Number of U.S. colleges & universities
- $386 billion – Annual expenditures of postsecondary institutions

The numbers alone are impressive, but perhaps more important is the fact that today’s college and university students will be the leaders in most areas of the U.S. economy in years to come. They will strongly influence the values and priorities in the country’s future use of energy, resources and political power. Although the years spent in college are just one of many forces shaping a young person, they can have a big impact not only on a student’s understanding of issues like sustainability and climate change, but also on development of the skills and habits of mind needed to successfully tackle them.

**ABOUT THIS GUIDE**

Over the years, the staff at Campus Ecology have visited hundreds of schools and collected a wealth of campus case studies and project examples. Yet when the field team travels the country putting on workshops and giving talks, they often hear from students who ask, “What else can students do?” or “What can I do that would be most effective?” Because students are key to many parts of the NWF’s Campus Ecology program—from fellowships to campus climate action networks to the Chill Out competition—it became clear that we needed to pull together some of the best and brightest stories we’ve come across showing how students are making a difference. These real-life experiences are the best teachers for other students and schools that might be considering similar projects and ideas.

Thus, the aim of this guide is to show a broad range of examples of students creating real change on campus in the areas of sustainability, climate change solutions, reducing greenhouse gas emissions and working toward a clean energy future. Campus examples were chosen to 1) feature a diversity of campuses in terms of size, type and geographical location and 2) highlight schools that have shown tangible outcomes or measurable results in terms of potential impact on the
Lessons from the Sustainability Movement

—from Lisa Madry, long-time campus field director for NWF’s Campus Ecology program.

“There is a massive movement of student action on climate—you can point to hundreds of campuses that participated in the Campus Climate Challenge, Focus the Nation, Chill Out and Power Shift. We know that students are diving head first into action, but sometimes student action has a “leap before you look” quality that doesn’t always lead to the more effective initiatives. In an effort to help students and those who work with them channel their efforts into projects that will have the greatest impact, we are attempting in this guide to highlight some of the most compelling examples of student action we have seen over the past several years as well as some of the lessons learned from those efforts.”

Campus Ecology Case Study Database – A gold mine of ideas …

There are more than 500 entries in the Campus Sustainability Case Studies online searchable database, spanning the years 1997–2009 with new examples added each year. The database is free and available to all, and is searchable by topic, school, state and year. Categories include building design, energy, campus habitat, composting, greenhouse gas inventories, waste reduction and transportation.

See: http://www.nwf.org/campusecology/resources/yearbook
Students have been engaged in sustainability in a wide variety of ways on campus. From campus planning and behavior-change campaigns to energy conservation and waste reduction strategies, students at hundreds of schools across the country have initiated or led projects that have brought about real change—both on campus and in the surrounding community. This important work has occurred through many venues in the campus organizational structure, including courses, independent study, student environmental clubs, student-staff task forces, residence hall associations and student government.

Because the climate crisis affects everyone and in multiple ways, the methods and strategies used to address it must also be plentiful and diverse. There is no single source for good ideas; they can come from anywhere. Increasingly, students are recognizing the power in their voices and passions, and also their role in expanding the wider campus sustainability movement. We have much to learn from their ideas and experiences.

### Campus Ecology Fellowships: Seed Money to Grow Successful Student Leaders

**Committed to cutting carbon emissions or putting green energy strategies to work? How about a little money to help get started?**

The National Wildlife Federation’s [Campus Ecology Fellowships](http://www.nwf.org/CampusEcology) are awarded each year to a select group of students (called Fellows) whose projects address important climate and energy issues and also show an understanding of the strategies and campus partnerships needed to carry out their ideas.

Since the program began in 2000, NWF has supported 131 Fellows in schools across the country. Training is held in the spring at NWF headquarters in Reston, Virginia, and Fellows collaborate as a team with Campus Ecology staff and other Fellows during their project year. Biographies of past Fellows and descriptions of their diverse projects are available online.

For information, see Endnotes or visit http://www.nwf.org/CampusEcology

### Green Purchasing

- Habitat Management And Restoration
- Mixed Media
- Recycling And Waste Reduction
- Residence Halls
- Transportation
- Water Conservation

### Renewable Energy

- Behavior Change
- Climate Planning And Personnel
- Education And Outreach
- Energy Conservation And Efficiency
- Food And Dining
- Funding
- Green Building

The 35 campus action topics below are organized into 15 categories, but many sustainability projects could easily fall into multiple categories. For example, outreach events like lightbulb swaps in residence halls could also be classified as energy conservation projects. And most examples deal with on-campus actions. Sources for each campus case example are provided in the endnotes; we invite readers to follow those links to learn more.
RENEWABLE ENERGY

Campuses everywhere are making significant contributions to the renewable energy field, with students often providing much of the research in areas of policy, promotion and demonstration of real-time projects. The emissions-reduction payoff for installing renewables makes them especially valuable. By definition, technologies such as wind, solar, geothermal and biomass are carbon neutral, and thus they hold the promise of making real cuts in the campus carbon footprint. Examples of student action include influencing campus and statewide policy and participating in on-campus demonstration projects, as well as reaching out into the broader community to show others the range of possibilities with renewable energy.

1. Energy Policy

Students are weighing in on energy policy initiatives at many levels, from the individual campus to the local community, even state and nation, sometimes with impressive results. University of New Hampshire students saw their research lead to an important new state policy. As part of an undergraduate research project on local ordinances regulating residential wind systems, student Laura Carpenter ('07) called upon State Representative William Chase to sponsor a bill supporting residential wind energy in New Hampshire. After the law passed, Chase was quoted in a news story: “We need to celebrate and encourage what students can do. Here is a student who took the bull by the horns and actually created change.”

The statewide Michigan Student Sustainability Coalition looked at problems with current energy policies and determined that their state legislators needed some influencing. They planned and launched a statewide campaign called “ReNew Michigan.” As part of this campaign, legislators received online Valentine’s Day cards calling for a renewable energy utility standard of at least 25% by 2025. The campaign also urged an energy efficiency standard that would require 2% annual efficiency increases in the state from 2008 to 2015, with a commitment to renegotiate a stronger standard after 2015. And to cut carbon emissions, the student strategy urged a moratorium on new coal-fired power plants. According to campus organizer Brandon Knight, the Michigan Student Sustainability Coalition was an important voice in final passage of the 2008 Renewable Portfolio Standard (which requires that 10% of the state’s energy come from renewables and 5.5% from efficiency improvements by 2015). Students from more than ten universities were involved, with strong efforts coming from Michigan State University, University of Michigan and Albion College.

Cutting the Carbon Footprint: A National Trend

NWF’s recent national survey and report of campus sustainability efforts, Campus Environment 2008, found that nearly half (45%) of the 1,068 responding schools had implemented “significant new programs to curb CO2 and other greenhouse gas emissions” since 2001, the year of the last survey. Many of those programs, and emissions cuts, are due to renewables. One respondent, the University of Minnesota, Morris, has a 1.65 MW wind turbine on campus and will soon generate 80% of its heating and cooling needs from biomass. Students are involved in many renewable energy projects on campus, including research on biomass, which is a byproduct of local agriculture.

Download the report free at www.nwf.org/CampusReportCard

“...collaboration allowed for a unified, decentralized and loud call for a renewable energy future in Michigan.”

—Brandon Knight, Global Exchange campus organizer
One story from a few years ago still has many lessons to offer. In 2003, the University of California Board of Regents passed a comprehensive green building and clean energy policy for the statewide university system, largely due to student-initiated campaigns calling for such a policy. Their success inspired advocacy organizations such as Greenpeace and the Student Environmental Action Coalition (SEAC) to carry on similar campaigns at more than eighty other U.S. schools. Student motivation in this project came from a desire to respond to environmental issues like the California electricity crisis of 2001 and President Bush’s attempt to drill oil in the Alaska National Wildfire Refuge, as well as international events including the Kyoto Protocol negotiations and the Iraq War. Students saw campus buildings and energy consumption as two tangible targets, and recognized that the ten UC campuses had differing levels of environmental performance. Students sought comprehensive policy solutions rather than piecemeal, student-initiated campaigns at individual campuses. Finding key allies within the administration was critical to the students’ success. Using the banner message of “UC Go Solar” and waging an aggressive grassroots campaign, students helped create a system-wide policy that called for new buildings to be Leadership in Energy and Environmental Design (LEED) certified and to increase the amount of renewable energy used on campuses.

### Key Lessons from the UC System campaign

1. Bottom-up and top-down support are essential for such a comprehensive policy.
2. Connecting student research with the needs of campus staff leads to a win-win situation for all.
3. Setting firm deadlines helps projects move along, and informs all parties of the steps to be taken along the way.
4. Harnessing the extraordinary energy of students can help campuses overcome institutional aversion to risk and reluctance to change.

### 2. On-Campus Demonstration Projects

Students have been active participants in bringing renewable energy applications to their campuses, with dozens of wind, solar, geothermal and biomass projects launched in the past few years.

At Northland College (WI) in May 2008, students in a Photovoltaic (PV) Installation class helped research and erect a 2.1 kilowatt sun-tracking photovoltaic array for the college president’s home. The PV array generates enough electricity to offset the annual consumption of the president’s house and prevents about 3.1 tons of carbon dioxide annually from entering the atmosphere. Savings in electricity will pay for the cost of the panels in about 16 years, assuming a 10% annual inflation rate. The panels are expected to last, with very little maintenance, for more than 50 years. During the course, students learned about electrical generation from photovoltaic cells, national electric codes, locally available incentives, load analysis, site assessment and pay-back time calculations. Funding for the array came from President Karen Halbersleben’s personal finances, supplemented by state energy grants.
While changes to campus infrastructure are needed to conserve energy and other resources, human behavior is a potentially large contributor to a smaller campus footprint. Students across the country are actively engaged in teaching and influencing members of the campus community about how individual behaviors contribute to climate change—and about the opportunity for making a positive difference collectively. Through various outreach campaigns and pledges, students are targeting behaviors ranging from waste reduction to energy conservation.

3. Resource-Saving and Efficiency Campaigns

In addition to the many ways changed behaviors can cut waste and resource use in residence halls (see Actions 28–31), there are plenty of opportunities in other campus arenas. The use of creative, fun campaigns is an effective way to draw attention to certain behaviors.

In 2007, a student club at the University of Washington dreamed up “Sustainability is Sexy,” a creative outreach campaign to encourage coffee drinkers to opt for reusable coffee cups over disposable paper cups. Mugs, T-shirts, stickers and buttons adorned with a lipstick-kissed logo served as visual reminders, plus UW’s discount for refillable cups added a financial incentive. The program’s intent was to reduce the estimated 5,000 disposable cups used daily on campus. Results were impressive. Over the first year of the campaign, refillable mugs were used 153,000 times, saving UW’s Housing and Food Services division an estimated $23,000 in cup costs—and avoiding a couple tons of landfill waste.

Buoyed by the success of its eye-catching title and “lips” logo, Sustainability is Sexy (SIS) has since evolved into a small nonprofit organization based in Seattle and run by its original creators after they graduated from the University of Washington. Over the past two years, the group has worked with several businesses to design reusable cup campaigns similar to the UW program. In the future, SIS hopes to find opportunities to partner with more businesses and college campuses.

“Shut the Sash” is a campaign spearheaded by students at the University of California, Irvine to close or lower laboratory fume hood sashes when not in use—but without compromising safety, of course. The campaign has a three-part strategy to influence the way lab users manage the hoods. First, students are instructed by teaching assistants to lower or close sashes when they are finished with experiments. Second, reminder stickers were placed on the hoods with facts about how much carbon can be saved by closing sashes (over one year’s time the heat lost through a single wide-open hood can account for 22 metric tons of CO₂). Third, an incentive-based

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“For an excellent resource to help students and others understand the economic and technical details of renewables, see The Business Case for Renewable Energy: A Guide for Colleges and Universities, by Andrea Putman and Michael Philips, 2006, published by Leadership in Educational Facilities (APPA), National Association of College and University Business Officers (NACUBO) and Society for College and University Planning (SCUP), and sponsored in part by NWF.”

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“Behavior Change

University of Washington students help spread the word that “Sustainability is Sexy” (Photo: Sustainability is Sexy)
competition is held between three lab buildings. The prize is a catered lunch for staff and students of the winning lab, plus an energy efficiency certificate from the Green Campus Program. Since the campaign’s start in 2005, the campus has saved around 36 metric tons of CO₂ and $13,000 in energy costs each academic quarter. Green Campus intern Courtney Gill said of the program, “Most students don’t know that something as simple as closing the sash of a fume hood can save a lot of energy. We’ve had positive experiences with graduate teaching assistants, undergraduate students and professors.”

But how to make outreach campaigns as effective as possible? A couple campuses have attempted to answer this by studying the impact of particular projects. Community-based social marketing is a strategy increasingly used by campuses to help design and assess behavior change programs. The University of Southern Maine, for example, achieved a 90% drop in computers left running during 2006 as a result of flyers, prompts and asking students and staff to sign a pledge to do so. Overall, behavior changes occurred in 40–90% of areas targeted, and an estimated 2,000 kWh were saved over three weeks.

Graduate student Amanda Zulas, at Western Illinois University, began a study in fall 2008 to test the effects of different approaches, drawn from the field of psychology, on improving recycling rates on campus. She found that applied behavior analysis theory, which uses prompts and rewards (in this case, a lottery for prizes) led to the highest recycling percentages. Social capital theory, based on perception that other students around them were recycling, resulted in the greatest improvement from the baseline recycling rate. Her findings, she noted, have implications beyond recycling to energy use, fuel consumption and other behaviors.

4. Pledges

Student activists employ another social marketing technique to encourage behavior change: written and oral pledges. According to research cited in the book Fostering Sustainable Behavior, individuals are more likely to follow through on a behavior when they have made a written or verbal commitment.

The “Lights Out Accountability” pledge at Allegheny College (PA) was preceded by a student initiative in fall 2008 to pressure the campus to install automatic sensors to turn off lights in unoccupied areas. According to Kelly Boulton, Allegheny’s sustainability coordinator, “the students acknowledged that sensors are a great tool—and the campus has installed them in certain areas—but they eliminate awareness and accountability from the users of spaces.” So the Lights Out pledge was born as a cost-free way to cut consumption, and students were urged to sign cards stating the pledge (see box). One of its innovations was for students to “adopt a room” on campus where they would try to switch lights off as often as possible. As reported by Shane Downing ('11), one of the student organizers, as a result of signing the pledge several students began shutting off lights on their way through buildings if they saw that nobody was using them.

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**Lights Out Accountability Pledge, Allegheny College**

“I promise to always shut the lights off in my room when I am not there. I will make an effort to shut off other lights around my dorm and around campus if they are not in use. I will make an attempt to unplug appliances and make others aware of energy saving on campus. I will personally make sure, whenever possible, that the light is always shut off in Room____.”

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*At UC Irvine, Green Campus intern Courtney Gill places a carbon footprint sticker on a fume hood to remind lab users to “Shut the Sash” to save energy and CO₂. (Photo: UC Irvine Green Campus Program)*

“In order to get average people to change their normal behaviors, you have to first find out what works best, and then apply that to situations where you can help them to change.”

—Amanda Zulas, Graduate student, Western Illinois University"
Other pledges are broader, such as the sustainability pledge at West Virginia University, which encourages behavior change across a variety of topics. The sustainability pledge at Yale University (CT) allows students, faculty and staff to self-select certain actions they want to commit to, and its website posts the hundreds of names of those who have made the pledge. On that site, student Jacquelyn Maitram Truong (‘10) explains her support of the pledge. “Sustainability isn’t a distant, unattainable concept to be discussed in the abstract,” she said. “It is a very real way of making decisions that can be integrated into every single person’s daily actions. This pledge is not merely food for thought—it’s a call for action.”

This strategy of asking people to commit to an action was the approach of the hugely successful PowerVote campaign in fall 2008, which asked young people to pledge their vote “for clean and just energy” in both state and national elections—and to encourage friends and also their representatives in Congress to push for a clean energy economy. The campaign received pledges from more than 340,000 young people nationwide and is believed to have had a strong effect in the outcomes of many races. Two schools each had over 4,000 pledges: the University of New Hampshire and Ohio University. Schools having the largest percentage of participation based on school size included Lewis and Clark College (OR) with 53% of students signing the pledge, St. Mary’s College of Maryland with 52%, and Keene State College (NH) with 51%.

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**Greening of the Greeks**

*Greens Going Green* is a nonprofit launched in 2008 to promote on-campus campaigns for sustainable living solutions among members of sororities and fraternities. By 2009, the national organization had 11 chapters, including Kansas State University, Michigan State University, Mississippi State University, and the University of Texas-Arlington. The University of Florida chapter urges its Greek houses to implement one sustainable change a year such as participating in the sorority row recycling program, switching to compact fluorescent light bulbs, or planting more trees on the property or in the community. At the University of Washington, Greek houses have replaced 3,000 incandescent light bulbs with compact fluorescent bulbs (CFLs) and promoted water conservation by installing 300 five-minute shower timers, 300 low-flow (2 gpm) shower heads, and 500 bathroom sink low-flow aerators (1 gpm). Lead organizer Chris Bruno (‘09) explained his motivation to get involved: “I started the project because I wanted to do as much as I could for the environment, as much as my abilities and available resources would allow. I decided to start with light bulbs in the Greek Houses because CFLs are relatively easy to work with, and I knew my fellow UW students would be very appreciative.”
CLIMATE PLANNING AND PERSONNEL

Strategic planning and resulting policies are a guiding force behind a campus’s mission and operations. In recent years, students have applied pressure on administrators to live up to higher standards, especially in the realms of social justice and climate action. Participation in the American College and University Presidents’ Climate Commitment with its required greenhouse gas inventories and climate action plans is just one area where students have been working closely with staff and administrators. To move institutions further on sustainability action, students have also petitioned for related staff positions on campus that are dedicated to such work.

5. Greenhouse Gas Inventories & Climate Action Plans

As of summer 2009, 650 presidents had signed the American College and University Presidents’ Climate Commitment (ACUPCC), several of whom were lobbied by students to do so, such as at the University of Oklahoma and Birmingham Southern College (AL). As signatories to this commitment, campus leaders are dedicating time and resources to calculating greenhouse gas inventories and developing climate action plans to eventually bring their institutions to carbon neutrality. Of the public greenhouse gas inventories received by the ACUPCC, 17% were primarily researched by students or by classes, as shown in the pie chart below. As deadlines draw nearer for campuses to submit their climate action plans (within two years of signing the ACUPCC), we may see similar participation rates from students in the climate action plan research and writing process.

STUDENT-TO-STUDENT ADVICE

How to Conduct a Successful Campus Sustainability Project
Chris Bruno, Class of 2009, University of Washington

Project: Greeks Going Green

1. Before starting anything, make sure you have a solid plan. Write everything down and get things organized and spelled out. Have a document that is concise yet detailed enough so that anybody who reads it can gain a solid understanding of what the project is about.

2. Identify roles and duties. All participants need to clearly know their roles and responsibilities so they will have greater confidence in their actions, and hence the project will experience fewer setbacks and slowdowns.

3. Don’t forget publicity. This is always a good idea, since high visibility will inspire others to help or lead their own projects. Also, good publicity encourages participants to work at their best, since they know they are being watched.

4. You may get frustrated and stressed, and your skills and patience may be put to the test, but don’t forget that all the trials and tribulations are worth the reward at the end. Stress and pain are short, but success lasts forever.
One of the earliest plans for carbon neutrality was originally proposed by a student organization, MiddShift, at Middlebury College (VT) during the 2006–2007 school year. After completing a greenhouse gas inventory, students developed a carbon neutrality toolkit that integrated several years’ worth of student research and helped guide the process of choosing a set of projects that would fully eliminate the college’s carbon footprint. MiddShift students proposed their scheme in a meeting with the Middlebury Board of Trustees in 2007 and won approval for a goal of carbon neutrality by 2016. Upon trustee approval, President Ronald Liebowitz appointed a MiddShift Implementation Working Group of students, faculty, staff and administrators, who are charged with developing a neutrality roadmap that is “feasible, cost-effective, accessible and flexible.”

A popular approach for student involvement in greenhouse gas inventories is to do them as class projects, taking advantage of the team effort. At Stetson University (FL), an environmental science class took on the charge of researching and tabulating the inventory. Among many other topics, students did the legwork to get the numbers on fuel consumption and commuter patterns, visiting over 200 departments to look at mileage reimbursement forms.

At Pomona College (CA), students are deeply integrated into planning and research for the campus sustainability audit, greenhouse gas inventory and climate action plan. By design, many of Pomona’s sustainability initiatives and outreach projects through the years have been student-initiated and student-centered. By taking the lead, students are provided valuable training and gain real-world work experience, while the campus benefits greatly from the work. As an example, Pomona College hired a consultant to conduct a thorough sustainability audit, and a team of students were paid and trained to work alongside the consultant, completing a variety of tasks needed for the audit.

Another way students at Pomona are involved is through Sustainability Action Fellowships developed by the sustainability coordinator, a recent Pomona alumnus. This program brings together approximately 30 students who work in teams on topics like energy, outreach and environmental justice. They generate, vet and prioritize recommendations for the college to move forward with its sustainability goals. These groups meet monthly for a workshop that includes leadership training and campus updates, and allows plenty of time for sharing ideas on how to implement strategies. While currently voluntary, there is the hope that the fellowships can become paid work-study positions.

6. Sustainability Positions

The number of dedicated sustainability positions has grown rapidly in the past decade, with students often being strong champions behind the creation of these positions. This continues to be the case today, with more positions being announced on a regular basis. By having a dedicated position for sustainability-related work on campus, institutions show a commitment to having a consistent and proactive approach to tackling these issues. Both NWF’s Campus Ecology and the Campus Consortium for Environmental Excellence (C2E2) have resources online on how to create sustainability positions on campus.
Humboldt State University\(^{51}\) (CA) students developed and presented a proposal for a sustainability coordinator position to the university president, who approved it the same day. Duke University\(^{54}\) (NC) recently created a new staff position, the Coordinator of Student Environmental Initiatives, whose task is to “develop a strategic, university-wide plan to boost environmental awareness and encourage greater participation in environmental initiatives,” primarily by gathering input from students and other campus members.

Students not only advocate for the institution to host such positions, but they are even hosting positions within their own organizations. At the University of Arizona\(^{55}\), the Associated Students of UA recently created the position of Sustainability Director within the student government to focus primarily on projects within student unions and to work with student clubs and organizations. Similarly, there is an Environmental Senator position within the student government structure at California State University, Monterey Bay\(^{56}\), typically held by the chief student activist on campus.

**EDUCATION AND OUTREACH**

Student-led educational initiatives focusing on the environment go back at least as far as the first Earth Day on April 22, 1970. On many campuses Earth Day has expanded into Earth Week, an annual celebration featuring speakers, information fairs, rallies and other events. More recently, Focus the Nation, the National Teach-In for Global Warming Solutions, Campus Sustainability Day and NWF’s Chill Out: Campus Solutions to Global Warming awards webcast and other sponsored events have added new educational opportunities to the campus calendar. These organizations often provide promotional toolkits to help campuses stage successful programs. Students are also taking the sustainability message off-campus into surrounding communities and beyond, expanding their reach to the wider public. Some of these are service-learning projects that involve aspects of equity and social justice for communities of color and other groups.

7. On-Campus Awareness and Education

Student-led peer-to-peer education efforts benefit from the fact that students typically know what approaches will catch other students’ attention. The longest-running and most widespread environmental awareness-raising campus event is Earth Week, typically held the week nearest to April 22 and coordinated primarily by students. At Bergen Community College\(^{57}\) (NJ) in 2009, students hosted many Earth Week activities, including a thrift goods sale, tree-planting event and a “pledge wall” on which they wrote behavior-change promises. The week culminated in a statewide capstone conference, “Go Green NJ,” with participation from many New Jersey colleges and universities for a day of workshops, speakers and sustainability activities. Earth Week 2009 at Boise State University\(^{58}\) (ID) had a packed schedule with service projects, live bands, movie showings, panel discussions on alternative energy and transportation—to mention just a few of the offerings.

“Students and their passion for the environment have always been a driving force in Pomona’s sustainability projects and programs. Through our Sustainability Action Fellowships, they have become more fully integrated into the administration’s decision-making processes and get to see and participate in ‘the other side’ of how decisions are made.”

—Bowen Patterson, Sustainability Coordinator, Pomona College

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**Green Curriculum for a Green Future\(^{59}\)**

As the college curriculum changes to meet the needs of a clean energy workforce, sustainability-related courses and degree programs become awareness tools in themselves. At community colleges,\(^*\) in particular, the greening of the curriculum is on the fast track. New programs in wind, solar, geothermal and other renewable energy technologies are opening at a rapid pace, but demand often outstrips supply—suggesting promising growth in these fields for years to come.

\(^*\)For more, see Campus Ecology’s ClimateEdu for May 12, 2009: “Community Colleges Step Up to Train Clean Energy Workers.”
Sustainability-related educational programs also occur on campuses at other times during the school year, either as one-time or annual events. Students and staff at the College of the Menominee Nation (WI) hosted a Sustainability Fair in spring 2009, whose aim was to showcase the college’s efforts and achievements (including its sustainably managed tribal forest) and “to inspire a sustainable culture” through exhibits, demonstrations, speakers and workshops. At the University of Colorado at Boulder, the annual Rocky Mountain Sustainability Summit has expanded from a campus-only event to a multi-state gathering of western colleges and universities. The February 2009 summit, coordinated by students and staff, drew participants from nine states and offered workshops in areas such as creating a campus culture of sustainability, social and environmental justice, and carbon mitigation planning. To encourage more CU Boulder students to attend, admission is free.

Organization-sponsored programs have recently widened the pool of options for campus-based sustainability events. Starting in 2006, the National Wildlife Federation has sponsored Chill Out: Campus Solutions to Global Warming, which is a competition open to all colleges and universities. Students and staff submit descriptions of innovative projects that have an emphasis on saving energy and cutting carbon. In 2009, eight campuses won awards in different categories and more than 240 schools and other organizations, including some from overseas, logged on to see the national webcast featuring the winning entries. In many settings, students organized the viewing and showed it during group meetings, classes and other events. One of the Chill Out categories, campus-based videos, drew many entries in 2009. Students at the University of California, San Diego created one of the winning entries, which featured many of the school’s innovative renewable energy projects and other green programs. Another video, from the University of Arkansas showcases the school’s sustainability initiatives and student involvement. The awards webcasts and videos from past Chill Out competitions are available online.

Other nationally available programs include the National Teach-In on Climate Change Solutions, which was held February 5, 2009, at hundreds of schools nationwide. Northern Arizona University was one of the Teach-In participants, sponsoring a day of activities and educational offerings for students and including a speech by NAU President John Haeger. The university hosted the event in collaboration with nearby Coconino Community College, (AZ) composed of six campuses, which provided live video streaming of the entire day’s happenings. The national Campus Sustainability Day, held every October since 2003, is sponsored primarily by the Society for College and University Planning. In its first six years, more than 280 campuses participated from all over North America. Madison Area Technical College (WI) held a Sustainability Day in 2008, which was planned by students, faculty and staff and included presentations on the National Renewable Energy Laboratory, winter biking in Madison, and a showing of the webcast “Climate Realities, Challenges and Progress in Higher Education.”

8. Community Outreach

With the aim of teaching about sustainability and reducing carbon emissions in their surrounding communities (and thereby helping create a higher quality of life for all), students are engaging in various service projects such as offering home weatherization services and compact fluorescent bulb distribution. Greenhouse gas emissions saved through such projects can be counted as carbon credits toward a school’s overall reduction.

The Community Carbon Use Reduction at Brown program (CCURB) at Brown University (RI) solicits community-based project ideas from students that are meant to address community needs—and also save carbon that can be used as a measurable offset for campus emissions. One of the projects, HeatSave, involves the installation of...
programmable thermostats in low-income homes in Providence. A HeatSave student volunteer, Adam Yarnell (’10), was amazed to find that “even folks with limited resources, who have other very pressing needs, care so deeply about the environment.” And at Warren Wilson College (NC), a spring break service program called INSULATE! involved ten students who collectively worked 440 hours in weatherizing the homes of five families.

Morehouse College (GA) students created the Let’s Raise a Million initiative, with a goal of raising funds to obtain and install one million energy saving CFL bulbs in low-income households in the Atlanta area over a period of four years. By September 2008, they had installed 6,000 bulbs and one year later were up to 20,000. At Oberlin College (OH), student organizers secured a contribution of 10,000 CFL bulbs from an anonymous donor, and in 2007 and 2008 swapped them for incandescents both on and off campus. Members of Oberlin’s Light Bulb Brigade estimate that 6,500 tons of CO2 will be avoided over the life of the bulbs (see Student-to-Student Advice box below).

“Service for sustainability” can take many forms. Starting in spring 2009, Drury University (MO) students served as interns for the new Ozarks Center for Sustainable Solutions, an organization that primarily assists regional businesses and organizations with pollution prevention and sustainability awareness. University of North Dakota student Robert Deringer (’08) saw the need for a recycling system in downtown Grand Forks and started a program on his own. “The city challenges its citizens to recycle 80 percent of their waste,” Deringer said, “But that’s not an option for people living and conducting business downtown.” The recycling station he set up now provides the opportunity for residents and businesses to do so.

### STUDENT-TO-STUDENT ADVICE

**How to Conduct a Successful Campus Sustainability Project**

**Kristin Braziunas, Class of 2008, Oberlin College (OH)**

**Project: The LightBulb Brigade**

1. Find a source of funding by asking local businesses or environmental organizations, or encourage your college or university to finance your project in return for claiming the carbon reductions, which can be very significant (our 10,000 CFLs offset 13% of Oberlin’s annual carbon emissions!). Or, create a voluntary carbon offset fund and encourage students, faculty and staff to pay into it.

2. Appoint one or two experienced (junior- or senior-year) students to coordinate the program, keep good records and provide accountability.

3. Anyone can change a lightbulb or organize a lightbulb-exchange event. Encourage students, faculty, staff and community members to volunteer their time, even if only for a few hours.

4. Build ties with community leaders such as church pastors, business owners, tenant council members and neighborhood-event organizers. They are your access points and allies, and will lend you credibility as well as help you set up the exchanges.

5. Don’t forget education! Distribute information on mercury content, steps for cleanup of broken CFLs and proper disposal of CFLs with every exchange. When you are giving away bulbs for free, you are responsible for ensuring that participants are well informed.

6. Put in extra effort to change lightbulbs in many different communities. While setting up an exchange with students and staff at your college may be the easiest means of distribution, working with community leaders to set up exchanges in churches, businesses, and neighborhoods ensures that the bulbs are distributed to those who may be least likely to purchase them due to their cost and who will benefit the most from the energy and monetary savings.

7. Finally, don’t forget sustainability. Encourage the development of additional local carbon offset programs that enable continued student involvement. Thank your college for supporting a community carbon reduction program and encourage them to begin budgeting an annual amount for carbon emissions offset projects.
Taking the message of sustainability to a national audience, a group of 15 students from Dartmouth College\(^\text{\textregistered}\) (NH) have been steering their “Big Green Bus” each summer to dozens of cities from coast to coast, starting in 2007. As a rolling science lab and energy efficiency exhibit, their mission is to show everything from basic sustainable living practices such as energy efficient appliances to do-it-yourself biofuels. Painted bright green to catch the eye, the 2009 bus is a converted 1989 MCI motor coach, a major upgrade from the old school buses of the past. It is fueled primarily by filtered vegetable oil harvested from restaurants en route, and powered by four high-efficiency solar-electric panels mounted on the roof that operate its computers, display lights and air conditioning.

ENERGY CONSERVATION AND EFFICIENCY

With rising fuel and electricity costs, schools are increasingly turning to conservation and efficiency measures to save energy and much-needed money. While many campus energy managers have made huge strides in this realm, students often have played a part in helping identify new places to save energy. Many have assisted facilities staff with energy audits and greenhouse gas inventories and have helped investigate the availability and costs of alternative practices and technologies. Examples of the many possible actions in this area include lightbulb swaps, heat recovery projects and energy metering and feedback systems.

National Trend toward Energy Efficient Campuses

NWF’s recent national survey of campus sustainability efforts (Campus Environment 2008\(^\text{\textregistered}\)) revealed that upgrades in lighting, HVAC systems (heating, ventilation, air conditioning) and computing networks have all increased since the first survey in 2001. Notably, of the 1,068 schools that responded to the 2008 survey, 67–74% reported that they had “plans to do more” in the area of energy efficiency, a significant rise since the last survey. Download the report free at [www.nwf.org/CampusReportCard](http://www.nwf.org/CampusReportCard)

9. Compact Fluorescent Lightbulb Distribution

Several stories about bulb-swapping have already been given, but they focused on Greek houses and off-campus community outreach projects. Student-run CFL distribution programs have been popular—and successful—on campus, too. Finding funding to pay for the bulbs, from government energy offices, local power companies or private donors is often a first and sometimes challenging step toward action on sustainability. But giving the bulbs away is relatively easy since most students now recognize the “swirly” bulbs as energy-conserving devices that save on greenhouse gas emissions as well as electricity.

In Connecticut, student-based organization ConnPIRG distributed donated bulbs to students at Trinity College\(^8\) (CT) while educating them about other simple ways to conserve energy as part of their Campus Climate Challenge. Some students have used the bulbs as incentives to participate in sustainability events, such as Focus the Nation or Earth Week. Students at Sarah Lawrence College\(^9\) (NY) exchanged incandescent bulbs for CFLs during one of the campus events scheduled for Focus the Nation in 2008.

Bulb swaps offer the opportunity to go door to door in campus residence halls where students literally can “get a foot in the door” to talk with other students about conservation measures. Bowdoin College\(^10\) (ME) student Eco-Reps created a “Kaptain Kilowatt”

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Dartmouth College’s Big Green Bus at its University of Wisconsin-Madison stopover, August 2009. (Photo: David J. Eagan)

Bowdoin College’s “Kaptain Kilowatt” battles with Phantom Energy to help cut wasted energy. (Photo: Keisha Payson, Bowdoin College)

National Trend toward Energy Efficient Campuses

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character who joins in on the bulb-swapping fun (see photo). The University of Vermont Eco-Rep program has held an annual lightbulb swap since 2004, resulting in significant savings (see table). First-year students are the primary target in the residence halls, and each year Eco-Reps distribute around 550 free bulbs (costing UVM $1 after rebates from Efficiency Vermont, a state energy program). Savings estimates are based on a calculation that includes the wattage of the incandescent bulb, hours of use per day, utility grid costs for electricity and other factors.

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<th>Estimated savings from University of Vermont residence hall lightbulb swaps</th>
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<td><strong>TOTALS</strong></td>
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¹ based on $0.10/kWh
², ³, ⁴ based on VT’s grid emissions outputs (2000) from http://www.epa.gov/cleanenergy/index.html

(Note: Totals do not represent cumulative campus savings because students usually take the bulbs with them at the end of the school year.)

10. Heat Recovery and Thermostat Control

Considerable savings can result from reducing the amount of energy needed to heat and cool buildings—either by conserving the heated/cooled air already in the building or cutting the overall amount of energy needed. Student research at the Massachusetts Institute of Technology (MIT) found that using revolving doors (instead of typical hinged doors) kept more heat inside buildings and saved energy, so they wrote a successful proposal to pay for signs that read “Help Conserve Energy. Please Use the Revolving Door.” Tests in 2007 showed that the signs helped increase the use-rate of the revolving doors to 65%, up from 23%. Mechanical engineering seniors at the University of Maine conducted a study for a capstone course in 2007, designing a heat recovery mechanism for the air-handling system of the Engineering and Science Research Building. The lab building requires huge volumes of ventilation air, but by using heat pumps to recover heat from outflow air in winter, incoming outside air can be pre-heated as it enters the building. The design could potentially recover the energy equivalent of 27,000 gallons of fuel oil per year, saving the campus an estimated $100,000 annually. Students in a fall 2009 course are still developing the innovative design, and the University of Maine Foundation’s Green Loan Fund has approved $200,000 to pay for the system.

At California State University, Chico, students recognized the savings potential in lowering and raising the standard heating and cooling thermostat settings on campus. Eighty-four percent of students voting in spring 2007 approved an advisory measure to adjust temperature standards by three degrees, so that buildings would not be heated above 65 degrees in winter or cooled below 81 degrees in summer. Student organizers estimated annual savings of $151,000 in costs and 1,100 tons of CO₂. In a news release about the victory, organizer Julienne Riddle (’07) said of the project, “It was the greatest feeling in the world to know we worked hard, raised awareness and most importantly, that students really care about this stuff. I’m just happy we’re making the change we want to see on campus.”
11. Metering and Feedback Systems

Research in social marketing has demonstrated clearly that providing feedback results in higher rates of behavior change. This is the premise behind the real-time displays of residential hall resource use, a concept first developed by students and faculty at Oberlin College (OH). Their Campus Resource Monitoring System (CRMS) allows anyone to see, for example, how much electricity is being used per person in one residence hall and compare that to energy use in another building. This tool, first developed by undergraduates, has expanded into a commercial enterprise, the Lucid Design Group (founded by Oberlin graduates), which develops similar “dashboard” display systems for other campuses and institutions. Oberlin faculty recently won an $800,000 grant to develop a community-based resource monitoring system that will not only track energy use, but also a variety of other environmental parameters such as the water quality in a nearby creek. Student researchers will work directly on this project.

In April 2007, Oberlin added an eye-catching component to show dorm residents their building’s overall energy use. Known as “Energy Orbs,” these glowing spheres are mounted by the entrances of six halls and vary in color (green, yellow, red) depending on how much energy is being used. Students can see, as they walk in or out, how their dorm is doing without having to visit the CRMS display panel. Another variation on visual feedback is at Dartmouth College (NH). Along with graphs and numerical data showing energy use in residence halls, their GreenLite Dartmouth program also shows an animated cartoon polar bear whose mood and fate reflect current energy use. In times of low energy use, a happy, playful bear appears in displays mounted in dorm hallways or on the internet, desktop widgets and cell phones. As energy use increases, the bear becomes more distressed as its well-being is threatened. When energy use is too high, it sinks through disappearing ice and struggles to swim. The program’s goal is a 15% reduction in energy use as a result of implementing this innovative tool.

Resource use feedback does not have to depend on high-tech dashboards or other display systems. A student at the State University of New York at Albany developed a website where the 7,000 resident students could check their building’s monthly electrical consumption and compare it with others. Results from two semesters of the Albany Energy Campaign showed that students reduced their electricity use by 192,500 kWh and approximately 41 metric tons of emissions. For students living in apartments who pay a fixed electricity charge, campaign organizers developed a simulated billing system to show students their actual monthly usage, and volunteers conducted room audits with Kill-A-Watt meters to help high consumers figure out ways to reduce.

Food and Dining

The sustainable foods movement resonates deeply in many student communities. From urging campus dining services to serve more local and organic foods to actually growing it themselves, students are helping change the way campuses eat, and ultimately reducing greenhouse gas emissions resulting from the many steps required to bring food from field to plate.

12. Student-Grown Food

On campuses nationwide, students have launched garden projects, which often start small but then expand as demand grows on campus and in the community for their fresh produce. For a few schools, student-grown food is part of the curriculum. At Dickenson College (PA), a small garden was started as a class project in 1999 and grew in size to three-quarters of an acre with its vegetables supplying a local food bank. In 2007, the program expanded into the “College Farm,” moving to a 20-acre property near campus. In 2008, it had six acres in cultivation with five acres in pasture. The farm’s manager, former student Jennifer Halpin, coordinates a crew of
paid and volunteer student workers each summer and during the school year. Produce raised at the farm goes to members of a CSA (community supported agriculture), as well as the campus food service, and gross sales in 2008 were around $28,000. Students and faculty at the Maharishi University of Management\textsuperscript{91} (IA) enjoy an organic vegetarian diet of locally grown food harvested daily from the student-run solar and wind-powered greenhouses. Their irrigation system uses captured rainwater, and a vermiculture (worm composting) system converts organic food wastes into fertilizer.

FROM CLIMATE EDU: Student-grown organic produce helps low-income residents of Missoula, Montana

The PEAS farm (Program in Ecological Agriculture and Society) is an urban agricultural “field station” for students at the University of Montana. (PEAS is co-sponsored by Garden City Harvest, a nonprofit organization.) Through supervised internships under UM’s Environmental Studies Program, 75 – 80 students a year are engaged in all necessary farm chores, from planting to harvest, on the 10-acre farm located two miles from campus. In 2008, the results of their labor—more than 20,000 pounds of organic produce—was given to the Missoula Food Bank, which had 11,000 client visits that year. Farm director Josh Slotnick works closely with the students and emphasizes their essential role. “The work is very real,” he said. “If they don’t weed the carrots, the carrots don’t grow and others go without. The students feel they are contributing to the greater community. It’s a transformative experience.”

The organic farm at the University of Nevada, Reno\textsuperscript{93} started in summer 2008 as an idea of two students in an environmental citizenship class. The university’s Academy for the Environment contributed $3,500 for student wages and equipment to help launch the project. At Boston College\textsuperscript{94} (MA), organic produce grown by the Real Food BC group on the Brighton campus is shared through the college dining services. Student volunteers put together a 2008 report summarizing their progress and experiences, noting that in their first year more than 50 undergraduate and graduate students helped tend the garden, collectively spending more than 600 hours and harvesting more than 500 pounds of vegetables. And at Michigan State University,\textsuperscript{95} students in the Institute of Agricultural Technology organic farming program manage a 10-acre student organic farm that produces more than 70 crops, including vegetables, fruits and cut flowers. As part of the program, they also run a farm stand in summer to sell their produce.

13. Local Foods in Dining Halls

To avoid the environmental and social costs of buying food shipped from thousands of miles away, students and staff have long advocated supporting local agriculture to supply vegetables and other foods to campus. Two important coalition organizations have grown out of the campus food movement: the Community Food Security Coalition\textsuperscript{96} (also known as Farm to College) and the Real Food Challenge,\textsuperscript{97} an organization founded and run by current students and professionals. Both organizations work extensively with student activists who are engaged in growing and serving local and organic foods on campus. CFSC conducts annual surveys of individual farm-to-college programs, and links to the data from over 130 colleges and universities is at \url{http://www.farmtocollege.org/list.php}. The University of Montana-Bozeman,\textsuperscript{98} for example, reports spending $300,000 annually on local farm products.
At Berea College (KY) students are engaged in all levels of the food system, including coordinating the purchase and delivery of products, researching the availability of local products, working on the 400-acre campus farm (crops and livestock) and conducting promotional and educational outreach. Students at Augustana College (IL) are a key part of the school’s “Farm to Fork” initiative. They visit and work at nearby family farms for hands-on learning about sustainable food production. (For a student-produced video about the experience, see http://www.youtube.com/watch?v=XSKeSZiYwQqc). Currently, four of these local growers help supply campus dining halls with fresh strawberries, lettuce, squash, apples, onions and other vegetables, and a collective of livestock producers provides beef products. According to Director of Dining Garry Griffith, during the fall 2009 harvest period around 80% of the produce needed by dining services was locally sourced, a testament to the success of the program. During the 2008–09 school year, his operation spent over $100,000 on locally grown foods.

In the Midwest at Iowa State University, students held a “Real Food Picnic” in fall 2008 to develop support and awareness around local food issues. They are also working with campus dining services, which plan to increase local food purchases. By 2012, 35% of food served on campus will come from Iowa farms and be sustainably grown and/or certified organic. At Linfield College (OR), to gain support for asking their dining services provider to serve more local foods, students in the Veggie Club held a “Real Food Taste Test” on campus, comparing processed commercial foods to local, organic, healthier options. The preferred items, not surprisingly, came from local producers.

FUNDING

Students who understand the fiscal limitations facing most campuses today have created new strategies to support campus sustainability projects that they think are important. Student fees, revolving loan funds and class gifts are three innovative ways that students have strengthened the support of sustainability and climate action projects on campus.

14. Student Fees

At many schools, students have voted to increase their own annual or per-semester fees, with revenues typically going to three types of projects: 1) purchasing renewable energy produced off-campus, 2) funding renewable energy and efficiency projects on campus, or 3) a hybrid of the two. Supplementing the examples featured below, a list of schools with such mandatory student fees has been compiled by AASHE and includes over 30 examples from across the country along with supporting documentation.

In spring 2008, 82% of students at Centre College (KY) voted to approve a $20 annual green fee that supports buying renewable energy credits (RECs) from a local hydro-electric provider, and the college’s board of trustees approved the fee shortly thereafter.
University of Colorado-Colorado Springs\textsuperscript{106} students voted in 2008 (with 76\% in favor) for a $5 per semester fee to fund the installation of solar panels on university buildings. Over the five-year duration of the program, more than $300,000 will be raised. As noted on a campus website, the fee will help UCSCS “fight dependence on fossil fuels at a rapidly developing institution located in one of the sunniest states in the nation.” And at the University of Oregon,\textsuperscript{107} self-assessed student fees that generate approximately $36,000 a year go toward the purchase of wind power and also fund energy conservation projects on campus. Known as the Energy Conservation and Alternative Futures Fund, students make recommendations on where the money is spent, with final approval from the university’s vice president and provost.

Student fees are not always energy-related, but also address other needs on campus such as for recycling at Montana State University\textsuperscript{108} and to support a sustainability coordinator position at Bemidji State University\textsuperscript{109} (MN). At Johnson County Community College\textsuperscript{110} (KS) the student fee, which went into effect in fall 2009, will generate about $300,000 a year based on a $1.00 per credit assessment. As a student-initiated idea, more 700 signed a petition in support of the fee. Center for Sustainability Director Jay Antle notes the significance of that number: “Particularly at a commuter campus like JCCC, it’s difficult to get students in large numbers to get involved in any sort of activity. So to have 700 actively show their support for this green fee is really a testament to their commitment to environmental issues.” Projects will be proposed by students and selected by a student committee, and suggestions have already been made about the need for small wind turbines and composting on campus. Starting in fall 2008, Prescott College\textsuperscript{111} (AZ) students assessed a fee on themselves of $100 per year (for a total of $100,000 annually) to support the salary of a sustainability coordinator and to fund a small grants program. The money has been used to pay for student-proposed campus projects, with the Sustainability Exploration and Education Development (SEED) committee deciding which ones to support.

The Tennessee Story: Bringing All Stakeholders to the Table

At the University of Tennessee Knoxville\textsuperscript{112} (UTK), the group Students Promoting Environmental Action in Knoxville, or SPEAK, was eventually successful in establishing a student fee for clean energy at UTK, as well as several other universities in Tennessee. In its first three years, the Student Environmental Initiatives Fee generated about $1.4 million for green power purchasing and energy efficiency upgrades at UT Knoxville. But the road to success had a few stumbling blocks.

Former student Jon Paul “J.P .” Plumlee (’05), one of the student organizers at the time, explained that for students who attended, the first annual Southeast Student Renewable Energy Conference in 2004 was a pivotal point for building enthusiasm around renewable energy projects. After attending the conference, they came back to UTK to survey their peers on their interest in a green fee, then got over 1,500 signatures on a campus-wide petition supporting a measure that went to a campus vote. Marked by the largest student turnout ever, the measure passed with 60\% of students supporting it.

The following summer, however, key administrators expressed their concern and said they would not support the fee. “This is when we learned the importance of communicating with all players on campus,” said Plumlee. “So, with three student activists working with the chancellor over the summer, we settled on a pilot fund of $100,000 for campus projects that students could submit proposals for.” This allowed several lighting retrofit projects to start and for the chancellor to see that students were serious about their proposals—and the green fee.

\textit{continued on next page}
15. Revolving Loan Funds

A growing number of schools are creating bank-like funds that extend a line of credit to individuals and departments to cover the costs of a project, with payback calculated to both restore and grow the fund. One of the earliest funds—and the nation’s largest—is Harvard University’s MA Green Campus Loan Fund with $12 million in capital. It has funded over 150 projects with a return on investment averaging 27%. Seeing the potential for students to be involved in creating such funds, two students from Macalester College (MN) wrote a how-to manual called Creating a Campus Sustainability Revolving Loan Fund: A Guide for Students, which was published in 2007. One of the student authors, Timothy Den Herder-Thomas, explained in a press release the central aim of his publication: “Our guide is specifically targeted to help students at other campuses establish revolving loan funds that include substantial student involvement.”

Students at California State University, Monterey Bay created a loan fund in 2006 called the Energy Innovations Fund (EIF), which was set up to provide support on a competitive basis for campus energy efficiency projects. Their first project in 2006 helped pay for efficient overhead lights on the basketball court in CSUMB’s sports center. The EIF was able to pay for four fixtures at 5% interest, recouping their investment plus interest in 18 months. By fall 2009, the fund was up to around $10,000, with some campus staff contributing regularly through payroll deduction.

The Sustainability Revolving Fund at Carleton College (MN) gives students access to resources to use toward campus projects that reduce greenhouse gas emissions. Launched in 2007, its initial
funds of $35,000 came from the Carleton Students Association, whose loan was matched by the college. In 2008, former student Jim Haughn, class of 1983, raised $14,000 to add to the fund by riding his bike from Ohio to Northfield for his 25th class reunion. As of November 2008, the SRF was up to $70,000. Proposed projects require a detailed application showing a payback of preferably less than six years to maximize the amount returned to grow the fund.

16. Class Gifts
As students prepare to graduate, their class often chooses to leave a gift for the institution as part of their class legacy. More frequently, students are deciding on gifts that have a sustainability message. And in at least one instance, an individual student made such a gift.

The class of 2008 at the University of Delaware provided a gift that went to support the completion of a greenhouse gas inventory and a campus sustainability website. The class of 2009 continued this theme, raising a record $100,000 for solar panels to be installed on campus. As noted in the gift announcement, Heather Barron, senior associate director of annual giving, called the class “pioneers in the university’s efforts toward sustainability” who offer a positive role model for others. In 2008, seniors at Williams College (MA) broke tradition with their class gift (typically such gifts are unrestricted) by requiring that the money be used to create a new fund to support sustainability projects at their alma mater. At Cornell University (NY) in 2006, a graduating senior who had been involved in campus renewable energy projects personally contributed $10,000 to help fund a 15-kilowatt solar installation on Day Hall. The panels, the first to be installed at Cornell, have been used by many classes as an educational resource.

GREEN BUILDING
“Green” is one of the most widely used terms associated with campus sustainability projects. Generally meaning environmentally responsible or environmentally preferred, green building is an area where campuses have the opportunity to put the other type of “green”—meaning dollars—to work in ways that help promote a clean, sustainable economy. At schools nationwide, students are urging their administrations to put their “green” to good use by implementing policies for healthy, energy efficient, high-performing buildings.

17. Building Design and Construction
Campuses across the country are touting the many benefits of their latest green buildings—including structures that are LEED certified (Leadership in Energy and Environmental Design)—especially their significant life-cycle savings. In some cases, students have been involved in different stages of the building process, from design planning to curricular connections. This is a huge and important arena for campus sustainability, of course, with buildings directly or indirectly responsible for 70–90% of a school’s carbon emissions. If more students can get involved in campus retrofit or new construction initiatives, they will become much better equipped to take action in future decades to help transform the nation’s stock of domestic, institutional and commercial buildings to energy efficient, healthy places to live and work.
Northland College’s (WI) students co-designed a 114-student residence hall that opened in 1998, and which also serves as a teaching tool, providing everyday opportunities to learn about such things as energy efficient construction, renewable energy systems and composting toilets. St. Lawrence University’s (NY) Johnson Hall of Science earned a LEED-Gold certification in 2007. It was the first certification at that level for a college campus in New York. The resource-saving features of this 115,000-square-foot lab building were developed in a planning process that involved students and faculty throughout the design phase.

The Georgia Institute of Technology’s took sixth place in the 2007 Solar Decathlon with its student-designed-and-built experimental house. The 800-square-foot structure was moved onto the campus in 2008 and is being used as a classroom and learning lab for sustainable power. Its 39 photovoltaic panels produce 3,600 watts of electricity, with panels on the roof tilting to catch the sun in any season. A diverse group of more than 125 students were involved in the project from Georgia Tech’s colleges of architecture, engineering, sciences and management. (The Solar Decathlon, sponsored by the U.S. Dept. of Energy, is held every two years with 20 teams competing. Most come from a single institution, but some are multi-school teams.)

Student involvement in green buildings can also extend beyond the campus. A cohort of 22 University of Kansas architecture graduate students saw an opportunity to help fellow Kansas residents affected by a spring 2007 tornado by designing and building prefabricated housing modules with green-design features such as wind turbines and solar-electric panels, thermal massing and geothermal heating. The seven modules were constructed in Lawrence, Kansas, and delivered to Greensburg, located 400 miles away, on the one-year anniversary of the tornado that devastated the town. The 1,600-square-foot “Sustainable Prototype” building, which now serves as an arts center, is a model for the community of how building green might be achieved in homes and other structures. Upon its completion, the Arts Center became the first LEED-Platinum building in Kansas, as well as the first designed and built by students.

Although not directly tied to greening a particular campus, there are new outlets for student creativity in applying green building ideas elsewhere. The national Lifecycle Building Challenge, whose aim is to promote innovative ideas for buildings that can readily be deconstructed and their components reused, runs an annual contest for students and professional firms. Student winners in 2008 came from Carnegie Mellon University (PA), Illinois Institute of Technology and Washington University in Saint Louis (MO), with Carnegie Mellon’s Plug and Play design entry also winning the Best Greenhouse Gas Reduction Design award. Students at Lafayette College (PA) received top honors among undergraduate students in the United States Green Building Council’s Natural Talent Design contest, which challenges students and professionals to create a sustainable learning environment and revitalize park space in New York City.

GREEN PURCHASING

Colleges and universities are major purchasers of goods and services, which include custodial chemicals, food service supplies, office products and furnishings, bookstore merchandise, laboratory and research equipment, fleet vehicles, maintenance supplies and much more. In all of these areas, greener options are becoming more widely available as well as more cost-competitive. Copy paper with 100% post-consumer recycled content, for example, is now on par with virgin paper in both quality and cost. While individual purchases can be made with sustainability in mind, the preferred approach is for green products and purchasing to be required across the board in campus policies and contracts.
18. Purchasing Policies

For just about every item purchased by a college or university, a formal policy spells out the expectations of the exchange. At the University of Vermont,129 students organized under the group Forest Crimes Unit, led by Basil Tsimoyanis ('09), successfully lobbied the university to change a purchasing policy for custodial paper products. Working with the purchasing unit for Residential Life, students conducted research and product trials and finally succeeded in getting the university to agree to buy only “green certified” toilet paper and paper towels made from 100% post-consumer recycled paper, bleached without chlorine, and that meet other stringent environmental standards. In a press release about the initiative, Leslye Kornegay, Director of Custodial Services, noted the importance of the student voice. "We have a paradigm shift here, where the students are really our partners," she said. “These students had legitimate concerns, and we take that into account in our business decisions." This project was part of a nationwide effort in 2008, organized by Greenpeace, for schools and businesses to avoid tissue paper products containing paper fiber harvested unsustainably from North American boreal forests.

HABITAT MANAGEMENT AND RESTORATION

Students can play an important role by helping protect, restore and manage both the landscaped and natural environments on and near their campuses—places that, among many other benefits, offer homes and shelter for wildlife. A Campus Ecology guidebook devoted to this topic is scheduled to be published in 2010. It will cover sustainable landscaping, natural areas management and restoration, green roofs, stormwater management, campus farms and local foods, and carbon sequestration.

19. Landscape Management and Restoration

Natural areas on campuses—ranging from pristine ecosystems to re-naturalized habitats—can provide breeding sites, food and corridors for wildlife migration, all of which will help native species survive the ecological disruptions predicted by global warming. At Sweet Briar College’s130 (VA) 3,200-acre rural campus, 400 acres have been formally designated as nature sanctuaries. Comprised of ten diverse areas, the first sanctuary dates back to 1958. These sites are used extensively for class projects and student research, including a study of spotted salamanders (*Ambystoma maculatum*), which in a single night in March 2007 tallied over 500 individuals making their way to a breeding pond on campus.

In the Pacific Northwest, a 58-acre wetland restoration along North Creek, jointly managed by the University of Washington Bothell and Cascadia Community College131 (WA), was one of the biggest such projects in the region. Construction began in 1998 that involved removing drainage ditches and levees, re-channeling the creek and reintroducing native species. According to UW Director of Facilities Services Tony Guerrero, the area is a living lab that is rapidly returning to a fully functioning wetland. After only a short time, beavers moved into the area and many bird species now breed there. The site is widely used for classes and nature walks, and the U.S. Army Corps of Engineers uses it as a model to show how similar restorations should be done. The project was featured on an NWF Campus Ecology webinar in 2008; the archived show is available online.

![The Forest Crimes Unit banner at the University of Vermont calls for student action during pilot testing of paper products in April 2008.](Photo: Forest Crimes Unit, UVM)

![A successful wetland restoration fills a bend in the highway at the University of Washington Bothell. A boardwalk (white line) leads to the heart of the reserve.](Photo: © 2006 George White Location Photography)
Students and faculty at the University of St. Thomas (TX) connect to the land every time they plant trees on campus and in Houston as part of a scheme to grow their way to carbon neutrality. Starting with 700 trees planted in 2007–08 and 3,700 more in 2008–09, this long-term effort led by the Environmentally Concerned Organization of Students (ECOS) aims eventually to plant 25,000 trees—the number they calculate will offset the university’s energy use (electricity plus natural gas for heating and cooling). Approximately 275 students have been involved in the planting parties in the first two years. And the city appreciates the effort, according to a news release about the project. “These trees add to the beauty of our city, and they also clean and cool our air, manage rainwater, prevent erosion, shelter wildlife and dress our views in green,” noted John Cutler, President of Trees for Houston.

The Sequestration Question
Can trees or campus natural areas count toward reducing a school’s carbon footprint?
Offsetting carbon emissions by tree planting and similar activities is complicated by such issues as additionality, age of the trees, permanence of carbon storage and the imprecise science of sequestration. Protecting and restoring habitat on campus or on campus-owned lands is vitally important, of course—for wildlife survival, water quality protection, and recreational and educational opportunities—but the calculation of carbon offsets and sequestration is still being debated. An article by Jennifer Andrews, Campus Program Manager at Clean Air-Cool Planet, offers helpful perspectives. See “A Recommendation on How to Account for Carbon Sinks in Campus Forests or Lands.”

MIXED MEDIA
Students often have a natural flair for bringing enthusiasm and creativity to campus sustainability projects. From guerrilla theater to video contests, students are spreading the message about their work and the issues they care about.

20. Sustainability Resources and Tools
Creating sustainable living guides for life on campus and beyond is a popular project on many campuses, because it simplifies the task of getting a consistent and complete set of information to incoming students. A guide recently produced by students at Indiana University, Bloomington features topics ranging from energy and water conservation to sustainable food and alternative transportation practices. In a news release about the guide, IU student organizer Kevin Pozzi (’09) explains, “Since the concept of sustainability covers such a wide range of issues, it can be difficult to know where to turn when choosing to live a more sustainable lifestyle—especially when leaving home for the first time. My goal was to make it as easy as possible for students to live more sustainably on campus, and just as importantly, to take this knowledge with them when they graduate from IU.”

To get a handle on the amount of greenhouse gases produced by lifestyle and other choices, carbon calculators have been developed for individuals, homes and offices. Creating a calculator for residence hall rooms was the goal of a 2007 student project at Rice University (TX). Initially a class project, this tool was made available to Eco-Reps in the residence halls at Rice to help students understand their individual campus carbon footprint.
21. Films, Games and Art

Students have access to more forms of media than ever before, with many avenues available for sharing them—especially on the internet. With the goal of raising awareness about wind energy in their state and exploring the ongoing controversy over wind energy in the Blue Ridge Mountains, a trio of Appalachian State University students created a documentary in 2008 called “Harvesting Wind: North Carolina’s Alternative Progress.” (To view the 18-minute video, see http://www.youtube.com/watch?v=jfgmChnMilo) Focusing their lens on the campus, Furman University freshmen created a film called “The Lifestyle Project,” which documents first-year students who sought to reduce their ecological impact by making changes in their daily lives, including eating a vegetarian diet, reducing water and energy consumption, and not driving. The film won the top prize in a contest sponsored by the Student Conservation Association and Mazda.

Recognizing the popularity of video games, 12 students at Ball State University collaborated in a Nature at Play seminar in 2007 to create a game called “Navigating Nature.” Its aim was to teach children about ecosystems and how to care for them. According to an online description, the game “follows an eight-year-old boy as he steps into the dying Forbidden Forest. While there, he must bring the once-thriving ecosystem back to life.” A video about the process of making the game describes Ball State’s open-ended immersive learning approach used for the seminar.

Focusing on a more traditional medium, a dozen art students from the University of Maine at Augusta contributed works for a gallery exhibit called “Informed Choices: Global Warming.” It opened in January 2008, at the Harlow Gallery in nearby Hallowell. Exhibit visitors were encouraged to give a monetary donation that went to purchase offsets for fuels and other materials used by the gallery.

RECYCLING AND WASTE REDUCTION

As detailed by the U.S. Environmental Protection Agency, the manufacture, distribution, use and disposal of products all result in greenhouse gas emissions. Although solid waste contributes only a minor part of a campus carbon footprint (only a few percent of the total), waste reduction and recycling can help reduce those emissions, plus they save energy and can even increase carbon sequestration by leaving forest resources intact. Students have been key players in launching recycling and composting programs across the country for the past three decades; and they continue to help waste management staff find ways to improve, such as hosting zero waste events, move-out collections, and by going “trayless” in dining halls. Students are also asking campuses to remember the first of the three Rs (Reduce, Reuse, Recycle) by reducing waste at the source, as in the case of water bottles, coffee cups and other disposable items.

22. Recycling Programs

While many campuses have had comprehensive recycling programs in place for years, other schools are just now getting on board. Some programs mark their origins to a student-led effort, often with students performing all the steps of the recycling process. Warren Wilson College (NC) is an example of a comprehensive, student-driven recycling program that began back in 1981. Evolving from a one-student operation to its current crew of 20 students, the program collects and sorts a wide array of recyclables and also comports campus food waste, distributes reused materials through a campus Free Store and surplus program, and markets hand-crafted notebooks created from waste paper. This award-winning program also offers educational workshops for area schools and organizations.
Students at Tennessee State University implemented a pilot paper recycling program in 2005–06, starting out with ten bins located throughout campus. Some of those students later helped bring a campus/community recycling center to TSU, which processes paper, plastics, cans, bottles and cardboard. When a Green Committee consisting of 60 students, faculty and staff was created at National-Louis University (IL) in 2007, there was no recycling on any of NLU’s campuses in the Chicago area. Over the following year, extensive recycling programs were put in place at all five schools.

In 2009, 510 campuses representing all 50 states participated in RecycleMania, a contest promoting campus waste reduction activities. Schools are evaluated over a 10-week period across several categories to find those that produce the least quantity of trash per person, collect the largest amount of recyclables per capita, collect the largest amount of total recyclables, and that have the highest recycling rate. Contest organizers claim that 69.4 million pounds of waste were diverted or composted in 2009 (up from 58.6 million pounds in 2008). While on some campuses students are involved with collection of materials, more commonly the role of students is promotion and peer education around recycling issues—and there’s nothing like an entertaining contest to get students to pitch in.

23. Composting Programs

Because they witness it every day during meals on campus, food waste is often a target of student concern and action. At the University of Missouri in 2008, graduate student Adam Saunders started a pilot composting program that captured 2,000 pounds of food waste per week from a campus dining hall. The scraps were hauled via bicycle by a small crew of students to a nearby community garden where the end-product was used to enrich the soil. In a press release about the project, Saunders notes, “We have a chance to affect the way the university runs. We push the envelope.”

The Bobcat Blend composting project at Texas State University, created by graduate student Jason Sanders, is both a research and education initiative. A large-scale windrow composting facility (receiving a mix of campus food, cardboard and paper waste, poultry litter from a nearby farm and water hyacinth plants) includes a study on whether the composting process can destroy the seeds of water hyacinth, an invasive aquatic plant, while producing mature compost. The education component is directed toward diners in the student center where signage and student volunteers help inform students of the composting initiative at the start of each semester. Campus recycling and waste management staff predicted that with just two of the seven dining halls involved, the composting program could cut waste hauling in half, saving as much as $17,000 per year. Finished compost will be added to flower beds and landscaped areas on campus.

Researching Alternatives for Composting on Campus

Sarah Campbell, a student at Western Michigan University, in a spring 2007 course on Appropriate Technology and Sustainability, compiled data and case study information about different composting methods used by other campuses. The aim of her research was to provide background for a pilot project on composting at WMU. According to her report, approximately one pound per student per day of organic kitchen waste was produced at the university which, at the time, was using in-sink grinders to send it down the drain. She analyzed the pros and cons of windrow, in-vessel, vermicomposting and campus-community partnership systems and produced a 20-page report that is available online (see endnote).
Exploring a composting method that can work on a smaller scale indoors, Campus Ecology Fellowship awardee Phil Aroneanu and another student spent spring semester 2004 testing a worm composting system for Middlebury College (VT). Hungry worms, kept warm in a greenhouse during the school year, turned many bags of dining hall scraps into rich compost that was later applied to Middlebury’s organic campus garden in summer. That fall the students invited and hosted internationally known “worm woman” Mary Appelhof to give vermicomposting workshops. As a class project, students at SUNY Brockport (NY) explored the possibility of composting another waste stream on campus: discarded paper towels from residence hall bathrooms. Based on a 2008 pilot project in one residence hall, the two students determined that there is potential for the project to expand if staff are willing to do the collecting and transporting to the on-campus composting site.

24. Zero Waste Events

The practice of “zero waste” aims for a level of recycling and composting—and avoiding as much waste as possible—so that nothing needs to be sent to the landfill or incinerator. From campus concerts and festivals to major sporting events, students are critically examining the amount of waste generated by these events and developing strategies to eliminate it. The student-run Whole Earth Festival at the University of California, Davis,151 has achieved near—zero waste status, with a 97% collection/recycling rate. Over the years, students have increased the amount captured at the festival through composting and the use of washable dishes.

STUDENT-TO-STUDENT ADVICE

How to Conduct a Successful Campus Sustainability Project

Derek Downey, Class of 2009, University of California, Davis

Project: Whole Earth Festival Zero Waste Program

1. If you’ve never been at an event doing zero waste, go and to see how they do things. Lots of people come to the Whole Earth Festival to learn how we do our zero waste program and take lessons back to their own schools. If you can’t attend such an event, call the festival or others who have done it before and we can walk you through it.

2. Before composting can even be considered, you must find a place willing to take it. We do most of it ourselves on campus year-round through the student-funded and student-directed Project Compost unit.

3. It is crucial to recognize that it takes a lot of work to pull off what we did and it also requires many volunteers or paid staff to make it happen. We rely solely on volunteers and make it fun for them and worthwhile (they get free food and T-shirts and become part of the family).

Tailgate parties are a fact of life at many campus sporting events and generally result in mountains of trash. Students on several campuses have taken up this cause, creating teams to collect recyclables and encourage tailgaters to reduce waste. Student Sustainability Alliance members at the University of Central Florida151 started the “Knights Pick Up” roving recycling service on football game days, when 45,000 fans descend on their campus. By interacting with fans and urging them to recycle, the enthusiastic students played a critical role in increasing the recycling rate on game days by more than 70 percent from 2007 to 2008. At the University of Notre Dame151 (IN), students kicked off the first-ever football game day recycling initiative in 2007. After this successful pilot program—which collected 3,400 pounds of recyclables from tailgaters during six games—the university greatly expanded the program. During the 2008 football season, special Game Day Recycling bins were placed not just around the stadium but throughout the campus, and students handed out blue recycling bags in the tailgate areas.
Notre Dame’s Office of Sustainability reports that 73 tons of recyclables were collected in 2008—a vast increase over the previous year. Game day recycling not only engages many student volunteers, but its waste reduction message reaches of thousands of visiting fans.

25. Trayless Dining

Removing trays from dining halls to reduce waste and conserve water and energy is a relatively new idea that is gaining traction at schools around the country. At the University of Virginia, student Kendall Singleton (’07) was dismayed by the amount of waste she saw in campus dining halls. With Dining Services support, she organized a series of food waste audits in 2006, which proved that the use of trays contributes to greater amounts of waste food. The reason: Students tend to load trays with more than they can eat. The study convinced Dining Services to remove trays from the halls, requiring students to hand carry the food items they select. Although not everyone was happy with the idea, a survey showed that 86% of diners were willing to go trayless.

One of the benefits at UVA is significant water savings (estimated at around 33%) and less detergent needed due to fewer dishes overall. Kendall added, “Not quite as tangible but just as important is the fact that tray removal officially came into effect after a majority of students were shown to support such an effort; environmental conservation is truly starting to resonate with the larger student body.” Results from this trayless dining initiative were published in 2009 in the Journal of Hunger & Environmental Nutrition. Two major campus dining services providers, Sodexho and Aramark, are encouraging going trayless. The blog Wasted Food lists over 30 schools that have made the switch or have experimented with trayless dining, including St. Joseph’s College (ME) and Palm Beach University (FL).

STUDENT-TO-STUDENT ADVICE

How to Conduct a Successful Campus Sustainability Project
Kendall Singleton, Class of 2007, University of Virginia

Project: Greening the Dining Services

1. Get others to help! I initially approached Dining Services as a lone student wanting to make improvements, but had a lot more success when I gathered together a group of like-minded students and then met with dining staff again.

2. Propose a specific project. I had the most success when proposing a limited project. Tray scraping, for example, was tangible and awareness-building in its focus.
26. Move-Out Programs

At schools across the country with on-campus housing, there are growing amounts of usable “stuff” left behind when students vacate at the end of the year. While savvy scavengers have long known about the free pickings, many campuses have been rethinking the move-out period with the aim of reducing waste and making sure that perfectly good clothing, household items and food end up in a better place than the landfill. Some campuses collect unwanted items in the spring and sell them back to incoming students in the fall, often with proceeds going to local charities. Ohio State University’s Dump and Run program, organized by Students for Recycling, has been operating this type of recycling strategy since 2004. Usable items it retrieves in spring are sold during fall semester’s Welcome Week at a big yard sale.

Suffolk University (MA) also has a Dump and Run program. In 2008, students donated over 5,500 pounds of usable items which were given to two local charities that provide food, clothing and household supplies to needy families. At Purdue University (IN), Project Move Out has been harvesting unwanted student cast-offs since 2000, at first collecting only from on-campus housing. Student volunteers now gather personal and household items from off-campus student neighborhoods as well as residence halls. The goods are then sorted and made available to community members in need who “shop” at no cost at the local armory.

27. Source Reduction

Avoiding or reducing waste at the source—and thus not having to deal with it later—is the simplest approach to reducing its impact. Students have devised ways to make actual reductions as well as encourage waste-free behaviors through education campaigns. At St. Norbert College (WI), students in the Environmental Club lobbied successfully to get the dining halls to offer reusable “To-Go” containers as an alternative to disposable foam clamshells, beginning in fall 2008. The containers cost $5 and students can exchange them for a clean container whenever they go through the food line.

Chuck it for Charity at the University of Virginia

(The following summary from UVA’s website shows the success and broad reach of their program.)

“Through Chuck it for Charity 2009, we diverted approximately 28,500 pounds of waste from landfills in Virginia. UVA students donated 3,360 pounds of clothing and 345 pounds of bedding and linens, along with dozens of refrigerators, bicycles, microwaves, vacuums, desks, computer printers, couches and futons, tables, appliances and other items. 485 pounds of nonperishable foods were donated along with over 3,600 pounds of carpeting. Fourteen organizations participated in the event this year, the highest number of participants we’ve ever had! The materials donated will be used by the charitable organizations in the Charlottesville community and across the world, as some groups send items overseas to areas in Africa.”
Students in the Penn Environmental Group at the University of Pennsylvania staged a public demonstration in fall 2008 to call attention to the negative environmental impacts of bottled water. They placed 1,000 empty plastic bottles (borrowed from campus recycling bins) upside down on bamboo skewers stuck into the ground, arranging them in a cemetery-like grid pattern on the high-traffic College Green. The display was accompanied by eye-catching signs to educate students about the downsides of the bottled water industry—with the aim of inspiring them to choose refillable water bottles over disposables. An opinion editor of the Daily Pennsylvanian, a student newspaper, later wrote about how the display prompted his conversion from skeptic to believer.

Students on many campuses are encouraging students, faculty and staff alike to “Bring their Own” mugs, water bottles, bags and more. Student Eco-Reps at Mount Holyoke College organized a “No Cups Week” in 2008, when all disposable cups were removed from dining areas for seven days to encourage use of reusable mugs. According to the organizers, in one semester more than 126,000 disposable cups are used in dining halls and the amount of energy and resources needed to produce 24 one-time-use cups is equivalent to one stainless steel reusable mug. At the Maryland Institute College of Art, senior graphic design major Lindsay Orlowski designed a poster advertising the college bookstore’s new “Bring Your Own Bag” campaign, launched in February 2008. The bookstore stopped providing disposable bags for customers, though it does offer a bin of reused plastic bags for shoppers who forget to bring their own.

In another education initiative, students in several classes at Michigan State University collaborated with the campus Office of Sustainability on a series of six posters promoting sustainable practices, all of which encourage reducing waste and pollution. They used puns based on familiar political phrases—with release timed for the fall 2008 national election—such as “I Like Bike,” “Read My Lips: No New Bottled Water” and “Wind Power to the People.” Although timed for the fall campaign, the posters were intended to have a more enduring impact. On the website where the posters are available for free download, Land Policy Institute Communications Manager John Kinch, who helped students develop the posters, expresses this aim: “Sustainability . . . is a global, bipartisan issue that we hope people stay engaged with long after this election season is over.”

**RESIDENCE HALLS**

While students attend college and university primarily for the coursework, those who live on campus spend more time in their living quarters than they do in classrooms. These residence halls, not surprisingly, have become learning laboratories for many campus sustainability actions; often all it takes is one or two motivated students with a bright idea to get something started. From peer outreach programs to inter-hall energy competitions to model dorm rooms, students have been engaging with one another and with campus faculty and staff to reduce waste, conserve resources and spread the word about sustainability. And beyond improving the performance of traditional dorm buildings, students have also been active in creating and experimenting with sustainable living situations and “eco-houses” at many schools.

**28. Student Eco-Reps**

Outreach to students is a central goal of many campus sustainability programs. One strategy uses a highly effective peer-to-peer education approach to bring the sustainability message to students living on campus. Often known as “Eco-Reps,” these programs enlist students to be educators and leaders in their residence halls, encouraging behaviors such as waste reduction and energy
conservation. The peer-to-peer sustainability outreach idea was developed at several schools, with one of the earliest programs at Dartmouth College (NH), which in 1998 began placing Eco-Reps in many campus departments, as well as residence halls. The University of Virginia initiated a program in 2000 focused on recycling, and in 2008–09 had 18 student “Conservation Advocates” working in the dorms. Tufts University (MA) started its Eco-Rep program in 2001 and created a how-to manual in 2006 for other schools interested in developing one. There are now over 40 such programs across the country listed in an AASHE directory. An active email listserve, conference workshops and the first national student Eco-Rep symposium in fall 2009 are ways that these programs network and share ideas.

Skidmore College (NY) began an Eco-Reps program in the 2008–09 school year. Its ten paid Eco-Reps worked four hours a week raising environmental awareness among students. Five of the Eco-Reps also served as mentors for students in the First-Year Experience seminar, helping them learn about sustainability initiatives on campus, as well as how to plan and implement projects. In a news release about the program, student Laura Gruberg voiced her enthusiasm, “When I first heard about the Eco-Rep program, I was excited because it showed not only that the school was ready to commit to a more sustainable, efficient residential life and overall campus, but that the administration had enough faith in the students to let us lead the initiative.”

At Rice University, an EcoReps program was launched in 2008, due in part to students successfully submitting an internal grant proposal for seed money to help pay for nine EcoReps, one for each residential college. EcoReps have six primary duties: facilitating recycling, reducing food waste, conserving energy, promoting environmental issues, maintaining contacts with key staff members and administering the Green Dorm Initiative (which certifies that rooms meet certain requirements, including thermostat limits). The goal of the program is to support itself financially in the future through cost savings from lightbulb swaps and reduced energy loads. Among the program’s first initiatives were the distribution of thousands of CFLs and hundreds of recycling bins to fellow students. Taking the sustainability message to the broader campus, Rice EcoReps also led the 2008 RecycleMania effort. Sustainability Director Richard Johnson described one of their projects: “As an awareness activity they strung dozens of plastic bottles from an oak tree, representing just two hours of plastic bottle consumption on campus.”

The University of Vermont, Eco-Rep program, established in 2004, had a crew of 35 (fall semester) and 24 (in spring) student reps in 2008–09. Each year an extensive evaluation is conducted to explore ways to improve the program and to help students get the most out of the experience. The UVM program is the primary subject of research for Christina Erickson (coauthor of this publication), a doctoral student at the school. While student Eco-Reps programs are gaining popularity on campuses across the country, no one has yet thoroughly examined the effectiveness of these programs, to see if they truly meet their proposed outcomes. Focusing on the University of Vermont program and drawing on the experiences of campuses elsewhere, Erickson is conducting an examination of the organizational structure plus internal and external evaluation methods for student Eco-Rep programs.
29. Inter–Residence Hall Competitions

A popular student-centered activity that often shows measurable savings are inter–residence hall competitions for which calculating changes in water consumption, kilowatt-hour usage, fuel costs, carbon emissions and other metrics determine the winner. At the University of New Hampshire, student Ecological Advocates and Energy Captains are the organizing force behind the school’s Energy Waste Watch Challenge. This competition challenges residence halls to see which building can show the greatest reduction in energy and water consumption compared to established building averages. Student educators raise awareness in the residence halls by holding parties and electricity-free activities, posting fliers and attending hall council meetings. The winning building earns cash prizes plus the honor of hosting a student-made trophy. In 2008, students saved more than $16,000 in energy costs and greenhouse gas emissions—the equivalent of 112 barrels of oil or not driving nine passenger cars for one year. The annual challenge attracts local and national media attention, and the project continues to grow, with longer challenges and more students involved. Off-campus apartment residents have asked how they can be involved, and this is a goal for future contests.

The George Washington University (DC) achieved so much success with a two-month pilot that it extended its inter–residence hall competition, known as the GW Eco-Challenge, to the full 2008–09 academic year. This required collaboration between several departments, including Planning and Environmental Management, Residential Property Management and GW Housing Programs. Within the first period (September 2–October 15, 2008), GW’s 38 large and small residence halls conserved 288,708 kilowatt hours of electricity (200 metric tons of CO2), saving an estimated $36,000. Over the full year, they saved 1,284,890 kWh and 1,691,864 gallons of water. Students learned about their contest standings via data posted on a website. Charts were also posted in each building to show building-specific breakdowns of utility usage such as gallons of water and kWh per person. The winning hall, Building JJ, received an eco-friendly student lounge renovation, reusable water bottles, a pizza party and the Eco-Challenge Champion Flag to hang outside for all to see.

Beyond the typical energy conservation measures encouraged by these inter-dorm challenges, campuses are adding other creative components to the competitions. Students at Furman University (SC) added a Sustainability Fair in fall 2008 to their residence-based Kill-A-Watt Challenge (an annual competition among Furman’s 11 North Village buildings), which included the distribution of 144 clothes-drying racks for students to use instead of energy-intensive dryers. Student organizers talked to their fellow students and created posters displaying the energy and emissions reductions possible by using the racks. Drying racks were to be returned in good condition in spring so they could be redistributed the following year. Students in the Renewable Energy Club at Connecticut College, seeking an everybody-wins approach, launched a “Concert from Conservation” campaign for the residence halls in winter 2007. The idea was for a percentage (25%) of the electricity and heating fuel savings to cover the cost of a concert on campus—to be enjoyed by all. By successfully implementing many conservation measures, the first concert was hosted in spring. The campaign was held again in 2007–08 with similar savings achieved. Student efforts cut energy use by 12% (based on a five-year average), saving an equivalent of 108,000 kWh and around $9,600—which netted the students $2,400 for their concert. The “Concert from Conservation” campaign also included lightbulb swaps and a pledge to conserve energy.
Students in Minnesota took the idea of inter-residence hall competitions and bumped it up a notch. In February 2007, going beyond their campus borders, 16 private and public colleges and universities in the state held a month long inter-school competition called “Campus Energy Wars.” By unplugging appliances, turning out lights and cutting wherever possible, Carleton College students reduced energy usage by 21% in residence halls, and the college cut overall consumption by 10%, putting them at or near the top of the competition. Minnesota’s efforts inspired a larger audience—a national one—the following year. The National Campus Energy Challenge, held in February 2008, was a one-month competition organized entirely by students at many schools around the country and promoted through the Campus Climate Challenge organization. Perhaps due to their prior experience with inter-campus competitions, two of the three top schools were from Minnesota. St. John’s University (MN) was determined the winner with Winona State University (MN) and Swarthmore College (PA) tying for second place.

With the popularity of inter-residence hall competitions—which go by a variety of names including “Ecolympics” at Oberlin College (OH), “Green Cup” at Harvard University (MA) and “Do It in the Dark” at Tufts University (MA)—student organizers at Duke University (NC) created a detailed how-to tool kit and instructional video to help fellow students launch new programs. The project started as a way to document their annual Eco-Olympics competition, but soon became a training tool for the following year’s event organizers and now is available to any school to guide them through the steps (see box).
The University of California, Berkeley expanded on this idea beginning in 2006 with the “Green Room Series,” a trio of student rooms that included a Green Room, Green Apartment, and Green Suite. Each room featured different ways that students could lower their environmental impact, ranging from efficient technologies to green personal care products. Green Room residents gave tours of their unique living spaces, teaching fellow students about sustainable choices and lower-impact living.

At Westminster College (MO), six years of planning led by students came to fruition with the creation of the Eco-House in 2007, a three-bedroom residence owned by the college that went through energy retrofits as a result of an audit completed by students and advisors. Beyond serving as a model of sustainable living for other students and community members, the house serves as a meeting place for ECOS, the Westminster student environmental organization.

The eco-house type of living arrangement has existed for many years on some campuses, with one of the oldest being the Campus Center for Appropriate Technology (CCAT) at Humboldt State University (CA)—founded in 1978, more than 50 years ago. It began as a renovation of the dilapidated Buck House, which has since been moved to a larger site on campus where extensive gardens and other green features have been developed. This living-learning laboratory

### 31. Eco-Houses and Sustainability-Themed Residences

On residential campuses, students often are living away from home for the first time—which opens an opportunity for them to live in a way consistent with their beliefs, including living in an environmentally sustainable manner. Individual students, student organizations and student affairs professionals have pushed for higher performance housing choices on many campuses, with inspiring results. Eco-houses, off-the-grid residences and sustainability-themed housing communities now offer healthier alternatives to traditional dorm life. By choosing “green,” students show by example that living sustainably doesn’t mean living in a cold, dark cave but instead can be a fun, rewarding and high quality lifestyle.

### Table: Tulane University ENERGY STAR Showcase Dorm Room, 2008

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<th>Appliance</th>
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<th>NON ENERGY STAR APPLIANCES</th>
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*Estimate for all 3257 students in residence halls $69,085.96 | $130,814.36 | $61,728.40 | 968,073

*Average for one school year (nine months) = (w/1000)x(hours on)x(30 days)x(9 months)

**Energy Used times Tulane’s May 2008 electricity price ($.097878/kWh)

***Uses a national average of 1.535lbs. of CO2/kWh

has allowed students to design, develop and test theories around technologies that reduce the use of energy, water, materials and toxins in a residential setting. CCAT is open for tours for school children and also hosts workshops and classes for HSU and the broader community. Weekly work days allow student co-directors, volunteers and 15 employees to work together on projects, such as a solar thermal system and alternative building construction.

At Babson College—(MA)—a school renowned for entrepreneurship education—students recently combined their interest in sustainability and business to create a special-interest housing community of 20 students called the Green Tower, based in the existing Van Winkle Hall. As explained by Green Tower co-President Ben Cox (’10), “Green Tower members hold themselves to a higher standard of living by signing a sustainability pledge, a vow to follow certain guidelines to minimize their personal carbon footprints.” Members also lead campus initiatives; they introduced Fair Trade coffee and established a bicycle coop in 2008-09, the organization’s first year. The group’s founding president, Jamie Kent (’09), explained their mission: “As business students at Babson, we in the Green Tower focus our skills and education to create sustainable entrepreneurial endeavors that aim to fight environmental issues. As an organization, we work to further sustainability initiatives on our own campus.” And at Dartmouth College (NH) an “affinity house” for a community of 18 sustainability-minded students opened its doors as the Sustainable Living Center in fall 2008, in the former North Hall. In the future, the building will be retrofit with efficient energy systems; but even without these major changes, the SLC occupants used 58% less energy compared with occupants from the previous five years. Long-range plans call for it to become a waste-free, energy-neutral student residence.

TRANSPORTATION

Single-occupant vehicles are a notoriously wasteful means of transportation in terms of pollution per passenger mile. Especially at commuter schools, the daily drive of students and staff can be among the largest sources of campus greenhouse gas emissions, which also has significant implications for community health and safety. In response, students have initiated many actions to help lessen the impact of transportation, including mass transit, alternative fuels and bicycle programs. In addition to reducing CO₂ emissions, these alternatives also cut campus transportation management costs. A recent article by campus transportation sage Will Toor outlines these and other benefits. And NWF’s national survey of campus sustainability efforts (Campus Environment 2008) showed that transportation is clearly targeted for improvement. Significant numbers of schools have plans to increase carpooling and access to mass transit, reduce single-occupant vehicles and make campuses more bike-friendly.

Alternative Transportation is Headed for the Mainstream

For promising news about the direction of transportation in higher education, see the 2008 report: Transit Systems in College and University Communities: A Synthesis of Transit Practice. This report, sponsored by the Federal Transit Administration, is based on a review of existing campus transportation literature and original surveys completed by 94 schools. A July 2009 article in ClimateEdu reviews some of the survey’s findings:

“The report finds that ridership is up and commuters are increasingly finding alternatives to driving alone to campus, especially at schools that do the best job of providing alternatives and cultivating informed riders. Through such strategies, in recent years, the University of North Texas has experienced a 10-fold increase in transit ridership, and business has increased by over 50% at Iowa State University, the University of Connecticut and University of Chicago. With more than 11 million annual passenger trips, Arizona State University and other schools listed experienced a considerable total overall increase in the number of annual passengers.”
32. Mass transit

Whether using existing public bus or other transit systems or running their own fleet, campuses can reduce emissions, traffic congestion and costs by promoting methods of mass transportation. The Associated Students of the University of Montana's Office of Transportation (ASUMOT) has one of the only student-run transit systems in the country, and it has significantly increased student ridership since its launch ten years ago. In 1999, with funding from a self-assessed fee, students took over a fledgling van service that ran sporadically to and from a parking lot south of campus. This service gave 3,860 rides in 1999–2000, but by 2008 expanded dramatically to a six-bus system that gave 343,518 free rides to UM students, staff and the public; and it now is serving three Park-N-Ride locations and runs a shuttle between the University of Montana and the College of Technology. The program, which employs only students, including 28 student drivers, four student bike ambassadors and two outreach specialists, saved an estimated 170 tons of carbon emissions in 2006–2007. Over the years, students have increased their self-assessed fee from $4 a semester to $26 a semester to cover the expanded service and transport options. Of all of UM's student fees, the ASUMOT fee receives the most student votes. The program was a 2008 winner of NWF's Chill Out competition in the transportation category.

A bus-pass program based on a $15 a semester student fee at Humboldt State University (CA) was launched after a campuswide vote in 2007. Prior to the vote, students worked with campus commuter services staff as well as HSU President Rollin Richmond to work out the details. After implementing the Jack Pass program, the local bus service saw a 30% increase in ridership, and the campus experienced a drop in demand for its limited parking permits—there were over 500 fewer applications—despite an increase in enrollment. Humboldt State was one of the winning campuses in the 2009 NWF Chill Out competition. Students at the University of California, Irvine, looking for ways to improve an existing campus shuttle service, lobbied for and passed a measure in 2007 to pay for conversion to biodiesel, requiring vehicle upgrades and new fueling equipment. UC Irvine’s extensive student shuttle system, which is now fueled with B100 (100% biodiesel), provides free rides for more than 1.3 million passenger trips a year. Conversion of the 20 existing diesel buses to biodiesel cuts campus CO2 emissions by an estimated 480 tons per year.

33. BioFuels

Biofuels, especially biodiesel, can either be purchased or made on campus and used to run fleet vehicles. By definition, biofuels are carbon neutral because when burned they release the carbon captured during photosynthesis. Net emissions savings, however, must take into account the fossil fuels, fertilizers, land tillage and other inputs needed to grow the food plants used to make vegetable oil. Colleges and universities are excellent settings to experiment with biodiesel, in particular, because their dining halls and local restaurants can provide a steady supply of used cooking oil.

At the Massachusetts Institute of Technology, a team of students developed a plan to turn waste vegetable oil into fuel for campus shuttle buses and other vehicles, which will eventually save Dining Services the $1.10 per gallon charge to dispose of the oil. It will also cut fuel costs for the MIT fleet. Their design and proposal to implement an on-campus processor earned the team the $25,000 top prize in the 2007 GE/MtvU’s Ecomagination challenge. Matt Zedler ('07), one of the group leaders at the time, noted in a news release that there were high levels of support for the project among MIT students and the administration. But difficulty in finding space for the processing equipment, along with rising costs, almost killed the project. It wasn’t until spring 2009 that the equipment was finally purchased. A student-made video from July 2009 presents the financial and policy-related challenges the project has faced, as well as its tenacious student support (see http://techtv.mit.edu/videos/3309).
A joint biodiesel project at Syracuse University (NY) and the College of Environmental Science and Forestry at State University of New York was funded in 2008 by a grant from the Syracuse Campus-Community Entrepreneurship Initiative. Business students from Syracuse and science students from ESF will collaborate on a two-year project to create a business plan, conduct the research and implement a green energy cooperative through which the two schools will share the biodiesel made from waste cooking oil from both campuses. Profits will be used to fund other campus sustainability projects. At the University of Central Florida, a group of four seniors in a 2008 engineering class designed and constructed a biofuel reactor system that can produce 60 gallons of biodiesel every two days, using waste vegetable oil from nearby restaurants. UCF, which paid for the project, will use the apparatus to make fuel for campus vehicles, saving about two-thirds on their previous costs for biodiesel. The graduating seniors went on to start a company that uses the processing design they created.

Exploring a promising alternative source for plant oil, Brunswick Community College (NC) students in the Aquaculture and Biotechnology programs are researching the possibilities of harvesting biofuel from special high-oil strains of algae. According to a 2008 press release, they will be experimenting with ways to extract the oil and convert it to biodiesel, which in some strains can be as high as 50% by weight. Students at James Madison University (VA) worked on similar research in 2006 for their senior thesis project and presented findings at the JMU annual College of Integrated Science and Technology Senior Symposium. They tested 15 species of algae that they grew in a bioreactor, and even worked on methods to raise algae in sea water, a potentially significant way to remove more CO₂ from the air.

### The Quest for Non-Food Fuels

Creating fuel from food plants such as corn, sugarcane or soybeans is relatively easy, but comes with serious costs to the environment and society. Deriving fuels from non-food plant sources, while technically feasible, could avoid many of those costs, but has not yet been achieved in industrial-scale quantities. Researchers at schools across the country are working hard to figure out how to ramp up production, and many students are involved in those projects—which someday will be an essential component of our future clean-energy economy.

A recent ClimateEdu article offers an update on the state of biofuels science and where some of the important research is occurring. Here’s a sample:

**Oil production to make biodiesel**
- Algae – at San Diego State University (CA)

**Converting cellulose to ethanol**
- Waste sugarcane stalks – at the University of Hawaii
- Switchgrass – at South Dakota State University
- Waste paper (to make “Trash-ahol”) – at the University of Maryland

The National Wildlife Federation, while in favor of such research, agrees with many scientists that we should proceed with caution. A rush to biofuels could increase pressure on land, water and biodiversity—so it is important to strive to minimize such impacts.

34. Bicycle Share Programs

Bike sharing programs are popular on campuses for a variety of reasons. Bicycles are a low-cost, hands-on technology that students know a lot about, plus they provide a carbon-free, healthy alternative for campus-related transportation. Juniata College (PA) has a fleet of bicycles that is available for students to use for errands and trips about campus or around town. The program, which began in spring 2007, is coordinated and maintained entirely by students. Juniata recently revamped its bike share program to increase student responsibility for the bicycles and reduce the cost of maintenance. Students are now asked to fill out a no-cost “rental” agreement to check out a bike for up to one week; in addition, the fleet will be converted to one-gear, balloon-tire cruiser bikes rather than multi-gear bikes.

At Southwestern University (TX), a “bike collective” program was established, whose idea originated as a 2008 class project. The collective involves a group of students who teach bike repair and provide refurbished bikes—for work-trade instead of cash—to people who need them. The project got a boost from $2,500 in start-up funds from a foundation, as well as donations from local businesses and bike shops. Cabrillo College (CA) operates a similar venture on campus, though it is run as a cooperative with memberships costing $20 for six months. Students staff the cooperative’s bike maintenance shop during the week and also offer repair workshops and a tool-share. The program started in fall 2008, aided by a $2,500 grant from the Student Senate and assistance from the Bike Church (a commercial bike shop in nearby Santa Cruz). Their mission: “to provide students and the surrounding community with the tools, space and education to use bicycles as a means of sustainable, low-cost transportation. Our intent is to create a hub for sustainability and petroleum-free transportation at Cabrillo College.”

Juniata College’s service-oriented students helped launch the college’s bike share program. The Cycling Club currently handles maintenance and the Juniata Activities Board oversees management of the bikes. (Photo: Juniata College / Ian Bradshaw)
WATER CONSERVATION

As the daily news brings more frequent stories of droughts and water shortages from around the world, the wise management of potable water is likely to become a growing issue for campuses too—especially in the more arid parts of the country. Recognizing this inevitable future, students are taking action on water conservation initiatives in a wide range of areas, including some of the ways described above such as in Eco-Reps programs, residence hall competitions and behavior-change outreach. Perhaps most important, students are helping to influence and create sustainability-minded campus water policies and studies—and doing the legwork to collect data and identify key places where water can be conserved.

35. Water Policy and Research

Knowing how much water flows into and out of a campus, and where water use is highest, are some of the essential pieces of information needed before conservation plans can be made. In drought-prone California, students at the University of California, Santa Cruz, working in conjunction with a consulting firm, conducted a detailed survey of water use on campus in 2007 to identify improvements that could save water and money. The survey included measuring faucet and shower flow rate, checking for missing faucet aerators and looking for leaks in campus irrigation systems. Based on the study, recommended changes could save 10–15% in annual water use, which translates to 20–30 million gallons or $330,000 to $500,000 in savings.

At Carnegie Mellon University (PA), Campus Ecology Fellow Joe Wong conducted a comprehensive assessment of campus water use in 2004. His research was incorporated into a larger baseline report on environmental indicators at CMU. In addition to a detailed analysis of potable water and wastewater, Wong also calculated stormwater runoff from 22 different sub-basins on campus. His methods for tracking water use enabled facilities staff to more effectively monitor progress in water management in subsequent years. Taking an active position on water conservation, the Student Government Association at Appalachian State University (NC) passed a recommendation in fall 2008 for the urinals in all new and renovated campus buildings to be low-flow, using only one-eighth of a gallon of water per flush. Not only will this save water, it will cost significantly less in utility bills.
More than 160 schools from 46 states are mentioned in the 35 campus action topics featured above. They represent the engagement in sustainability of literally thousands of students—but that’s just a splash in the pool of 18 million students who attend postsecondary education. So much more is possible. Notably, every one of those projects was an opportunity that students turned into reality, often by overcoming significant obstacles in terms of money, technology, bureaucracy, time and human nature. (For example, as noted above, students at the University of Tennessee Knoxville and schools across Texas first had to overcome administrative and legal resistance to implementing self-assessed green fees.) And while the students, staff and faculty involved in these diverse campus projects are all to be applauded, the bulk of the work needed to significantly slash the carbon footprint of higher education still lies ahead.

Each campus project has its own list of lessons learned, some of which were noted in the text or the student-to-student advice boxes. Some lessons and advice bear repeating, along with others not yet articulated, and that is the aim of this final section. As with other life experiences, much more can be gained from a campus sustainability exercise if it is followed with reflection or some sort of evaluation process. Said another way, opportunity will lead to insight and more opportunity, but usually only if the inevitable challenges are adequately considered and addressed.

Much has been gleaned from the experiences of students and others on campuses nationwide who have helped lead the way for sustainability. They have been pioneers in what will truly be a decades-long experiment to see if we can get this climate and clean energy revolution right. It is humbling to realize that it will take the children of today’s students—and perhaps the children of those children—to make enough progress so that global warming is no longer one of the defining challenges of this century.

Five Lessons from Student Leaders

• More Venues for Student Engagement
• Learning From Others, Teaching What You Have Learned
• Growing the Campus Leadership Network
• Greater Connections with Staff, Faculty and Administrators
• Acknowledging and Celebrating Success

These five lessons are explored below as opportunities available to students everywhere. They synthesize some of the best advice and ideas that have been passed along from students, faculty and staff, and are based on a multitude of campus projects over the years. Although presented as opportunities, each also embodies the ever-present challenges—whether stated or implied—that attend every campus initiative.

More Venues for Student Engagement

As sustainability becomes integrated into more aspects of college and university life, the ways for students to become involved have multiplied. Getting started early is one key to engaging more students and for longer periods. A promising indicator that greater numbers of students and staff are finding out about sustainability efforts when they first arrive on campus was revealed in NWF’s recent national survey, Campus Environment 2008. The data showed a doubling—since the 2001 survey—of the number of schools that offered new students and staff orientation on sustainability.

Certain activities, such as recycling, have long been student favorites. Initiatives like RecycleMania and residence hall competitions prove that recycling is still an easy and increasingly popular activity. Lauren Olson of the Michigan State University Office of
Campus Sustainability thinks of recycling as the “gateway drug” to sustainability. Once hooked, students are likely to participate in more events and bring their friends along too.

**Work-Study, Internships, Volunteer positions**

On most campuses, there are multiple venues available for students to connect with climate action projects. Campus jobs and internships may be offered through sustainability offices, such as Sarah Brylinsky’s ('09) sustainability intern position at Ithaca College (NY), or as work-study opportunities like the 11 paying jobs available at Northland College (WI), or as an Eco-Rep at The Johns Hopkins University (MD), among many other examples. At Indiana University, the Sustainability Task Force sponsored more than a dozen undergraduate intern and graduate fellow positions for a Summer Program in Sustainability in 2008. And at Southwestern College (KS), students can apply to the Green Team, a program that offers scholarship funds for students in exchange for their work on developing innovative ideas to bring renewable energy to campus and help reduce the campus carbon footprint.

**Research Projects**

Many students use campus sustainability and climate action as the topic for their capstone project or senior thesis, as did Alyssa Borowske ('07) at Cornell College (IA) with a paper titled “Cornell College: A Blueprint for Sustainability.” Campus sustainability topics have been used as the topics for many Master’s and Ph.D. theses. As noted above, Christina Erickson of the University of Vermont, a coauthor of this report, is focusing her doctoral research on the Eco-Reps experience at UVM and elsewhere. Faculty also often use campus climate action work as the theme for class and research projects, as they have at Emory College (GA) since 2001.

**Community Service**

Sustainability and climate action work can also take place in service-learning situations like those offered through the Office of Service Learning and Sustainability at Green Mountain College (VT). In the 2006–07 school year, more than 500 students participated in service-learning projects totaling nearly 7,000 hours. At Grand Rapids Community College (MI), students adopted a community rain garden, working with two local youth groups as partners.

**LEARNING FROM OTHERS, TEACHING WHAT YOU HAVE LEARNED**

For any particular campus project, the how-to specifics are known best by the people who currently are or once were involved. It is important not only to write up and publish a project’s methods and findings—making sure they are easily accessible online, if possible—but also to make it easy for others to contact those who worked on the project. Leaving a permanent record is a terrific way to make a lasting contribution to the institution.

**Websites**

It’s hard to find a campus anymore where typing “sustainability” in the search box comes up empty. And growing numbers of schools have dedicated websites featuring campus initiatives and sustainability-related links and resources. Such sites can be found for schools in every state and offer models and features for other schools wishing to create their own. The University of Utah has a typical comprehensive website, with buttons for campus projects on topics such as energy, recycling and transportation, plus a “Leadership” page with 12 links to campus student organizations and opportunities for student involvement. On the site of the University of Minnesota, Morris, links are provided to current student research projects focused on biomass. In today’s connected world, the internet offers the most effective way to share with others off-campus and also to keep a record of both current and past activities and achievements accessible to members of the campus community.

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“I’ve been attracted to and remain committed to working on Project 20/20 and other CCURB projects because of the social impact. Most Brown students do have an interest in getting off of College Hill and relating to the Providence community in a meaningful way. If not for my work here and all that I’ve learned, it’s unlikely I would seriously consider staying in Rhode Island to work on energy issues, but now I am.”  
—Libby Kimzey ('10), Community Carbon Use Reduction at Brown program, Brown University. See www.proj2020.org
Networks, Meetings, Presentations

With growing numbers of local, state and national meetings focused on sustainability, plus state and regional campus networks, getting the word out about success stories is becoming easier. These gatherings and organizations have become essential networking and sharing opportunities for students, sustainability staff and others in this fast-growing field.

The Upper Midwest Association for Campus Sustainability\(^{230}\) (UMACS), for example, is a hub for schools in Iowa, Illinois, Indiana, Minnesota and Wisconsin. According to its website, UMACS is “a nonprofit organization focusing on sustainability in higher education institutions throughout the region that serves as a networking tool, information resource, and conference organizer for faculty, staff, campus administrators, students and others seeking to place their campuses on a more sustainable footing.” At a more local level, Estrella Mountain Community College\(^{231}\) (AZ) hosted the annual Maricopa Community College District Student Conference in April 2009. Its theme, “The Green Revolution,” featured 30 presentations by students on topics like water conservation, sustainability in Arizona, global warming and the politics of energy.

Evaluation

Examining what worked, what didn’t, and applying those lessons to future projects is essential for improving sustainability’s success rate. A model for evaluation is the University of Vermont’s\(^{232}\) Eco-Reps program. Each year, student Eco-Reps provide extensive feedback that is posted on the program website and used to make the next year’s program even better. The series of annual reports highlights an evolving, maturing program with strong student investment.

GROWING THE CAMPUS LEADERSHIP NETWORK

There is strength in numbers, of course, and increasing numbers of schools are achieving critical mass in terms of student involvement that keeps campus sustainability vibrant. Some of the schools mentioned above in the campus actions are especially good examples: Middlebury College, University of Colorado at Boulder and Warren Wilson College. But at most schools, sustainability is up against a lot of competition for student attention and time.

Recruiting More Student Leaders

Although there are many ways students can take the lead on campus projects, the issue of leadership turnover is a widely recognized challenge—and also an opportunity to bring in new blood. Students graduate, pursue other interests, take a semester abroad or otherwise drift away. A key part of the student leadership role is a conscious effort toward bringing in new students and thus avoiding significant gaps in momentum. This is an important opportunity for existing student leaders to practice good recruitment skills, as well as for recruits to benefit from the mentorship of experienced leaders. The University of Texas at Austin\(^{233}\) holds an annual leadership course through the Campus Environmental Center to develop a suite of student leadership skills. The course includes topics like recruitment, running meetings, event planning, volunteer management, publicity and working with decision makers.

Many schools have had a charismatic or at least deeply committed student who is an “environmental instigator” for projects and ideas. A good example is Tyler Dunham (’09) at Connecticut College\(^{234}\), who was featured in campus press releases from his sophomore year through to graduation. He was long-term co-chair of the Renewable Energy Club and helped recruit a contingent of more than 130 students to attend Power Shift in 2009. Sparking and
nurturing this kind of motivated leadership will happen more often as opportunities for student engagement expand on campus.

Students who are awarded NWF Campus Ecology Fellowships often mention, in project reports, their efforts to keep an initiative going after they graduate. Fellow Alex Pocock at the College of Wooster\(^{236}\) (OH) used his fellowship support in 2002 to improve and institutionalize the Wooster Community Bike Program, which provides and maintains a small fleet of free bicycles for use on campus. One of his key accomplishments was establishment of the bike program as a chartered campus organization, making it eligible for college funding for two paid positions. The program, known today as the Community Bike Club, still provides bicycles for free rental on campus.

If student leadership is not perpetuated, momentum can be lost. An interesting case occurred at California State University, Monterey Bay,\(^{236}\) where a group of enthusiastic students created a sustainability loan fund in 2006 and used its first $500 to pay for a lighting project in an athletic facility. Those initial students moved on to other interests, and the fund has since grown to over $10,000, but as of summer 2009 no new students had stepped forward to manage the funds for new projects.

**Sustainability Offices and Careers**

The growth of the campus sustainability movement has been marked by a parallel growth in sustainability offices and paid positions.\(^{237}\) Since the mission of these offices usually involves working with students, they have become a hub of student activity and often serve as the broker and connecting point between students and campus faculty and staff. These offices also have filled a long-term need for institutional memory, giving students a place where their project contributions are valued, encouraged and preserved for future students to learn from.

Thanks to these offices, sustainability is being given the recognition it deserves and is being seen increasingly by students and others as a viable career option. At Tulane University,\(^{238}\) one of the students who founded the Energy Star Showcase Dorm Room now works for the Office of Environmental Affairs and helps with the dorm-room contest and website updates. In fact, the office itself gives credit for its origin to a charismatic and influential undergraduate, Aaron Allen, whose 1999 honors thesis in Environmental Studies examined the history of environmental action and programs at Tulane and proposed a structure (now the OEA) to ensure further progress in greening the university.

**GREATER CONNECTIONS WITH STAFF, FACULTY AND ADMINISTRATORS**

Concern over climate change and commitment to taking action on a clean energy future has united students, staff, professors and administrators in common cause as never before. It has brought them together as partners in a quest for solutions, because the potentially disastrous consequences of inaction will affect everyone.

**Mentorship**

An important role for faculty, staff and administrators is to provide guidance to students and their projects. Because sustainability initiatives touch most aspects of campus operations, management and curriculum, every employee, regardless of status, plays a part in the educational mission of the school. Operations personnel increasingly are called upon to work directly with students. As noted in a recent article in *Facilities Manager*,\(^{239}\) “facilities staff have often done their part to set a good example . . . serving as guest lecturers in the classroom, teaching capstone courses or serving as project advisors to students.” Staff and faculty can also help bridge the gap

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“As a freshman at Babson, I didn’t know where to go to meet others who shared my passion for business and the environment and also recognized the importance of connecting the two. Now students can apply to live in the Green Tower and immediately immerse themselves in an energetic and cooperative environment with some of the college’s most dedicated individuals. With the Green Tower we have a face, we have a voice, and we have a growing presence on campus and in the business world.”

—Benjamin Cox (’10), Co-President of the Green Tower environmental residence founded in fall 2008 at Babson College
that students often create when going abroad or graduating. And student organization advisors assist with bringing in the next generation of leadership and help make connections to those who have the information students may need.

Mentorship for students by faculty and researchers in ecology is especially important for fostering the knowledge and skills needed to help wildlife survive global warming. A program of the Ecological Society of America called SEEDS (Strategies for Ecology Education, Diversity and Sustainability: Diverse People for a Diverse Science) has a chapter at United Tribes Technical College, whose mission is to “provide opportunities for underrepresented minority undergraduates of UTTC to experience active, solution-based research in ecology while interacting with positive role models and mentors.” In 2008–09, students in the group worked with staff, faculty and other groups on projects related to renewable energy and waste monitoring, as well as on ways to improve the campus landscape “to provide a living laboratory as well as more natural habitat for wildlife.”

ACKNOWLEDGING AND CELEBRATING SUCCESS

Finally, every project is an opportunity to recognize and praise student sustainability achievements. Jolea Bryant, former Southeast Field Coordinator for NWF’s Campus Ecology Program, stressed the importance of student recognition and acknowledgment of their work. Drawing from the many campuses she worked with, it was a central theme in the talk she presented at the AASHE national conference in 2008. For many, timely—and especially, public—recognition is worth more than monetary compensation. Simply being named in press coverage or on websites or group reports goes a long way toward solidifying a student’s commitment to sustainability. There is a deep need in most people to be recognized and honored in some way by others.

Campus Award Programs

A number of individual schools as well as higher education systems have created award programs to spotlight the work being done on their campuses. The University of Kansas, for example, gives annual sustainability awards in four categories: project, faculty, staff and student. In 2008, the student honor went to the Student Rain Garden, which was planned, designed and installed by students with assistance from campus staff. At the University of Colorado at Boulder, Campus Environmental Awards have been bestowed on deserving students, staff and faculty at an annual ceremony since 2001. In California, best practice awards are given at the annual Sustainability Conference, which is jointly sponsored by campuses of the University of California, California State University and California Community College systems. Two of the awards are reserved for the year’s best Student Energy Efficiency Projects and Student Sustainability Projects.

National Awards

Nationwide competitions offer another opportunity for recognition of student work. The annual Chill Out competition of the National Wildlife Federation promotes sustainability and honors U.S. schools that are advancing creative solutions to global warming on their campuses. In 2009, eight schools were chosen for their exemplary programs with the grand prize going to the Massachusetts Maritime Academy for providing sustainability education across the curriculum and hands-on learning about clean energy technologies. The Association for the Advancement of Sustainability in Higher Education has an annual awards program with honors given for sustainability leadership and research on campus. One of four awards given to students in 2009 includes a research project at Stanford University on integrating electric vehicles with solar panels on campus.
During the research and interviews conducted for this guide, a different sort of student college experience and campus worldview became apparent. Increasing numbers of students are paying attention to the social and environmental impacts of their campus, and many acknowledge a more integral role for themselves and responsibility to take action. Granted, it seems to affect only a modest percentage of the national student body at present, but there is a sense of growing momentum and commitment. One doesn’t have to look far to see that sustainability is going mainstream, and the shift in thinking toward a green economy and green jobs looks extraordinarily strong and enduring.

Where might all of this lead? What sort of campuses will we have in the not-too-distant future if current trends replace the old? For one thing, we might not even need sustainability offices or courses if the core values of social, environmental and economic sustainability become the everyday business of all departments within the institution, and of society at large. Students won’t need a guide like this one because their work and learning will be integrated into the fabric of a sustainably run campus—tending gardens, tracking energy-use data, taking classes in which sustainability is seamlessly integrated and which prepare them intellectually and practically for a green-minded economy and workforce.

The sooner, of course, that all students begin to share this sort of vision of the future, the better. It is going to take their leadership now and for many decades to come to steer campuses and indeed human civilization toward the only future that has a chance of working. They may not be the first to envision an alternative campus and world. But they may be the first generation to fully appreciate that, this time, working toward a green-energy century is not just an abstract exercise—but a necessity.
APPENDIX A: Campus Sustainability Resources

Books, Reports and Articles

**NWF’s Campus Ecology Program**


Rappaport, Ann and Sarah Hammond Creighton (2007). Degrees that Matter: Climate Change and the University. Cambridge, MA: MIT Press


Online Resources

NWF’s Campus Ecology Program

Resources page
http://www.nwf.org/campusecology/resources/index.cfm

ClimateEdu (biweekly e-newsletter)
http://www.nwf.org/campusecology/climateedu

Campus Sustainability Case Studies
http://www.nwf.org/campusecology/resources/yearbook

Web Conference Series
http://www.nwf.org/campusecology/resources/teleconferences.cfm

Association for the Advancement of Sustainability in Higher Education Resource Center
http://www.aashe.org/resources/resource_center.php

Clean Air-Cool Planet, Climate Action Toolkit
http://www.cleanair-coolplanet.org/toolkit

Creating a Campus Sustainability Revolving Loan Fund: A Guide for Students

Green Student U, blog posts
http://www.greenstudentu.com

Organizations and Coalitions with Student Involvement

Association for the Advancement of Sustainability in Higher Education
http://www.aashe.org

Campus Ecology, National Wildlife Federation
http://www.nwf.org/campusecology

Energy Action Coalition
http://www.energyactioncoalition.org

Environmental Justice and Climate Change Initiative
http://ejcc.org

Indigenous Environmental Network
http://www.ienearth.org

Sierra Student Coalition
http://ssc.sierraclub.org

Student Public Interest Research Groups (PIRGs)
http://www.studentpirgs.org

Student Environmental Action Coalition (SEAC)
http://www.seac.org

SustainUS (U.S. Youth for Sustainable Development)
http://sustainus.org
APPENDIX B: Schools in Guide Listed by State

NOTE: Coverage of programs or initiatives at schools named in this publication ranges from a brief mention to detailed case examples. Page numbers in the Generation E report follow the school name.

TOTAL: 165 Schools, 46 States + DC

AL
Birmingham Southern College - 19

AR
University of Arkansas - 22

AZ
Arizona State University - 5, 45
Coconino Community College - 22
Estrella Mountain Community College - 52
Northern Arizona University - 22
Prescott College - 29
University of Arizona - 21

CA
Cabrillo College - 48
California State University, Chico - 25
California State University, Monterey Bay - 21, 30, 53
Humboldt State University - 21, 44, 46
Pomona College - 20, 21
San Diego State University - 47
Stanford University - 54
University of California, Davis - 37
University of California, Berkeley - 44
University of California, Irvine - 16, 46
University of California, Los Angeles (UCLA) - 8
University of California, San Diego - 22
University of California, Santa Cruz - 49
University of California System - 15, 54

CO
Colorado College - 11
University of Colorado-Boulder - 8, 22, 52, 54
University of Colorado-Colorado Springs - 29

CT
Connecticut College - 42, 52
Trinity College - 24
University of Connecticut - 45
Yale University - 5, 18

DC
George Washington University - 42

DE
University of Delaware - 31

FL
Palm Beach University - 38
Stetson University - 20
University of Central Florida - 37, 47
University of Florida - 18

GA
Georgia Institute of Technology - 32
Emory College - 51
Morehouse College - 4, 23

HI
University of Hawaii - 47

IA
Cornell College - 51
Iowa State University - 28, 45
Maharishi University of Management - 27

ID
Boise State University - 21

IL
Augustana College - 28
Illinois Institute of Technology - 32
National-Louis University - 36
University of Chicago - 45
Western Illinois University - 17

IN
Ball State University - 35
Indiana University - 34, 51
Purdue University - 39
University of Notre Dame - 37, 38

KS
Johnson County Community College - 28, 29
Kansas State University - 18, 28
Southwestern College - 51
University of Kansas - 32, 54

KY
Berea College - 28
Centre College - 28

LA
Tulane University - 43, 44, 53

MA
Babson College - 45, 53
Boston College - 27
Harvard University - 30, 43
Massachusetts Institute of Technology - 25, 46
Massachusetts Maritime Academy - 54
Mount Holyoke College - 40
Suffolk University - 39
Tufts University - 41, 43
Williams College - 31
<table>
<thead>
<tr>
<th>State</th>
<th>University Name</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>MD</td>
<td>Maryland Institute College of Art</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>St. Mary’s College of Maryland</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>The Johns Hopkins University</td>
<td>51</td>
</tr>
<tr>
<td></td>
<td>University of Maryland</td>
<td>5, 47</td>
</tr>
<tr>
<td>ME</td>
<td>Bowdoin College</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>St. Joseph’s College</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>University of Maine</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>University of Maine at Augusta</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>University of Maine at Farmington</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>University of Southern Maine</td>
<td>17</td>
</tr>
<tr>
<td>MI</td>
<td>Albion College</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Grand Rapids Community College</td>
<td>51</td>
</tr>
<tr>
<td></td>
<td>Grand Valley State University</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>Michigan State University</td>
<td>9, 14, 18, 27, 40, 50</td>
</tr>
<tr>
<td></td>
<td>University of Michigan</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Wayne State University</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Western Michigan University</td>
<td>36</td>
</tr>
<tr>
<td>MN</td>
<td>Bemidji State University</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td>Carleton College</td>
<td>30, 43</td>
</tr>
<tr>
<td></td>
<td>Macalester College</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>St. John’s University</td>
<td>43</td>
</tr>
<tr>
<td></td>
<td>University of Minnesota, Morris</td>
<td>14, 51</td>
</tr>
<tr>
<td></td>
<td>Winona State University</td>
<td>43</td>
</tr>
<tr>
<td>MO</td>
<td>Drury University</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>Washington University in Saint Louis</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Westminster College</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td>University of Missouri</td>
<td>36</td>
</tr>
<tr>
<td>MS</td>
<td>Mississippi State University</td>
<td>18</td>
</tr>
<tr>
<td>MT</td>
<td>Montana State University</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td>University of Montana</td>
<td>4, 27, 46, 54</td>
</tr>
<tr>
<td>NC</td>
<td>Appalachian State University</td>
<td>35, 49</td>
</tr>
<tr>
<td></td>
<td>Brunswick Community College</td>
<td>47</td>
</tr>
<tr>
<td></td>
<td>Duke University</td>
<td>21, 43</td>
</tr>
<tr>
<td></td>
<td>Warren Wilson College</td>
<td>23, 35, 52</td>
</tr>
<tr>
<td>ND</td>
<td>United Tribes Technical College</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>University of North Dakota</td>
<td>23</td>
</tr>
<tr>
<td>NH</td>
<td>Dartmouth College</td>
<td>24, 26, 41, 45, 47</td>
</tr>
<tr>
<td></td>
<td>Keene State College</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>University of New Hampshire</td>
<td>14, 18, 42</td>
</tr>
<tr>
<td>NJ</td>
<td>Bergen Community College</td>
<td>21</td>
</tr>
<tr>
<td>NV</td>
<td>University of Nevada, Reno</td>
<td>27</td>
</tr>
<tr>
<td>NY</td>
<td>Cornell University</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>Ithaca College</td>
<td>51</td>
</tr>
<tr>
<td></td>
<td>Medaille College</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Sarah Lawrence College</td>
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<td></td>
<td>Skidmore College</td>
<td>41</td>
</tr>
<tr>
<td></td>
<td>St. Lawrence University</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>State University of New York at Albany</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>State University of New York at Brockport</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td>State University of New York College of Environmental Science and Forestry</td>
<td>47</td>
</tr>
<tr>
<td></td>
<td>Syracuse University</td>
<td>47</td>
</tr>
<tr>
<td>OH</td>
<td>College of Wooster</td>
<td>53</td>
</tr>
<tr>
<td></td>
<td>Oberlin College</td>
<td>23, 26, 43</td>
</tr>
<tr>
<td></td>
<td>Ohio State University</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>Ohio University</td>
<td>18</td>
</tr>
<tr>
<td>OK</td>
<td>University of Oklahoma</td>
<td>19</td>
</tr>
<tr>
<td>OR</td>
<td>Lewis &amp; Clark College</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Linfield College</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>University of Oregon</td>
<td>29</td>
</tr>
<tr>
<td>PA</td>
<td>Allegheny College</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>Carnegie Mellon University</td>
<td>32, 49</td>
</tr>
<tr>
<td></td>
<td>Dickenson College</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>Juniata College</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>Lafayette College</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Swarthmore College</td>
<td>43</td>
</tr>
<tr>
<td></td>
<td>University of Pennsylvania</td>
<td>40</td>
</tr>
<tr>
<td>RI</td>
<td>Brown University</td>
<td>22, 50</td>
</tr>
<tr>
<td>SC</td>
<td>Furman University</td>
<td>35, 42</td>
</tr>
<tr>
<td></td>
<td>University of South Carolina</td>
<td>11</td>
</tr>
<tr>
<td>SD</td>
<td>South Dakota State University</td>
<td>47</td>
</tr>
<tr>
<td>TN</td>
<td>Middle Tennessee State University</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Tennessee State University</td>
<td>35, 36</td>
</tr>
<tr>
<td></td>
<td>Tennessee Tech University</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>University of Tennessee Knoxville</td>
<td>29, 30, 50</td>
</tr>
<tr>
<td>TX</td>
<td>Rice University</td>
<td>34, 41</td>
</tr>
<tr>
<td></td>
<td>Southwestern University</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>Texas State University</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>University of North Texas</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>University of St. Thomas</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>University of Texas-Arlington</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>University of Texas at Austin</td>
<td>52</td>
</tr>
<tr>
<td>UT</td>
<td>University of Utah</td>
<td>51</td>
</tr>
<tr>
<td>VA</td>
<td>James Madison University</td>
<td>47</td>
</tr>
<tr>
<td></td>
<td>Sweet Briar College</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>University of Virginia</td>
<td>38, 39, 41</td>
</tr>
<tr>
<td>VT</td>
<td>Green Mountain College</td>
<td>51</td>
</tr>
<tr>
<td></td>
<td>Middlebury College</td>
<td>20, 37, 52</td>
</tr>
<tr>
<td></td>
<td>University of Vermont</td>
<td>25, 33, 41, 52</td>
</tr>
<tr>
<td>WA</td>
<td>Cascadia Community College</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>Western Washington University</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>University of Washington</td>
<td>16, 18, 19</td>
</tr>
<tr>
<td></td>
<td>University of Washington Bothell</td>
<td>33</td>
</tr>
<tr>
<td>WI</td>
<td>College of the Menominee Nation</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>Madison Area Technical College</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>Northland College</td>
<td>15, 16, 32, 50, 51</td>
</tr>
<tr>
<td></td>
<td>St. Norbert College</td>
<td>39</td>
</tr>
<tr>
<td>WV</td>
<td>West Virginia University</td>
<td>18</td>
</tr>
</tbody>
</table>
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