Pennsylvania Consortium For Interdisciplinary Environmental Policy

2003 Annual Report: Notable Greening, Sustainable Development, Global Warming or Interdisciplinary Environmental Research Programs in PCIEP Member Colleges and Universities

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2003 ANNUAL REPORT:

Notable Greening, Sustainable Development, Global Warming, or Interdisciplinary Environmental Research Programs in PCIEP Member Colleges and Universities.

The **PENNSYLVANIA CONSORTIUM FOR INTERDISCIPLINARY ENVIRONMENTAL POLICY** (*PCIEP*) issues this report, which identifies outstanding or notable greening, sustainable development, global warming, and interdisciplinary environmental research programs in *PCIEP* member colleges and universities.

Seeing environmental challenges ahead, and mindful of the expertise and interest in environmental issues that exists in many Pennsylvania institutions of higher education, the Pennsylvania Departments of Environmental Protection (*DEP*) and Conservation and Natural Resources (*DCNR*) have worked with 42 Pennsylvania colleges and universities to form *PCIEP*. *PCIEP* has been created in the belief that government decision-makers and academia must work together in a new partnership to enhance environmental protection efforts in Pennsylvania. The Consortium has been created because the environmental problems of the 21st Century will challenge both decision-makers and academic institutions in new ways. For this reason greater cooperation between government and higher education is needed to protect and restore the environment for present and future generations.

Although all *PCIEP* member colleges and universities provide excellent environmental and sustainable development courses in their curriculum, this report attempts to identify innovative or otherwise notable programs in these institutions specifically relating to greening, sustainable development, global warming, and interdisciplinary environmental research. This report identifies outstanding or notable programs in the following PCIEP member institutions:

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GREENING COLLEGES AND UNIVERSITIES

Greening programs are those that integrate environmental or sustainable development considerations into the curriculum or operation of institutions of higher education. Those programs that are more concretely focused on sustainable development or global warming problems and issues are listed under sustainable development or global warming programs below—even though some of these could have been included with "greening" programs.

ALLEGHENY COLLEGE

Wind Power

In April 2002, Allegheny College announced that it would purchase 7.5% of its electricity, or more than 1 million kilowatt hours per year, from the wind-power marketer Community Energy, Inc. The energy purchased will equal over one-quarter of the output of a new wind turbine that will be built in the Allegheny Mountains of southwestern Pennsylvania.
http://www.newwindenergy.com/regional/mid-atlantic/customers.html
http://www.allegheny.edu/news1/releases/2002/april/windpower.html
http://www.eren.doe.gov/greenpower/0402_communergy_pr.html
Wind Power—a PCIEP statewide initiative.

DEP "Rush To Recycle" Challenge

Allegheny College was one of 18 participating schools in the Department of Environmental Protection's recycling challenge contest. The *"Rush To Recycle"* Challenge pitted colleges and universities across the Commonwealth against one another to see which school can recycle the most materials over an eight-week period from October 7, 2002 to November 30, 2002. Recycling saves natural resources, energy, our environment, landfill disposal capacity and costs, and recycling is good business—our waste reduction and recycling activities can make a difference!
http://www.dep.state.pa.us/hosting/rushtorecycle/default.htm
http://www.dep.state.pa.us/hosting/recycleteam/
http://www.dep.state.pa.us/dep/deputate/airwaste/wm/RECYCLE/Recycle.htm
A joint DEP & PCIEP project.

Composting Facility

In 2001, Allegheny College became the first college or university in Pennsylvania to install an on-campus composting facility. Allegheny's composting unit is only the second in-vessel organic waste composting program in Pennsylvania, and one of only a handful in the northeast region of the United States. Designed to compost 1,500 pounds of organic material in only 28 days, the unit completely contains the composting process and creates a soil-like, nutrient-rich material that helps to replenish lawns, gardens and flowerbeds without using chemical fertilizers. At Allegheny College, the material composted is primarily waste from the College's three on-campus cafeterias and other food service facilities. To accommodate the composter, one of the food service operations has begun using compostable disposable plates made of cornstarch. In addition, the College hired a compost operator, who will be assisted by students studying environmental science at the College to ensure the composting program's success.
http://www.allegheny.edu/news1/releases/2001/october/composter.html

Partnership for Energy Performance: Linking Businesses, Institutions & Industries

In 2000, Allegheny entered into a joint venture in energy management with the Meadville Medical Center (MMC). The venture led to contracting with an energy service company, Vestar, Inc., which conducted energy audits of both institutions. In summer 2001, Vestar began installing over $3.5 million of energy- and water-saving equipment at these facilities. New equipment will be paid for over a five- to ten-year period using annual energy savings. The amount of energy savings is guaranteed by Vestar; if expected savings do not materialize, then the energy service company will pay the difference to the College and the Medical Center. Allegheny College and MMC have also recently joined the Energy Star Buildings program sponsored by the U.S. Environmental Protection Agency as a sign of their growing institutional commitments to environmental protection. This joint venture has since grown into the Partnership for Energy Performance (PEP), led by the Meadville Community Energy Project (see below, *B. Sustainable Development Programs*). Over the past year, PEP has expanded to nine members committed to energy management in their facilities, including the Meadville Area Recreation Authority, which has also entered into a performance contract for its swimming and ice rink complex.

BLOOMSBURG UNIVERSITY OF PENNSYLVANIA

Wind Power

As one of the State System of Higher Education's 14 member schools, Bloomsburg University purchased wind-generated energy as part of the Commonwealth of Pennsylvania's five percent renewable energy contract, from the wind-power marketer Community Energy, Inc.'s wind farms in Fayette and Somerset counties.
http://www.newwindenergy.com/regional/mid-atlantic/customers.html
http://www.dep.state.pa.us/dep/deputate/polycomm/update/12-07-01/1207015149.htm
http://www.eren.doe.gov/greenpower/0402_communergy_pr.html
Wind Power—a PCIEP statewide initiative.

BUCKNELL UNIVERSITY

Wind Power

In April 2002, Bucknell University announced that it would purchase 1 million kilowatt hours of wind energy a year from the wind-power marketer Community Energy, Inc. The wind-generated energy purchase will replace 60% of the electricity purchased from the utility grid—combining wind energy with its on-campus cogeneration plant, owned and operated by the university, allows Bucknell to meet nearly all of the campus energy needs in a very environmentally responsible or 'green' manner.
http://www.newwindenergy.com/regional/mid-atlantic/customers.html
http://www.departments.bucknell.edu/alumni/bisonline/july2002.shtm - 5
http://www.eren.doe.gov/greenpower/0402_communergy_pr.html
Wind Power—a PCIEP statewide initiative.

CALIFORNIA UNIVERSITY OF PENNSYLVANIA

Wind Power

As one of the State System of Higher Education's 14 member schools, California University purchased wind-generated energy as part of the Commonwealth of Pennsylvania's five percent renewable energy contract, from the wind-power marketer Community Energy, Inc.'s wind farms in Fayette and Somerset counties.
http://www.newwindenergy.com/regional/mid-atlantic/customers.html
http://www.dep.state.pa.us/dep/deputate/polycomm/update/12-07-01/1207015149.htm
http://www.eren.doe.gov/greenpower/0402_communergy_pr.html
Wind Power—a PCIEP statewide initiative.

CARNEGIE MELLON UNIVERSITY

Wind Power

In April 2002, Carnegie Mellon announced its intention to extend its commitment to wind energy for five years, from the wind-power marketer Community Energy, Inc. The extended commitment will reduce the cost of wind power per kilowatt-hour, and allow Carnegie Mellon to increase their purchase amount from 5% to 6% of total electricity use. Carnegie Mellon University was the first Pennsylvania university to purchase wind power in 2001 and its leadership set the 5% precedent that many schools are following.
http://www.newwindenergy.com/regional/mid-atlantic/customers.html
http://www.cmu.edu/epc/green7.pdf http://www.cmu.edu/epc/index.html
http://www.cmu.edu/cmnews/061301/061301_windfarm.html
http://www.cmu.edu/news/news_stories/01stories/01_windpower.html
http://www.eren.doe.gov/greenpower/0402_communergy_pr.html
Wind Power—a PCIEP statewide initiative.

DEP "Rush To Recycle" Challenge

Carnegie Mellon University was one of 18 participating schools in the Department of Environmental Protection's recycling challenge contest. The *"Rush To Recycle"* Challenge pitted colleges and universities across the Commonwealth against one another to see which school can recycle the most materials over an eight-week period from October 7, 2002 to November 30, 2002. Recycling saves natural resources, energy, our environment, landfill disposal capacity and costs, and recycling is good business—our waste reduction and recycling activities can make a difference!
http://www.dep.state.pa.us/hosting/rushtorecycle/default.htm
http://www.dep.state.pa.us/hosting/recycleteam/
http://www.dep.state.pa.us/dep/deputate/airwaste/wm/RECYCLE/Recycle.htm
A joint DEP & PCIEP project.

Green Practices

Carnegie Mellon's *Green Practices Committee*, originally established in 1998 as the *Environmental Practices Committee,* was established to develop a more comprehensive waste reduction and energy conservation program. This Green Practices Program has been successful in reducing materials and energy use throughout the campus, as well as implementing a recycling program. The *Green Practices Committee*, which is comprised of staff, faculty and students, establishes priorities, goals, and mechanisms for implementing environmental practices. http://www.cmu.edu/epc/members.html

Green Design

In 1992, Carnegie Mellon began a campus-wide *Green Design Initiative* to promote environmentally conscious engineering, product and process design, manufacturing, and architecture. The initiative involves forming partnerships with industrial corporations, foundations, and government agencies to develop joint research and education programs, which improve environmental quality while encouraging sustainable economic development. http://www.ce.cmu.edu/GreenDesign/

Green Curriculum

Carnegie Mellon's *Environmental Institute* has been a driving force in educational initiatives campus-wide for over ten years. These include major and minor degree programs as well as development of specific courses and sections of courses. The EI has also organized the Distinguished Lecture Series each year, which has enabled representatives from government, industry, academia, and NGOs in Western Pennsylvania to hear leading national and international environmental speakers. http://www.ce.cmu.edu/EnvInst/

CHATHAM COLLEGE

Wind Power

Chatham College currently purchases 10% of its energy from wind-generated energy—one of the highest percentages of any school in the Eastern United States—from the wind-power marketer Community Energy, Inc. The cost savings from the College's campus wide efforts to reduce toxic substances, including cleaning supplies, herbicides and pesticides, by substituting toxic-free alternatives allows the college to purchase this wind power.
http://www.newwindenergy.com/regional/mid-atlantic/customers.html
Wind Power—a PCIEP statewide initiative.

Green Practices

To commemorate the 40th anniversary (September 27, 2002) of the publication of *Silent Spring* by environmentalist Rachel Carson, Chatham College announced new initiatives to green its campus and to celebrate Ms. Carson's legacy. Chatham's *Rachel Carson Institute* will launch *eCollegie Stage 2*—a campus wide effort to reduce toxic substances, including cleaning supplies, herbicides and pesticides, by substituting toxic-free alternatives.
http://www.chatham.edu/rci/pages/rci.html

Chatham eCollegie is Chatham College's brand name for a *Campus Greening Project* designed to make the campus community aware of its interaction with the environment, as well as to take action to live more sustainably in that environment. *Chatham eCollegie* was coined to evoke the notion that we are a place that studies our impact on the environment and takes it seriously. It also serves as a call to action. *Chatham eCollegie* is the on-going study of our house and the interaction of our community with the environment. The launching of *eCollegie* began with modest changes, such as new recycling systems, an energy efficiency goal, more sustainable practices in food services, the library and the copy center. Each year we examine how we can be more effective in reducing, reusing and recycling to lessen our overall environmental impact.
http://www.chatham.edu/rci/pages/ecol.html
http://www.chatham.edu/rci/pages/ecol.html - _Campus_Greening_Project

Green Design

In 1998, Chatham's Woodland Road campus became a registered *Arboretum*. As a living museum and outdoor classroom, the *Arboretum* offers a wide variety of educational opportunities for Chatham students, particularly in such fields as landscape design, landscape studies, environmental science and environmental studies. The *Arboretum* serves an important public outreach function, attracting visitors to the campus, and connecting Chatham to the landscape, botanical and museum committees in Pittsburgh.

Chatham recently launched a new Master of Landscape Design program, emphasizing the relationship between environmental issues and the design, installation, maintenance and restoration of landscapes. Chatham's new program is the only one if it's kind in the region. Pittsburgh is becoming a national hub for green design so students will have multiple opportunities to participate in labs and design projects tied to the curriculum. The program follows the guidelines of the Landscaping Architecture Accreditation Board (LAAB) and is a professional, applied degree leading to licensure.
http://www.chatham.edu/admweb/htm/admisSections/visit/virtualTour/arboretum.htm

CHEYNEY UNIVERSITY OF PENNSYLVANIA

Wind Power

As one of the State System of Higher Education's 14 member schools, Cheyney University purchased wind-generated energy as part of the Commonwealth of Pennsylvania's five percent renewable energy contract, from the wind-power marketer Community Energy, Inc.'s wind farms in Fayette and Somerset counties.
http://www.dep.state.pa.us/dep/deputate/polycomm/update/12-07-01/1207015149.htm

http://www.eren.doe.gov/greenpower/0402_communergy_pr.html
http://www.newwindenergy.com/regional/mid-atlantic/customers.html
Wind Power—a PCIEP statewide initiative.

CLARION UNIVERSITY OF PENNSYLVANIA

Wind Power

As one of the State System of Higher Education's 14 member schools, Clarion University purchased wind-generated energy as part of the Commonwealth of Pennsylvania's five percent renewable energy contract, from the wind-power marketer Community Energy, Inc.'s wind farms in Fayette and Somerset counties.
http://www.newwindenergy.com/regional/mid-atlantic/customers.html
http://www.dep.state.pa.us/dep/deputate/polycomm/update/12-07-01/1207015149.htm
http://www.eren.doe.gov/greenpower/0402_communergy_pr.html
Wind Power—a PCIEP statewide initiative.

DELAWARE VALLEY COLLEGE

DEP "Rush To Recycle" Challenge

Delaware Valley College was one of 18 participating schools in the Department of Environmental Protection's recycling challenge contest. The *"Rush To Recycle"* Challenge pitted colleges and universities across the Commonwealth against one another to see which school can recycle the most materials over an eight-week period from October 7, 2002 to November 30, 2002. Recycling saves natural resources, energy, our environment, landfill disposal capacity and costs, and recycling is good business—our waste reduction and recycling activities can make a difference!
http://www.dep.state.pa.us/hosting/rushtorecycle/default.htm
http://www.dep.state.pa.us/hosting/recycleteam/
http://www.dep.state.pa.us/dep/deputate/airwaste/wm/RECYCLE/Recycle.htm
A joint DEP & PCIEP project.

DICKINSON COLLEGE

Wind Power

In April 2002, Dickinson College announced that it would purchase 9.2% wind-generated energy—one of the highest percentages of any school in the Eastern United States—from the wind-power marketer Community Energy, Inc.

http://www.newwindenergy.com/regional/mid-atlantic/customers.html
http://www.dickinson.edu/cgi-bin/nrshow.cgi?2001179
http://www.eren.doe.gov/greenpower/0402_communergy_pr.html
Wind Power—a PCIEP statewide initiative.

DEP "Rush To Recycle" Challenge

Dickinson College was one of 18 participating schools in the Department of Environmental Protection's recycling challenge contest. The *"Rush To Recycle"* Challenge pitted colleges and universities across the Commonwealth against one another to see which school can recycle the most materials over an eight-week period from October 7, 2002 to November 30, 2002. Recycling saves natural resources, energy, our environment, landfill disposal capacity and costs, and recycling is good business—our waste reduction and recycling activities can make a difference!
http://www.dep.state.pa.us/hosting/rushtorecycle/default.htm
http://www.dep.state.pa.us/hosting/recycleteam/
http://www.dep.state.pa.us/dep/deputate/airwaste/wm/RECYCLE/Recycle.htm
A joint DEP & PCIEP project.

Green Practices

The *Treehouse* is Dickinson College's Center For Sustainable Living. The *Treehouse* is a Dickinson Student Designated Learning Center, where environmentally conscious students take residence. http://www.dickinson.edu/storg/treehouse/

The *Treehouse's* has five main goals:

1. To foster an atmosphere of student understanding towards sustainable living and responsible environmental actions at the local level.
2. To educate each other and the College Community about environmental issues, sustainability, environmental student activism, and stewardship toward the environment.
3. To aid the other environmental groups on campus such as *Earth Now!* http://www.dickinson.edu/~earthnow/ and the Senate Ad Hoc "greening the campus" Committee, so that through our combined efforts we can achieve a more green campus.
4. To act as a liaison between the Dickinson College campus and the Carlisle community for issues concerning sustainability and environmental student activism.
5. To act as leaders, examples for the College and community regarding environmentalism.

Committee on the Environment (COTE)[2003 Update]

Dickinson College's Committee on the Environment (COTE) began nearly ten years ago to explore the use of paper on campus. COTE is a 12-member team composed of students, faculty, and administrators who are poised to raise awareness about how every member of the campus community can help to ensure the health of our environment. COTE has also joined forces with the Treehouse and Earth Now! to explore campus recycling efforts, water use, and utility consumption.

COTE's latest study focused on trash and recycling on campus. COTE's efforts have resulted in the purchase of copy paper that has a post-consumer recycled content. Along with this, vendors will be required to meet supply requests with products that have recycled content. This will include virtually all office materials such as notepads, file folders, calendars, copy paper, and legal pads (to name a few).

Dining Service[2003 Update]

Dickinson College's Dining Service delivers food scraps to the Student Garden twice a week. This material, together with the food waste from the Dickinson Tree House, is incorporated into the Garden's compost piles that are later used to fertilize the garden beds. Dining Service is serving some organic produce from the Student Garden along with the non-organics--a program that predates the well-known offering at Yale.

Fair Trade Coffee[2003 Update]

The College is now involved with "Fair Trade Coffee" whereby the coffee served in our student union is provided by small Central American family farmers following sustainable practices and for which they receive a "fair price" for their product.

Water Wars Contest[2003 Update]

The Water Wars Contest sponsored by the college was set up to reduce dorm water usage during drought conditions and raise awareness about water conservation practices. The results were emailed to the entire college along with tips on how to conserve water.

Recycling Program[2003 Update]

The Dickinson College Physical Plant is responsible for the recycling program on campus.

ES Environmental Studies/Science [2003 Update]

Our ES Environmental Studies/Science curriculum requires that all students become engaged in real-world environmental problems through their course projects. These include, and are not limited to, conducting a toxic waste audit using the TRI database in the introductory course, and more advanced collaborative service learning for upper-level courses in aquatic and terrestrial ecology. This engagement is backed up through required internships for those students following the BA degree in Environmental Studies, and through various study abroad programs, particularly at the University of East Anglia in Norwich, UK and at the University of Queensland in Brisbane, Australia. In addition Dickinson College is one of the consortium members for the Center for Sustainable Development in Atenas, Costa Rica (through the School for Field Studies). Most of the ES students, be they BS majors in Environmental Science or BA students in Environmental Studies, complete at least one semester abroad.
http://cfserv.dickinson.edu/academics/program.cfm?environ
http://www.dickinson.edu/bulletin/environ.html
http://www.dickinson.edu/departments/envst/

DREXEL UNIVERSITY

Wind Power

Drexel University has committed that 9.5% of its total energy usage will be generated by wind energy—one of the largest percentages of any school in the Eastern United States—from the wind-power marketer Community Energy, Inc. Drexel's purchase equals the entire energy output of a 220-foot tall wind turbine, approximately the energy required to power 500 Pennsylvania homes for a year.
http://www.newwindenergy.com/regional/mid-atlantic/customers.html
http://www.drexel.edu/dateline/default.pl (Archived News Releases: July 2002)
Wind Power—a PCIEP statewide initiative.

Green Practices

The *recycling program* at Drexel University is growing at a rapid pace. In the summer of 1997, the Facilities Management Department started a new pilot-recycling program that has grown into a campus wide recycling program that follows city and state regulations. According to the State of Pennsylvania, Recycling Law Act 101 passed in 1988, municipalities such as college and/or university's need to recycle a certain number of items from their campus and try to recycle 25 percent of their waste stream. At this time, Drexel University is recycling more than the required amount of items and is working on recovering 25 percent of its waste stream. Hazardous waste recycling is another area that the University is in compliance, as of January 6, 2000 Federal and State regulations require the university to recycle their hazardous waste in an environmentally safe manner. The Facilities Management Department also operates a compost center

located at Drexel University's Friel Fieldhouse. The Facilities Management Department transports grass clippings, leaves, and tree limbs to the compost center and prepares these items to become mulch that will be used across campus.
http://www.drexel.edu/facilities/recycle_frame.htm

DUQUESNE UNIVERSITY

Wind Power

Combining wind-powered energy with Duquesne University's on-campus cogeneration plant, the university recently announced that it is making a commitment to purchase 5% wind-generated energy, from the wind-power marketer Community Energy, Inc. Duquesne's cogeneration plant utilizes an uncommon technology that heats and cools most of the University at the same time.
http://www.newwindenergy.com/regional/mid-atlantic/customers.html
http://www2.duq.edu/Times/ArticleBody.cfm?Id=1010
Wind Power—a PCIEP statewide initiative.

EAST STROUDSBURG UNIVERSITY OF PENNSYLVANIA

Wind Power

As one of the State System of Higher Education's 14 member schools, East Stroudsburg University is purchasing wind-generated energy as part of the Commonwealth of Pennsylvania's five percent renewable energy contract, from the wind-power marketer Community Energy, Inc.'s wind farms in Fayette and Somerset counties.
http://www.newwindenergy.com/regional/mid-atlantic/customers.html
http://www.dep.state.pa.us/dep/deputate/polycomm/update/12-07-01/1207015149.htm
http://www.eren.doe.gov/greenpower/0402_communergy_pr.html
Wind Power—a PCIEP statewide initiative.

EASTERN UNIVERSITY

Wind Power

Solely through a recent few-weeks' fundraising campaign by Eastern University's students and some faculty, enough money was raised for the University to commit to purchase 3% wind-generated energy, from the wind-power marketer Community Energy, Inc.

http://www.newwindenergy.com/regional/mid-atlantic/customers.html
Wind Power—a PCIEP statewide initiative.

DEP "Rush To Recycle" Challenge

Eastern University was one of 18 participating schools in the Department of Environmental Protection's recycling challenge contest. The *"Rush To Recycle"* Challenge pitted colleges and universities across the Commonwealth against one another to see which school can recycle the most materials over an eight-week period from October 7, 2002 to November 30, 2002. Recycling saves natural resources, energy, our environment, landfill disposal capacity and costs, and recycling is good business—our waste reduction and recycling activities can make a difference!
http://www.dep.state.pa.us/hosting/rushtorecycle/default.htm
http://www.dep.state.pa.us/hosting/recycleteam/
http://www.dep.state.pa.us/dep/deputate/airwaste/wm/RECYCLE/Recycle.htm
A joint DEP & PCIEP project.

Green Practices

Sustainable Peace Initiative (SPI) **2003 Update**

Eastern University's Sustainable Peace Initiative (SPI) educates students about a new development strategy appropriate to a context of primarily human induced global environmental change. Since 9.11, international hostilities have made it difficult to conduct "business as usual." Peace through trade, the World Trade center motto, cannot be sustained in its current form. SPI promotes a new type of "peace through trade" that is centered on sustainable environmental justice. This also includes an emphasis on reorganizing our own way of life in the United States away from carbon dependencies toward a future centered around clean hydrogen. As faculty became increasingly interested in environmental issues, the Academic Dean's office supplied copies of *Greening the College Curriculum* to interested colleagues (one fourth of the faculty).

SPEAK Fair Trade/Organic/Shade Grown Coffee Campaign **2003 Update**

Eastern University's SPEAK chapter has embarked on a campaign that seeks social, economic and environmental justice. While Coffee is the world's second largest commodity trade, farmers and agricultural ecosystems around the world are being are being exploited under the demands of economic "tycoons". Motivated by SPEAK's vision of being a "voice for the voiceless", students have worked hard at creating both campus wide and community awareness through holding weekly meetings on Mondays, establishing prayer days for farmers, hosting international fair trade businessmen and

making active petitions to the Student Government Association for "just" coffee legislation.

Educational Forums[2003 Update]

As a way to encourage dialogue among students, faculty, and people in the community, SPI invited appropriate outside speakers to make presentations to the Eastern community. Every forum was focused on educating the community about the sustainable development strategy that SPI promotes. We invited speakers from various sectors of society, including government, business, non-profit, and the religious community.

Eastern's Wind Energy Campaign[2003 Update]

Since energy production in Pennsylvania is one of the largest and dirtiest industries in the state (helping to place our zip code in the worst 10% category of U.S. air quality), Eastern's choice of energy service provider is an important sustainability issue. During the summer of 2002, Eastern students began strategizing for a way to shift Eastern University's energy consumption entirely away from nuclear and fossil fuel sources toward renewable sources. They researched how other universities approached the issue and designed a combined "best practices" three year strategic plan as follows: *(1) Immediate Donation-Based Wind Purchase, (2) Student Government Wind Fee, and (3) Administration Proposal for an Efficiency Based Wind Purchase.*

> *(1) Immediate Wind Purchase*: Beginning in August, students raised funds to purchase 3% of Eastern's 2002-3 energy as wind from Community Energy, Inc.[1] Students dressed up as "super heroes" and raised funds in dormitories as they handed out information on energy issues. Supportive faculty "sang for coins" during peak hours in the dining commons and at community gatherings ("The answer my friend, is blowin' in the wind…). The activity became an educational opportunity that laid the foundation for phase two, presentation of a proposal to the student government. Together, they raised more than $3,000 in less than one month to purchase wind.

[1] Community Energy, Inc. only sells New Wind Energy™ (which is Green-e certified) so each purchase equates to an increased contribution of wind power to the energy grid. At the same time, new contributions mean a reduction in the production of energy from fossil fuels. So, for example, if Eastern is successful in converting to 100% wind energy, Community Energy, Inc. has calculated that, based upon a three year average of Eastern's utility bills, this purchase would be the environmental equivalent of planting an estimated 404,000 trees per year, not consuming 2.9 million pounds per year of coal, not producing 5 million pounds per year of carbon dioxide, 36,000 pounds per year of sulfur dioxide, and 12,000 pounds per year of nitrous oxide (acid rain pollutants).

(2) Student Government Wind Fee: On October 7th, Jonathan Wilson-Hartgrove, SPI student representative, and Jessi Herman, student senator, presented a proposal to the Student Government Association asking them to vote in favor of adding an energy fee of $20.89/year to the student school bill to enable Eastern to purchase about 40% of its energy from wind beginning in Fall 2003. Before voting on the proposal, the student government solicited questionnaires from student majors most knowledgeable about environmental issues, they conducted student focus groups, and they held a community forum to discuss the issue. Students were engaged in vigorous campaigning of their representatives. A student fee will be included in the student bill beginning next fall with a place for conscientious objectors to mark their decision to "opt out" of the wind purchase, if they so choose.

(3) Administration Proposal for an Efficiency Based Wind Purchase: The final portion of the strategic plan for Eastern to purchase 100% of its energy from New Wind Energy™ involves increasing energy efficiency on campus and using the budget moneys saved from the first 11% of reduced total energy usage to cover the remaining cost of the wind premium.

The Rural Malawi Project (RMP) **2003 Update**

RMP aims to change lives as a byproduct of recycling. By recycling printer cartridges HERE, we not only aid rural Malawians, but we also keep our landfills free of unnecessary waste. In collaboration with the Green Fund Network and Thoroughbred Technologies, we have established an inkjet and toner printer cartridge-recycling program for the Philadelphia region. The Green Fund Network provides our program with collection bins and mailing labels. Our project coordinators, drawn mostly from federal work-study positions, enlist new participants in the program and collect the cartridges. We ship them to Thoroughbred Technologies where the cartridges are refilled and prepared for resale. Depending on progress with fundraising, the current plan is to develop a solar powered 30-horsepower (22 kw) pounding and grinding mill in Zowe, Malawi by June 2004. The project has three objectives: (1) It will move rural Malawians from dependency on wood to solar power (2) It will facilitate the use of solar power by rural Malawi households for small-scale income generating activities, and (3) It will facilitate the construction of houses roofed with energy-producing solar panels instead of grass thatch. The project will achieve these objectives through (a) a solar powered community-level business venture, and (b) helping households to run solar-based income generating activities.

EDINBORO UNIVERSITY OF PENNSYLVANIA

Wind Power

As one of the State System of Higher Education's 14 member schools, Edinboro University purchased wind-generated energy as part of the Commonwealth of Pennsylvania's five percent renewable energy contract, from the wind-power marketer Community Energy, Inc.'s wind farms in Fayette and Somerset counties.
http://www.newwindenergy.com/regional/mid-atlantic/customers.html
http://www.dep.state.pa.us/dep/deputate/polycomm/update/12-07-01/1207015149.htm
http://www.eren.doe.gov/greenpower/0402_communergy_pr.html
Wind Power—a PCIEP statewide initiative.

FRANKLIN AND MARSHALL COLLEGE

Wind Energy **2003 Update**

As a member of the Central PA Shared Services Consortium (SSC), Franklin & Marshall College purchased 7.3% wind power from Community Energy, Inc. (CEI). Franklin and Marshall plans to make wind energy a core part of the new student-faculty-initiated program to conserve energy and save the environment.
http://www.newwindenergy.com/regional/mid-atlantic/customers/fandm.html

GANNON UNIVERSITY

Wind Power

In April 2002, Gannon University announced that it would make a 5% commitment to wind energy, from the wind-power marketer Community Energy, Inc.
http://www.newwindenergy.com/regional/mid-atlantic/customers.html
http://www.eren.doe.gov/greenpower/0402_communergy_pr.html
Wind Power—a PCIEP statewide initiative.

GETTYSBURG COLLEGE

Wind Power

In April 2002, Gettysburg College announced that it would fill a portion of their energy needs by purchasing 7% wind-generated electricity from new wind farms in

southwestern Pennsylvania, from the wind-power marketer Community Energy, Inc.
http://www.newwindenergy.com/regional/mid-atlantic/customers.html
http://www.gettysburg.edu/administration/public_relations/notes/2002/May/electricity.html
http://www.eren.doe.gov/greenpower/0402_communergy_pr.html
Wind Power—a PCIEP statewide initiative.

HARRISBURG AREA COMMUNITY COLLEGE

DEP "Rush To Recycle" Challenge

Harrisburg Area Community College was one of 18 participating schools in the Department of Environmental Protection's recycling challenge contest. The *"Rush To Recycle"* Challenge pitted colleges and universities across the Commonwealth against one another to see which school can recycle the most materials over an eight-week period from October 7, 2002 to November 30, 2002. Recycling saves natural resources, energy, our environment, landfill disposal capacity and costs, and recycling is good business—our waste reduction and recycling activities can make a difference!
http://www.dep.state.pa.us/hosting/rushtorecycle/default.htm
http://www.dep.state.pa.us/hosting/recycleteam/
http://www.dep.state.pa.us/dep/deputate/airwaste/wm/RECYCLE/Recycle.htm
A joint DEP & PCIEP project.

Green Practices

The Harrisburg Area Community College (HACC) has been a member of the *Central Pennsylvania Energy Consortium* (CPEC) since 1997. This organization focuses on lowering energy costs to its members (370 separate entities). HACC has been prominent on its board since *CPEC's* inception. Partly due to the association with *CPEC*, HACC has embarked upon several energy conservation related projects:

1. A campus wide program, in conjunction with a performance contract with Johnson Controls, is evaluating and up-grading controllers and hardware.
2. Collection and analysis of the HVAC systems throughout campus for monitoring of performance and retrofits for improved energy efficiency is underway.
3. Lighting fixtures are being evaluated in a program that parallels the U.S. Environmental Protection Agency's Green-lights program for energy efficient upgrading.
4. Under a separate grant from the Virginia Alliance for Solar Energy, and in cooperation with Johnson Controls, a solar photovoltaic panels system

capable of generating 27 kW into the campus grid is being installed on the Physical Education Building. This system will use the pre-existing solar panels mounting system.

INDIANA UNIVERSITY OF PENNSYLVANIA

Wind Power

As one of the State System of Higher Education's 14 member schools, Indiana University purchased wind-generated energy as part of the Commonwealth of Pennsylvania's five percent renewable energy contract, from the wind-power marketer Community Energy, Inc.'s wind farms in Fayette and Somerset counties.
http://www.newwindenergy.com/regional/mid-atlantic/customers.html
http://www.dep.state.pa.us/dep/deputate/polycomm/update/12-07-01/1207015149.htm
http://www.eren.doe.gov/greenpower/0402_communergy_pr.html
Wind Power—a PCIEP statewide initiative.

JUNIATA COLLEGE

Wind Power

In April 2002, Juniata College announced that it is joining in on a shared wind turbine by making a 6% commitment to wind energy, from the wind-power marketer Community Energy, Inc. Juniata College is beginning construction on its new Raystown Field Station, a $6 million educational complex, and the electricity used to power the entire complex will be purchased through a wind energy generation facility.
http://www.newwindenergy.com/regional/mid-atlantic/customers.html
http://services.juniata.edu/magazine/spring02/feature1/
http://www.eren.doe.gov/greenpower/0402_communergy_pr.html
Wind Power—a PCIEP statewide initiative.

Green Practices

In 1998, Juniata College created a *Recycling Committee* composed of students, professors/staff, whose purpose is to increase awareness and responsibility to reduce waste in order to create a more environmentally sound campus.
http://clubs.juniata.edu/recycling/index.html

Juniata College has also created an *Environmental Task Force*, whose mission is to promote environmental awareness and resource conservation on campus.
http://faculty.juniata.edu/glazier/

Greening Programs[2003 Update]

The first new building of the Raystown Field Station opened in 2003. We placed the building with careful attention to sustainability. Our multi-story building design results in fewer independent structures, thereby reducing ecological impact. These structures have been and will be built along natural contours to minimize land disturbance, address accessibility issues, consolidate circulation paths, and maximize daylighting potential to both upper and lower floors. Building placement optimized solar orientation, reducing energy use for building heating. We maximized the use of recycled materials such as decking of recycled plastic and fly-ash based concrete. Lab cabinets and tables that were doomed to a landfill were taken and refurbished for use. We used high, thermal-efficiency glass and windows. Windows open to provide airflow without the use of pumps or air conditioning units. Even on hot summer days, the natural ventilation leaves a cool comfortable space. High efficiency lighting, heating and support equipment was installed throughout. Because of the lakeside location, special consideration was taken to protect lake water quality. Composting toilets and off-site gray water treatment serve to protect Raystown Lake. We are using the building as a sustainability teaching tool and invite other colleges to make use of the site as well. http://services.juniata.edu/station/lakesideconcept.html and http://services.juniata.edu/magazine/spring02/index.html

In the Fall of 2002 Students in the Environmental Problem Solving class addressed the issue of wasted energy at Juniata. They convinced the Computer Network Services to set-up computer monitors to go into 'sleep' mode, saving energy. They convinced President Kepple to allow them to sticker light switches across campus. "Are they off?" "Conserve. Use only the light you need." These energy-savings suggestions can now be found across campus.

Water and Conflict/Water and Cooperation [2003 Update]

Juniata is developing a Water and Conflict/Water and Cooperation undergraduate curriculum. Peace and Conflict Studies Department of the Baker Institute have teamed with the Environmental Science and Studies Department to create a secondary emphasis (a minor) in a topic of critical concern. We plan on networking with international partners (such as Cochine University in India) to share curriculum and case studies on Water and Conflict/Water and Cooperation.
http://services.juniata.edu/magazine/fall02/briefs/

KING'S COLLEGE

DEP "Rush To Recycle" Challenge

King's College was one of 18 participating schools in the Department of Environmental Protection's recycling challenge contest. The *"Rush To Recycle"* Challenge pitted colleges and universities across the Commonwealth against one another to see which school can recycle the most materials over an eight-week period from October 7, 2002 to November 30, 2002. Recycling saves natural resources, energy, our environment, landfill disposal capacity and costs, and recycling is good business—our waste reduction and recycling activities can make a difference!
http://www.dep.state.pa.us/hosting/rushtorecycle/default.htm
http://www.dep.state.pa.us/hosting/recycleteam/
http://www.dep.state.pa.us/dep/deputate/airwaste/wm/RECYCLE/Recycle.htm
A joint DEP & PCIEP project.

Recycling Program**2003 Update**

Spurred by a first place finish in the category of New Programs with the Highest Total Average Pounds per Student, King's College has now institutionalized a campus-wide recycling program. Containers are spread around campus for the collection of commingled recyclables and paper/cardboard materials. Dining Services recycles metal, plastic and glass containers of bulk food products. This constitutes a significant reduction in the college's "waste stream" and is part of a long-term contribution to the "greening" of King's College.

KUTZTOWN UNIVERSITY OF PENNSYLVANIA

Wind Power

As one of the State System of Higher Education's 14 member schools, Kutztown University purchased wind-generated energy as part of the Commonwealth of Pennsylvania's five percent renewable energy contract, from the wind-power marketer Community Energy, Inc.'s wind farms in Fayette and Somerset counties.
http://www.newwindenergy.com/regional/mid-atlantic/customers.html
http://www.dep.state.pa.us/dep/deputate/polycomm/update/12-07-01/1207015149.htm
http://www.eren.doe.gov/greenpower/0402_communergy_pr.html
Wind Power—a PCIEP statewide initiative.

Recycling Program[2003 Update]

Kutztown University has an on-campus recycling program for aluminum, paper, plastic, and glass. In addition, Kutztown University was selected as one of approximately 30 non-profit organizations to act as a recycler of used athletic shoes by participating in Nike's Reuse-A-Shoe program in partnership with the National Recycling Coalition. Kutztown University Environmental Science Forum students have committed to collect 5000 pairs of used athletic shoes to be recycled for eventual use in the construction of new soccer and football fields, tennis and basketball courts, running tracks, and playground surfaces. Kutztown's participation in the Reuse-A-Shoe program is being coordinated by the President of the Environmental Science Forum, Amiee Bollinger (limabean@fast.net).
www.nrc-recycle.org
www.nike.com/nikebiz/nikebiz.jhtml?page=27&cat=reuseashoe

LAFAYETTE COLLEGE

Greening

Brownfield Redevelopment (Adaptive Reuse) [2003 Update]

Lafayette's recently opened Williams Visual Arts Building was the result of a $3.5 million renovation which transformed a former antique car restoration facility into a 23,500 square foot high-tech art studio and gallery. The Building received the Adaptive Reuse Award from the Easton Heritage Alliance, recognizing excellence in improving and reusing a city building and was also recognized for excellence in design quality with the Silver Medal from the Pennsylvania chapter of The American Institute of Architects, the highest award given by the organization.

One of its most important features is its community-based teaching program ("CBTP") in the visual arts for middle and high school students. The CBTP offers courses designed to encourage secondary school students with a keen interest in the visual arts to develop their artistic potential. The CBTP offers local junior and high school students workshops, classes, gallery exhibitions and opportunities to interact with visiting artists, Lafayette faculty and students. In addition to the benefits the middle and high school students get from working with these mentors, they also have the opportunity to have their work displayed in the public gallery. It is anticipated that eventually elementary through high school students will become engaged in projects that will aesthetically enhance the community and could include, among other things, designing gardens and painting murals on old and blighted walls.
http://www.lafayette.edu/culture/wms_vis_arts/

LEAP ***2003 Update***

Lafayette is proud of its student environmental organization, LEAP. LEAP has taken a leadership role in recycling efforts at the school, producing a policy document for the College that has been accepted as a guide for moving forward with Lafayette's recycling efforts. It is the hope of LEAP that in addition to recycling, the policy will lead to lower energy consumption and the reduction of hazardous waste disposal from electronic devices.

LEAP has also been involved in several other issues affecting both the College and the community.

- **Bushkill Stream Preservation.** LEAP has been involved in the Bushkill Stream monitoring efforts discussed above.
- **Tending Trails Along the Lehigh Canal**. Working in conjunction with the Landis Outreach Center, LEAP has pulled invasive plants, engaged in erosion prevention activities, cleared paths, removed litter and educated students on environmental issues in the Lehigh Valley.
- **Earth Week Activities**. LEAP planned a week of activities, which included a volunteer-led campus cleanup project, campus beautification efforts, and education programs about birds of prey and other issues designed to raise student awareness about LEAP and environmental issues.
- **Environmental Appreciation.** One of LEAP's goals is not only to serve as an active environmental organization but also to educate students to become stewards of the environment by organizing hiking and trail maintenance excursions to the Delaware Water Gap, and trail maintenance, litter cleanup and tree planting in Jacobsburg Environmental Education Center at the foot of Blue Mountain in Wind Gap, Northampton County.

http://www.lafayette.edu
http://www.lafayette.edu/student_life/academic_groups.html

LOCK HAVEN UNIVERSITY OF PENNSYLVANIA

Wind Power

As one of the State System of Higher Education's 14 member schools, Lock Haven University purchased wind-generated energy as part of the Commonwealth of

Pennsylvania's five percent renewable energy contract, from the wind-power marketer Community Energy, Inc.'s wind farms in Fayette and Somerset counties.
http://www.newwindenergy.com/regional/mid-atlantic/customers.html
http://www.dep.state.pa.us/dep/deputate/polycomm/update/12-07-01/1207015149.htm
http://www.eren.doe.gov/greenpower/0402_communergy_pr.html
Wind Power—a PCIEP statewide initiative.

MANSFIELD UNIVERSITY OF PENNSYLVANIA

Wind Power

As one of the State System of Higher Education's 14 member schools, Mansfield University purchased wind-generated energy as part of the Commonwealth of Pennsylvania's five percent renewable energy contract, from the wind-power marketer Community Energy, Inc.'s wind farms in Fayette and Somerset counties.
http://www.newwindenergy.com/regional/mid-atlantic/customers.html
http://www.dep.state.pa.us/dep/deputate/polycomm/update/12-07-01/1207015149.htm
http://www.eren.doe.gov/greenpower/0402_communergy_pr.html
Wind Power—a PCIEP statewide initiative.

MERCYHURST COLLEGE

Greening Efforts[2003 Update]

Mercyhurst College has moved forward over the past year on its greening efforts in a number of areas:

- Purchase of 10% of our electricity from wind, brokered through Community Energy. With the prior incorporation of ground-source geothermal HVAC into three of our buildings, the wind purchase strengthens the commitment of the college to green energy;
- Continued development of our partnership with the Mill Creek and Lake Erie Watershed organizations. Funded in part by DEP Growing Greener grants, this effort has included faculty and students involvement in community education on watershed issues, development of a watershed history, as well as stream analysis, environmental restoration, creek cleanups, and technical assistance on a permeable surface parking lot at a local church.
- Continued progress on recycling and waste reduction. The college estimates approximately 30% of its waste is now being either recycled or composted (the latter through a small "compost corral" on campus). In

addition, students organized our first ever end-of-year trash recovery event.

- Co-sponsorship of seminars on organic landscaping and (with DEP) green building design. The former helped spark a new initiative to conduct a biological inventory of the campus with the goal of National Wildlife Federation Backyard Habitat designation. The latter event was attended by nearly 100 individuals representing architectural and design fields, as well as business, municipalities, and other educational institutions.

Partnership for a Healthy Mill Creek Watershed
http://www.millcreekwatershed.org/home.html

Pennsylvania Lake Erie Watershed Association
http://www.lakeeriewatershed.org

MILLERSVILLE UNIVERSITY OF PENNSYLVANIA

Wind Power

As one of the State System of Higher Education's 14 member schools, Millersville University purchased wind-generated energy as part of the Commonwealth of Pennsylvania's five percent renewable energy contract, from the wind-power marketer Community Energy, Inc.'s wind farms in Fayette and Somerset counties.
http://www.newwindenergy.com/regional/mid-atlantic/customers.html
http://www.dep.state.pa.us/dep/deputate/polycomm/update/12-07-01/1207015149.htm
http://www.eren.doe.gov/greenpower/0402_communergy_pr.html
Wind Power—a PCIEP statewide initiative.

Green Practices

Millersville University has a dedicated, effective recycling program—last year the University recycled over 300 tons of paper, plastic and metal materials. In doing so the University saved over $20,000 in deferred landfilling fees and additional revenues were realized from sales to reprocessors. But the bigger story is that recycling at the University saved precious landfill space, avoided attendant water pollution, diminished consumption of raw materials—trees, oil and gas, metals and energy. It has avoided additional global warming and air pollution.
http://muweb.millersville.edu/~recycle/index.html

DEP "Rush To Recycle" Challenge

Millersville University was one of 18 participating schools in the Department of Environmental Protection's recycling challenge contest. The *"Rush To Recycle"* Challenge pitted colleges and universities across the Commonwealth against one another to see which school can recycle the most materials over an eight-week period from October 7, 2002 to November 30, 2002. Recycling saves natural resources, energy, our environment, landfill disposal capacity and costs, and recycling is good business—our waste reduction and recycling activities can make a difference!
http://www.dep.state.pa.us/hosting/rushtorecycle/default.htm
http://www.dep.state.pa.us/hosting/recycleteam/
http://www.dep.state.pa.us/dep/deputate/airwaste/wm/RECYCLE/Recycle.htm
A joint DEP & PCIEP project.

Center for Disaster Research and Education**2003 Update**

Millersville University (MU) has formally established the Center for Disaster Research and Education, which sponsors a new minor in Environmental Hazards and Emergency Management (EHEM). This multidisciplinary minor brings together four academic disciplines - sociology, geography, Earth sciences and occupational safety to form an integrated curriculum in EHEM. MU is also working on the approval of five new minors in Environmental Science.
The Millersville University Environmental Institute is entering its third year, and along with its work on the Environmental Science minors, is planning on a Symposium on Water Resources for spring 2004, continues the development of an M.S. in Environmental Science, and maintains a local grant program. Relevant Web Sites related are:

Center for Disaster Research and Education: http://muweb.millersville.edu/~CDRE
Millersville University Environmental Institute: http://www.millersville.edu/~muenviro

PENNSYLVANIA STATE UNIVERSITY

Wind Power

In 2001, The Pennsylvania State University made one of three largest wind energy purchases in the United States for 5% of their electric usage and in April 2002, Penn State announced its intention to extend its commitment to wind energy by purchasing an additional wind turbine for an additional 5% of their electric usage on Penn State's statewide campus system, from the wind-power marketer Community Energy, Inc. The

combined 10% wind-generated power purchase is one of the largest wind-power purchases in the Eastern United States.
http://www.newwindenergy.com/regional/mid-atlantic/customers.html
http://www.newwindenergy.com/regional/mid-atlantic/press_release/PennState.htm
http://www.psu.edu/ur/2002/12jul02botenvironmental.html
http://www.psu.edu/ur/2001/windmillphotos.html
Wind Power—a PCIEP statewide initiative.

DEP "Rush To Recycle" Challenge

The Pennsylvania State University was one of 18 participating schools in the Department of Environmental Protection's recycling challenge contest. The *"Rush To Recycle"* Challenge pitted colleges and universities across the Commonwealth against one another to see which school can recycle the most materials over an eight-week period from October 7, 2002 to November 30, 2002. Also participating in the recycling challenge are Penn State's Middletown, Shenango, and Wilkes-Barre branch campuses. Recycling saves natural resources, energy, our environment, landfill disposal capacity and costs, and recycling is good business—our waste reduction and recycling activities can make a difference!
http://www.dep.state.pa.us/hosting/rushtorecycle/default.htm
http://www.dep.state.pa.us/hosting/recycleteam/
http://www.dep.state.pa.us/dep/deputate/airwaste/wm/RECYCLE/Recycle.htm
A joint DEP & PCIEP project.

Green Practices

Largely due to the creativity, commitment, and leadership of Penn State's Al Matyasovsky, Penn State has received national and regional recognition and the PA Governor's Award for Environmental Excellence for the school's innovative refuse and recycling programs. Thanks to the recycling efforts of Penn State students, faculty, and staff, the University's recycling efforts have raised more than $100,000 for contribution to charity, to Penn State student scholarship funds, the Joe Paterno Library for the purchase of reference materials related to recycling, and has saved the University more than $10,000 in waste handling and disposal fees.
http://www.psu.edu/ur/2002/staffexcell2002.html
http://www.psu.edu/ur/NEWS/recycling.html
http://www.psu.edu/oldmain/fab/dnews/recycling.htm

In particular, the Beaver Stadium and Newspaper Readership recycling programs have raised tens of thousands of dollars.

1. The *Beaver Stadium Recycling Program* is a large part of Penn State's efforts to recycle on campus. The program was begun in 1995 and is conducted during home football game. To date, the program has collected 214 tons of recyclable

materials and the more than $10,000 generated from the sale of the recycled materials has gone to the Centre County United Way. The program is known to be one of the best special event recycling programs in the country.

The program's success has spawned other special events and recycling projects at Penn State: The Bryce Jordan recycling, the Four Diamonds Recycling Effort, The Second Mile Recycling Effort, and a postgame recycling effort by Penn State students inside the stadium.

http://www.psu.edu/oldmain/fab/dnews/almatyasovsky.htm

2. Since the inception of the *Newspaper Recycling Program* in 1997, 831 tons of newspapers have been recycled. As of July 2002, $48,861 has been added to Penn State's general scholarship fund because of the recycling efforts. http://www.psu.edu/ur/2002/paperfund.html

Other notable Penn State "recycling" efforts are:

1. *"Scrap to Scholarship"*, now known as the *Environmental Resource Management Scholarship.* The adage goes: One man's junk is another's treasure. In 1999, Penn State was one of the first universities in the Nation to initiate and reap benefits of a program that turns scrap metal into scholarship monies. The recently established John Kustaborder Scholarship benefits students in Penn State's College of Agriculture Sciences. Kustaborder is the University's hauler of scrap materials expended from campus construction and demolition sites. The scholarship resulted from funds received for regenerating Penn State scrap materials. Since 1999, John Kustaborder has annually donated $5,000 to the scholarship. http://www.psu.edu/oldmain/fab/dnews/scraps.htm
2. *"Project Earth Grow"*, now known as *OMPEC* (Organic Materials Processing and Education Center). What began as a 10-week demonstration project in 1997 from one small dining commons is currently handling pre-consumer food waste and napkins from about 70,000 weekly meals in 7 dining commons and kitchen prep wastes from two campus hotels and conference centers and campus daycare. The project transforms food wastes, landscape debris, and animal manure into compost for use in campus landscaping projects, athletic field maintenance, and agricultural research and demonstration projects. http://www.age.psu.edu/psu-compost/
http://www.psu.edu/ur/2000/compost2.html
3. *"Trash to Treasure"* sale. Students living on campus donate unwanted, usable items to a "Trash to Treasure" sale that will benefit local charities through a newly developed recycling program. The new program will get usable items out of the refuse pile and into the hands of those that can use them. http://www.psu.edu/ur/archives/intercom_2002/May9/trash.html

In 1990, Penn State approved an administrative *University Recycling Program* policy, which states the University's commitment toward the environment by establishing a Recycling Policy. http://guru.psu.edu/policies/AD34.html

Commitment to Sustainable Stewardship

Penn State's Finance and Business *Environmental Stewardship Strategy* was created to identify specific actions and objectives aimed at conducting the University's business in a manner that demonstrates a commitment to environmental stewardship. The team also provides leadership and communication for environmental sustainability efforts and to encourage environmentally responsible purchasing, such as:

1. In an effort to increase the efficient use of energy and water, Penn State has joined *Energy Star*. http://www.energystar.gov/default.shtml
2. To minimize solid waste, the team encourages continued and enhanced recycling programs, the reuse of materials when possible, and a reduction in packaging waste.
3. The team is striving to minimize hazardous waste and toxic material use and to ensure regulatory compliance.
4. The team also encourages environmentally responsible planning and design, such as exemplified by the SALA (School of Architecture and Landscape Architecture in the College of Arts and Architecture) "green" building.

http://www.psu.edu/oldmain/fab/dstrat/strategy8.htm
http://www.psu.edu/oldmain/fab/index.html

The objectives of *Environmental Stewardship Initiative* are to result in the University conducting its business in a manner that demonstrates a commitment to environmental stewardship, and to move the University toward sustainable practices.
http://www.opp.psu.edu/f&benvstrategy/
http://www.psu.edu/oldmain/fab/dstrat/kim1.pdf

Measuring Institution Sustainability

In September 1998, a team of Penn State faculty, students, and staff released *The Penn State Indicators Report (1998)* on the sustainability of the school. The 1998 *Indicators Report* attracted both local and national attention. This report did something that had never been done—it examined Penn State through the lens of sustainability to evaluate whether the University was moving toward or away from sustainable practices. This analysis relied on thirty-four sustainability indicators in areas such as energy, food, water, waste, transportation, buildings, and decision-making. The ultimate goal of the project was to build a more sustainable and vital Penn State.

In late 1999, the "Indicators" group created Penn State's *Green Destiny Council* http://www.bio.psu.edu/Greendestiny/index.shtml, a faculty-staff-student association committed to promoting ecological responsibility at Penn State. In April 2000, the *Green Destiny Council* released *The Penn State Indicators Report *2000** http://www.bio.psu.edu/Greendestiny/publications.shtml, an update of the original 1998 *Indicators Report*. The *2000 Report* lays the foundation for a new measurement system by examining Penn State's performance and well being through the lens of sustainability. The 2000 report examines sustainability at Penn State using 33 different

"indicators of sustainability" distributed among 10 university systems. These systems include energy and water use, material resources and waste disposal, various food statistics, transportation use, land issues, building and ecological design issues, research priorities, and the openness and values of institution decision-making (see attached Appendix A). The *Indicators Reports* have led to an evaluation of how Penn State is doing as an institution on sustainability and a number of changes in campus operations have been made as a direct result of the indicators.

Penn State's *Green Destiny Council* has taken four important steps toward sustainability: http://www.bio.psu.edu/Greendestiny/steps.shtml

1. The first step (April, 2000) was Green Destiny's release of the *Penn State Indicators Report*. This Report made it clear that there is a large sustainability deficit at Penn State.
2. A second important step occurred in the Fall, 2001 when Green Destiny created an *Ecological Mission for Penn State*.
3. A third important step occurred in Spring, 2001, when the Penn State Faculty Senate and Penn State's President Graham B. Spanier unanimously approved and adopted *Green Destiny's Ecological Mission for Penn State*.
4. A fourth noteworthy step is occurring right now as Penn State works to finalize its first ever, *Finance and Business Strategy for Environmental Stewardship*.

Penn State's *Faculty Senate Committee on University Planning* issued "Recommendation for Developing an Ecologically Sustainable University" supporting the need for Penn State to develop long term goals in regards to ecological sustainability and to incorporate them into the University's Strategic Plan.
http://www.psu.edu/ufs/up/up.html
http://www.bio.psu.edu/Greendestiny/publications/gdc-senate_eem.pdf

Environmental Stewardship[2003 Update]

The environmental stewardship initiative identifies specific objectives aimed at conducting University business in a manner that demonstrates a commitment to environmental stewardship and moves the University toward sustainable practices. Eight goals guide this initiative's efforts:

- *Leadership and best management practices*—Provide leadership throughout the University for environmental stewardship through education and example.
- *Environmentally Responsible Purchasing Policies*—Encourage units to obtain maximum value for expenditures and work towards obtaining "best value" by taking a life cycle cost approach to purchases.
- *Efficient use and conservation of energy, water, and other resources*—Minimize energy consumption by promoting efficient use and improving energy performance in facilities and operations.
- *Minimize solid waste production*—Enhance policies and process that reduce solid waste generation through reduction, reuse, and recycling.
- *Minimize hazardous waste and toxic materials on campus*—Minimize use of and effectively track and dispose of hazardous materials.
- *Environmentally responsible campus design and planning principles*—Consider the environmental implications in the development, construction, and operation of campus infrastructure, grounds and buildings.
- *Transportation*---Plan for and operate transportation systems to minimize the impact on the environment by encouraging walking, bicycles and mass transit systems as well as encouraging the use of clean burning efficient vehicles.
- *Regulatory Compliance*—Ensure that facilities and practices meet or exceed compliance with applicable state and federal environmental regulations.

Accomplishments: 2002 – 2003 of the Environmental Stewardship Program

- Leadership and best management practices

  - Environmental Health and Safety won the Governor's award for Environmental Excellence.
  - Received EPA's 2002 Green Power Award.
  - Briefed the Board of Trustees twice on the Environmental Stewardship program.

- Environmentally Responsible Purchasing Policies

  - Purchasing 5% of Penn State's electricity from wind power.
  - All Purchasing 'bid requests' now encourage vendors to provide alternate bids for more environmentally responsible products.
  - All University purchasing cardholders were notified of the University's commitment to purchase "Energy Star" products. Local vendors were also notified and asked to promote this policy to University purchasers.
  - At the annual Big, Big Show, Purchasing and OPP showcased recycled paper, recycled carpet and the Trash to Treasure program.

- Efficient use and conservation of energy, water, and other resources

  - Re-commissioned six buildings to conserve energy.
  - Completed selection phase of first guaranteed energy savings project at University Park and conducting the investment grade audit.

- Minimize solid waste production

  - Completed first Trash to Treasure sale where students donated unwanted material to the United Way for their sale, thus avoiding disposal of items.
  - Sponsored Rush to Recycling and other recycling programs throughout campus.
  - Continued to operate a very extensive composting program with joint participation by the College of Agricultural Sciences, Housing and Foods and Physical Plant. Began using construction and demolition materials as for composting.

- Minimize hazardous waste and toxic materials on campus

  - Eliminated over 7,000 mercury-containing thermometers, containing over 420 pounds of elemental mercury from all University locations.
  - Demonstrated strong compliance efforts in areas using hazardous chemical and biological materials, including laboratories, shops and other facilities. Conducted OSHA outreach training for Commonwealth Campuses.
  - Distributed information on a wide range of environmental health and safety initiatives through newsletters and monthly handouts to the University community - hazardous materials handling and disposal for batteries, oils, and photographic chemicals; fire safety; smoke detector disposal; and electronic equipment disposal.

- Environmentally responsible campus design and planning principles

  - Collaboration between OPP and Transportation Services has advanced the development of the Intermodal Transportation Concept (ITC) in accordance with the University Park Campus Master Plan to create a more pedestrian oriented campus. A master plan for Pollock Road has been completed and includes an implementation strategy.
  - It appears that the new SALA building will be Leadership in Energy and Environmental Design (LEED) certified with a Silver rating. The design of the site and the building will heighten the visibility of PSU's commitment to environmental stewardship and education.
  - As design development continues, it appears that the School of Forest Resources building will be LEED certified. This will be PSU's second LEED certified building, and the first one designed in collaboration with DGS.
  - PSU has adopted "green" design standards that must be integrated into all new PSU buildings. These include compliance with the latest energy efficiency and indoor air quality design standards, as well as commissioning the new building to make sure it operates efficiently.
  - Integrated pest management policy completed and web page set up.
  - Implementation of the Heritage Trees and Groves policy.

- Transportation initiatives

  - In the past 12 months, the Office of Physical Plant and Transportation Services have presented the Intermodal Transportation Concept 24 times, to faculty, staff, students, and the community. A design for the

Pollock Road kiosks has been completed (will reduce traffic in the core). Construction of Stadium West has also been completed, which fulfills part of the commitment to provide alternative parking on the periphery and encourage use of transit.

- Completed di-methyl ether fuel project with Fuel Studies at Innovation Park. They studied the use of di-methyl ether fuel by converting the Guest Shuttle from diesel to di-methyl ether for a two-year period.
- Transportation Services completes its first year of the "Ride for Five" program in July 2003. This program offers full-time university employees the ability to purchase a CATA regional bus pass for $5 per month in exchange for their daytime parking permits. We increased from an average sale of approximately 58 bus pass sales per year to over 400 passes under the new program.
- Continue to provide a rideshare-matching program that offers university employees a guaranteed safe ride home. This year 409 employees were enrolled in this rideshare program.
- Working with Pennsylvania Transportation Institute, Department of Energy and Air Products on development and installation of hydrogen fueling facility

- Regulatory Compliance

  - Submitted applications for NPDES Phase II stormwater permits. Identifying illicit discharges and program corrective measures.
  - Surveyed all buildings to determine requirements for backflow protection.
  - Made arrangements to purchase spray fields for continued land application of wastewater treatment plant treated effluent.
  - Audited complete fuel storage tank program and re-wrote plans based on new requirements.
  - Proactively cleanup any contaminated areas that are discovered.

Penn State's Goals for the Environmental Stewardship Program for 2002 – 2003

- Leadership and best management practices

  - Survey campus environmental programs and add to web page. Continue outreach efforts to campuses.

- Environmentally Responsible Purchasing Policies

  - Continue efforts to encourage manufacturers to offer and supply more environmentally responsible products while minimizing costs associated with these products.
  - Increase University departments' awareness of environmentally friendly alternatives and encourage consideration of lifecycle costs vs. just the initial purchase price

- Efficient use and conservation of energy, water, and other resources

  - Continue re-commissioning program and re-commission at least 7 buildings
  - Complete our first Guaranteed Energy Savings Project at University Park and begin the next project.
  - Conduct a green house gas inventory to establish our current emissions, estimate a 1990 baseline and project our emissions for 2010.

- Minimize solid waste production

  - Continue Trash to Treasure program with sale at Stadium and work to make the program more efficient.
  - Continue to enhance the composting program by moving to a new and improved location. Exploring the feasibility of composting post-consumer green waste.

- Minimize hazardous waste and toxic materials on campus

  - Continue to eliminate hazardous materials use and storage through continued education and oversight.
  - Enhance overall EHS programs at non-University Park locations.

- Environmentally responsible campus design and planning principles

  - Continue design of the Intermodal Transportation Concept (ITC) to reduce the environmental impacts of transportation.

    › In collaboration with Transportation services develop a bicycle master plan for the UP campus to encourage alternative modes of transportation.

›In collaboration with Transportation services, complete design for Pollock Road improvements to reduce traffic on campus.
›Complete design and construction of Shortlidge Road Mall to improve pedestrian circulation and safety.

- Complete design of Bellefonte Rail Trail.
- Further refinement of Integrated Pest Management (IPM) policy and web site to improve its use as a management tool to reduce pesticide use.

- <u>Transportation initiatives</u>

  - Continue implementation of the Intermodal Transportation Concept to reduce the emission impacts of transportation.

    ›Construct Pollock Road kiosks.
    ›Reconstruct Brown A parking lot.
    ›Develop concept for West College Ave.
    ›Corl Street commuter parking on the western periphery.

  - Encourage use of bicycles through improved parking and additional racks.
  - July 1 will bring implementation of a reduction in the commuter lot rates to $5 per month. This component of the Intermodal Transportation Study is provided as a less expensive alternative to employees parking in the core of campus.
  - We are coordinating with CATA to provide the most efficient and effective campus bus service by utilizing not only dedicated transit equipment, but capacity on regional CATA routes that cross the campus.
  - Work with Pennsylvania Transportation Institute, Department of Energy and Air Products to complete development and installation of hydrogen fueling facility and conversion of OPP vehicles to burn hydrogen fuels. Additionally, Fleet Operations is pursuing opportunities for funding of hydrogen-fueled vehicles that traverse the campus on a frequent basis, i.e. campus shuttles.

- Regulatory Compliance

  - Implement Phase II of NPDES stormwater regulations. Begin action to correct illicit discharges and continue program to survey buildings to prevent discharges.
    Install backflow protection devices in building potable water systems.

SHIPPENSBURG UNIVERSITY OF PENNSYLVANIA

Wind Power

As one of the State System of Higher Education's 14 member schools, Shippensburg University purchased wind-generated energy as part of the Commonwealth of Pennsylvania's five percent renewable energy contract, from the wind-power marketer Community Energy, Inc.'s wind farms in Fayette and Somerset counties.
http://www.newwindenergy.com/regional/mid-atlantic/customers.html
http://www.dep.state.pa.us/dep/deputate/polycomm/update/12-07-01/1207015149.htm
http://www.eren.doe.gov/greenpower/0402_communergy_pr.html
Wind Power—a PCIEP statewide initiative.

SLIPPERY ROCK UNIVERSITY OF PENNSYLVANIA

Wind Power

As one of the State System of Higher Education's 14 member schools, Slippery Rock University purchased wind-generated energy as part of the Commonwealth of Pennsylvania's five percent renewable energy contract, from the wind-power marketer Community Energy, Inc.'s wind farms in Fayette and Somerset counties.
http://www.newwindenergy.com/regional/mid-atlantic/customers.html
http://www.dep.state.pa.us/dep/deputate/polycomm/update/12-07-01/1207015149.htm
http://www.eren.doe.gov/greenpower/0402_communergy_pr.html
Wind Power—a PCIEP statewide initiative.

Greening Practices

Slippery Rock's *Robert A. Macoskey Center for Sustainable Systems Education and Research (Center)* houses the campus-wide composting facility for the school's dining halls' food wastes. At the *Center* the food wastes are mixed with leaves and grass clippings collected from the Borough of Slippery Rock and the resulting compost mixture is used in the school's orchard, gardens, flowerbeds, and tree nursery.

http://www.sru.edu/depts/chhs/macoskey/. Slippery Rock also has an on-campus recycling program for paper, plastic and glass, coordinated by a Graduate assistant in sustainable systems.

SWARTHMORE COLLEGE

Wind Power

In April 2002, Swarthmore College committed to meeting 2.5 % of its energy needs through wind power, from the wind-power marketer Community Energy, Inc.—and thanks to a conservation effort by students, the College won't have to expend additional dollars to achieve a more environmentally friendly energy mix!
http://www.newwindenergy.com/regional/mid-atlantic/customers.html
http://www.swarthmore.edu/news/releases/02/wind.html
http://www.eren.doe.gov/greenpower/0402_communergy_pr.html
Wind Power—a PCIEP statewide initiative.

DEP "Rush To Recycle" Challenge

Swarthmore College was one of 18 participating schools in the Department of Environmental Protection's recycling challenge contest. The *"Rush To Recycle"* Challenge pitted colleges and universities across the Commonwealth against one another to see which school can recycle the most materials over an eight-week period from October 7, 2002 to November 30, 2002. Recycling saves natural resources, energy, our environment, landfill disposal capacity and costs, and recycling is good business—our waste reduction and recycling activities can make a difference!
http://www.dep.state.pa.us/hosting/rushtorecycle/default.htm
http://www.dep.state.pa.us/hosting/recycleteam/
http://www.dep.state.pa.us/dep/deputate/airwaste/wm/RECYCLE/Recycle.htm
A joint DEP & PCIEP project.

TEMPLE UNIVERSITY - AMBLER

DEP "Rush To Recycle" Challenge

Temple University Ambler was one of 18 participating schools in the Department of Environmental Protection's recycling challenge contest. The *"Rush To Recycle"* Challenge pitted colleges and universities across the Commonwealth against one another to see which school can recycle the most materials over an eight-week period from October 7, 2002 to November 30, 2002. Recycling saves natural resources,

energy, our environment, landfill disposal capacity and costs, and recycling is good business—our waste reduction and recycling activities can make a difference!
http://www.dep.state.pa.us/hosting/rushtorecycle/default.htm
http://www.dep.state.pa.us/hosting/recycleteam/
http://www.dep.state.pa.us/dep/deputate/airwaste/wm/RECYCLE/Recycle.htm
A joint DEP & PCIEP project

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UNIVERSITY OF PENNSYLVANIA

Wind Power

In 2001, the University of Pennsylvania agreed to purchase the output of five 215-foot-tall, 1.5-megawatt wind turbines, equivalent to more than 30 % of the total energy generated from two new wind farms at Somerset and Mill Run in western Pennsylvania. This purchase, from the wind-power marketer Community Energy, Inc., represented the largest retail wind energy purchase in the Nation at that time and will satisfy 5 % of the university's annual energy needs.
http://www.newwindenergy.com/regional/mid-atlantic/customers.html
http://www.upenn.edu/almanac/v48/n10/WindPower.html
Wind Power—a PCIEP statewide initiative.

UNIVERSITY OF PITTSBURGH

Green Practices

Beginning in 1990, the *recycling program* at the University of Pittsburgh continues to grow at fast pace. It began by recycling only white paper and has grown to the point where it now accepts all colors and most grades of recyclable paper, cardboard, aluminum cans, and all scrap metals and various other items such as copier toner cartridges, green yard waste, and wood pallets. The University has a full time recycling coordinator whose job it is to administer the recycling program.
http://www.facmgmt.pitt.edu/recycle.htm

VILLANOVA UNIVERSITY

DEP “Rush To Recycle” Challenge

Villanova University was one of 18 participating schools in the Department of Environmental Protection’s recycling challenge contest. The *"Rush To Recycle"* Challenge pitted colleges and universities across the Commonwealth against one

another to see which school can recycle the most materials over an eight-week period from October 7, 2002 to November 30, 2002. Recycling saves natural resources, energy, our environment, landfill disposal capacity and costs, and recycling is good business—our waste reduction and recycling activities can make a difference!
http://www.dep.state.pa.us/hosting/rushtorecycle/default.htm
http://www.dep.state.pa.us/hosting/recycleteam/
http://www.dep.state.pa.us/dep/deputate/airwaste/wm/RECYCLE/Recycle.htm
A joint DEP & PCIEP project.

WEST CHESTER UNIVERSITY OF PENNSYLVANIA

Wind Power

As one of the State System of Higher Education's 14 member schools, West Chester University purchased wind-generated energy as part of the Commonwealth of Pennsylvania's five percent renewable energy contract, from the wind-power marketer Community Energy, Inc.'s wind farms in Fayette and Somerset counties.
http://www.newwindenergy.com/regional/mid-atlantic/customers.html
http://www.dep.state.pa.us/dep/deputate/polycomm/update/12-07-01/1207015149.htm
http://www.eren.doe.gov/greenpower/0402_communergy_pr.html
Wind Power—a PCIEP statewide initiative.

DEP "Rush To Recycle" Challenge

West Chester University was one of 18 participating schools in the Department of Environmental Protection's recycling challenge contest. The *"Rush To Recycle"* Challenge pitted colleges and universities across the Commonwealth against one another to see which school can recycle the most materials over an eight-week period from October 7, 2002 to November 30, 2002. Recycling saves natural resources, energy, our environment, landfill disposal capacity and costs, and recycling is good business—our waste reduction and recycling activities can make a difference!
http://www.dep.state.pa.us/hosting/rushtorecycle/default.htm
http://www.dep.state.pa.us/hosting/recycleteam/
http://www.dep.state.pa.us/dep/deputate/airwaste/wm/RECYCLE/Recycle.htm
A joint DEP & PCIEP project.

Greening Programs**2003 Update**

West Chester University has expanded the visibility and scope of operations relating to Greening the University. In the last year, the University's Environmental Council, composed of students, faculty, and staff from several areas, including Facilities, has unveiled a web site (http://www.wcupa.edu/_information/afa/environment/default.htm) to highlight the University's efforts to act sustainably. For example, the site contains

information about upcoming events related to the environment, efforts in recycling, the Robert B. Gordon Environmental Natural Area, and links that students and others can use to become involved with local and regional environmental organizations, such as watershed associations.

The Environmental Council initiated the WCU Sustainable Living Center, which will serve as a model for sustainable living practices. It offers students, faculty, and staff who agree to abide by high standards of low impact, environmentally responsible living an opportunity to rent a room in a near-campus house. The Center's first occupants are in place for the 2003-2004 academic year.

The Environmental Council is in the final stages of formalizing the process by which the Council has the opportunity to provide input into Facilities Projects, from pre-design through design development. The Council will use principles based on the US Green Building Council's LEEDS process, along with University-related principles, to guide its recommendations.

WILSON COLLEGE

DEP "Rush To Recycle" Challenge

Wilson College was one of 18 participating schools in the Department of Environmental Protection's recycling challenge contest. The *"Rush To Recycle"* Challenge pitted colleges and universities across the Commonwealth against one another to see which school can recycle the most materials over an eight-week period from October 7, 2002 to November 30, 2002. Recycling saves natural resources, energy, our environment, landfill disposal capacity and costs, and recycling is good business—our waste reduction and recycling activities can make a difference!
http://www.dep.state.pa.us/hosting/rushtorecycle/default.htm
http://www.dep.state.pa.us/hosting/recycleteam/
http://www.dep.state.pa.us/dep/deputate/airwaste/wm/RECYCLE/Recycle.htm
A joint DEP and PCIEP project.

Green Practices

In the spring of 2002, Wilson College's sustainable organic farm, the *Fulton Farm,* and the student Environmental Club initiated the college's composting program. For processing into compost at the *Fulton Farm*, farm staff and student volunteers collected food scraps from the college dining hall and kitchens. Over 800 gallons of food waste were diverted from the landfill in the five-week period that the program was underway. Student volunteers helped with waste collection, dumping of the bins, and educational materials. The composting program will resume when students return in the fall. The

Fulton Farm, a 200-year old, 100-acre farmstead, is the heart of the college's *Richard Alsina Fulton Center for Sustainable Living.* http://www.wilson.edu/csl/csl.htm

SUSTAINABLE DEVELOPMENT PROGRAMS

Like the greening programs listed above, sustainable development programs listed here include outstanding curriculum or operations programs created by a PCIEP member institution. However, the programs listed in this section include those that are actually focused on concrete sustainability problems. Sometimes these programs have been designed to provide more concrete educational experiences of students, in other cases the PCIEP institutions are engaged in sustainable activities that provide actual services to the community or region in which the school is located.

ALLEGHENY COLLEGE

Center for Environment and Economic Development

Allegheny College's *Center for Environment and Economic Development* (*CEED,* http://ceed.alleg.edu/CEED/CEEDHome.html*)*, comprised of faculty from the Art, Biology, Economics, English, Environmental Science, Geology, and Political Science Departments, engages in projects that demonstrate how environmental and economic decisions work together to enhance the quality of life.

CEED engages Allegheny College students, faculty, and the community in creating innovative approaches to environmental stewardship and regional revitalization. *CEED* faculty and student members work closely with numerous local stakeholders, including local citizens, businesses and industry, and governmental and non-governmental agencies to combine academic learning with hands-on experiential projects

The wide variety of projects with which *CEED* has involved itself all share at least one common trait: they each, in some way, invite members of the local community to share in the project's development. *CEED's* initial success has been its ability to draw upon the talents and enthusiasm of northwest PA residents and to nurture these attributes by providing new outlets for their application. *CEED* and its affiliate projects and personnel have received a number of awards, including three Governor's Awards for Environmental Excellence, two awards from the Three Rivers Environmental Council, and citations for environmental excellence the from the PA House and Senate. In addition, CEED was named to The Templeton Guide: Colleges that Encourage Character Development under the category of Civic Education Programs.

Major *CEED* projects include:

1. Meadville Community Energy Project

A community initiative (http://welcome.to/mcep) formed to link college faculty, staff, and students with local organizations to address issues of energy efficiency within the Meadville community. Initiatives include energy audits for landlords and private homeowners, low-interest energy loans for homeowners and landlords to finance energy efficiency improvements such as high-efficiency heating and cooling equipment, water heaters, insulation, etc., and the Partnership for Energy Performance linking businesses, institutions and industries with a shared commitment to energy management. MCEP was also involved in Allegheny's commitment to adopt wind power.

2. Creek Connections

Creek Connections (http://merlin.alleg.edu/group/creekconnections/#) has forged partnerships between Allegheny College and regional K-12 schools to turn waterways in Northwest Pennsylvania, Southwest New York, and the Pittsburgh area into outdoor environmental laboratories. Emphasizing a hands-on, inquiry based investigation of local waterways; this project annually involves over 40 different secondary schools, the classes of 50 teachers, and over 2000 students annually. Allegheny College staff and students provide the framework and assistance for school-based investigative research in local watersheds. Equipment and teacher development is provided at a teacher-student summer workshop. School classes or clubs then begin to conduct water quality tests at their local field site at least once every three weeks. Specific activities include a summer institute where teams of teachers and students visit Allegheny College for a one-day workshop on aquatic ecology, ongoing water quality analysis every two to three weeks during the school year by elementary and high school students, elementary and high school student-designed research projects, an annual student research symposium, and a series of watershed teaching modules created to aid in teaching watershed issues, ecology, and environmental science topics in middle and high schools; the modules help address the Pennsylvania Academic Standards for the Environment and Ecology.

3. Strategic Environmental Management

This initiative works through a Pollution Prevention Roundtable to assist local industries in reducing costly waste streams. Regular meetings with local firms, a variety of internships, and workshops for regional industries have been employed to assist industries in waste reduction.

4. Northwest Pennsylvania Sustainable Forestry Initiative

The Northwest Pennsylvania Sustainable Forestry Initiative exists to improve forest management practices and to substantially increase the economic contribution of the wood products industry in this region. The initiative seeks to coordinate efforts of landowners, loggers, forest consultants, sawmill operators, pulp, paper, lumber industries, wood product manufacturers, and state and federal representatives. It also explores mechanisms of enhancing long-term ecological and economic values of forest resources in our region. The initiative catalyzed formation of the Northwest Pennsylvania Woodland Association (http://merlin2.alleg.edu/group/nwpwa/), which is lead by and oriented toward private forest landowners and others interested in practicing sound forest management practices. The association provides opportunities for landowners to meet and to learn about sound management techniques and important forest issues from professionals.

5. Visioning and Downtown Revitalization

The Visioning Process included a number of discussions, key person interviews, and mini-visioning exercises with community leaders, citizens, including adults and children, and special interest groups. Included were sectors of the community who are sometimes under-represented in community development planning, such as low-income families, ethnic and religious minorities, farmers, and women. Participants were asked to suggest priorities for regional improvements they would like to see initiated over the next five years. A downtown revitalization project, which included strong business, local citizen and local government input, links activities of the Art and Environment initiative with efforts to redesign, with an historical and environmental theme, a business alley in the vicinity of a large, energy efficient revitalization project in Meadville's downtown area.

6. Art and the Environment

Art and the Environment (http://ceed.allegheny.edu/ceed/ceedhome.html) projects include construction of an environmentally-friendly employee lounge at one of Pennsylvania's first reclaimed Brownfield sites (Avtex, in Meadville), an environmental art project, placed at a local PennDOT facility and constructed in cooperation with PennDOT. The project features an installation and sculptural mural constructed of recycled materials, including recycled soil and flowers constructed out of discarded road signs.

7. Ecotourism

Because of the region's strong natural history, proximity to several large cities, and existing tourism infrastructure, CEED is working with the Crawford County Convention and Visitor's Bureau to enhance ecotourism throughout northwestern Pennsylvania. An extensive website (http://naturetourism.allegheny.edu) provides a large database enabling visitors to learn about the area's outdoor resources and environmental issues. Educational and environmental aspects related to outdoor recreation are featured, and linkages between the environment and the people of the area are shown. A series of ecological driving tours available on the site contain driving maps, descriptions of the sites to visit, and background information on environmental issues associated with the locations.

8. Junior High School Environmental Curriculum

CEED developed the "Industrial Park Ecology Curriculum" (http://ceed.allegheny.edu/ceed/ceedhome.html) for junior high school students that focuses on industry-a sector that traditionally has not been included in environmental curricula. Through in-class instruction and a "Scavenger Hunt" on-site at the Crawford County Industrial Park, students look at the inputs and outputs of local industries, analyze the environmental impacts of their practices, and look for ways that they can reuse or trade waste products.

Department of Environmental Science

1. Academic Course Projects in Sustainability

A number of courses at Allegheny not only teach sustainability, but also engage students in course-based service learning and civic engagement projects that enhance and promote sustainability in the region. These projects are designed to teach classroom principles in efforts and laboratory initiatives that provide direct benefit to local and regional organizations involved in sustainability and

environmental efforts. A variety of courses, including Environmental Research Methods, Environmental Literature and Writing, Art and the Environment, Envisioning Environmental Futures, Forest Ecosystems and Management, Conservation Biology, Wetlands, Studies in U.S. Community Activism, Ecological Economics, Culture and Environment, and Junior and Senior Seminars employ this approach. Examples of service-learning projects include assessment of the potential impact of the Hemlock Wooly Adelgid on regional forests, development of an energy plan for a campus building, design of recycling protocol for campus cafeteria, assessment of forest biomass potential for a possible biomass-energy power plant, plans for an environmental and artistic downtown redevelopment project, design and construction of a "green" employee lounge at a nearby industrial facility, stream conservation plans for local dairy farmers, an ecological economic assessment of the Erie National Wildlife Refuge, and community visioning. Course project outcomes have been presented or delivered to, among others, the USDA-NRCS, Northwest PA Woodland Association, the City of Meadville, local dairy farmers, forest landowners, forestry professionals, and the US Fish and Wildlife.

Allegheny students are also required to produce a yearlong senior thesis, many of which focus on aspects of sustainability, and which are presented to local organizations involved in environmental sustainability. Examples http://webpub.allegheny.edu/dept/envisci/ESInfo/seniorcomps.html) include an assessment of stream erosion prevention techniques for local farmers, ecological driving tours for northwestern Pennsylvania, assessment of road-imposed edge effects on forests, promotion of community supported agriculture, green retrofit of existing campus buildings, energy savings plan for a nearby corporation, effects of consulting foresters on forest health, and examination of public concern over sewage overflow.

2. Internships

The department provides a wide array of credit-bearing internships (http://webpub.allegheny.edu/group/esdept/publicmain.html). Students gain experience in a host organization and contribute by assisting with routine operations; they also conduct a student-host designed project that furthers the host organization's goals. Projects have included energy conservation programs for a PADEP regional office, stream conservation plans, energy-saving studies for local industries, green design plans for the USDA, ecotourism initiatives, wetland restoration studies, land use plans, and environmental education curricula development. Participating host organizations include the Pennsylvania Department of Environmental Protection, French Creek Project, Tamarack Wildlife Rehabilitation Center, Moody and Associates, Inc., French Creek

Outdoor Learning Center, Erie National Wildlife Refuge, Crawford County Conservation District, Natural Resources Conservation Service, Crawford County Planning Commission, Asbury Woods Nature Center, The Meadville Area Sewer Authority, Crawford County Solid Waste Authority, Rural Development with the United States Department of Agriculture Office of Rural Development, French Creek Environmental Advisory Council, Conneaut Lake/French Creek Valley Conservancy, Crawford County Convention and Visitor's Bureau, Getty Farm, Meadville Community Energy Project, The Nature Conservancy, Crawford County Historical Society, PA Bureau of Forestry.

BLOOMSBURG UNIVERSITY OF PENNSYLVANIA

Bloomsburg University's *Quest* initiative offers students and the general public outdoor and educational courses in Pennsylvania, the United States, Africa, South and Central America and Europe. People of all ages and backgrounds participate. *Quest* participants develop a greater awareness and appreciation of the natural world. In July 2002, *Quest* had the first run of its new hands-on science program "Operation Ecosystem," where area school children learn about interactions within an ecosystem. http://orgs.bloomu.edu/quest/

CARNEGIE MELLON UNIVERSITY

The *Air Monitoring Supersite* is a multi-year effort to improve our understanding of airborne particles in Pittsburgh. The project includes sampling of ambient air and emissions at major air pollution sources, as well as computer modeling and in-depth analysis of data and model results. Roughly 15 institutions in the US and Europe are collaborators in this effort. http://homer.cheme.cmu.edu/

The *Brownfields Center* is a cooperative effort between Carnegie Mellon and the University of Pittsburgh. The purpose of this Center is to develop research and education on revitalizing former industrial sites to assist urban renewal and economic development so that idle sites can be returned to productive uses. http://tbc.ce.cmu.edu/

The *Green Roof* Project, which in the planning stages, involves using the roof of Hamerschlag Hall on campus as a demonstration of how rain runoff can be reduced and heating and cooling costs cut while improving aesthetics. This will be accomplished by developing a garden on the roof, and documenting the resulting environmental benefits.

The Institute for *Green Oxidation Chemistry* seeks to find alternatives to chlorine-based water purification methods. The program has developed methods that are now being tested and could have international impacts on the way water is treated. http://www.chem.cmu.edu/groups/Collins/

The *Solar Decathlon* project is led by a group of students to construct a full-size two-story house that will not require external energy for heating, cooling, and operation of all appliances. The construction features a tight building envelope with state-of-the-art insulation, long-term energy storage, heat pumps, photovoltaic cells, and several design innovations to achieve this goal. The house will be transported from CMU to Washington DC and installed on the Mall as one of fourteen houses in a national competition. http://www.arc.cmu.edu/carnegie_team/building/building_principle.html

CHATHAM COLLEGE

The *Rachel Carson Institute* was established at Chatham College in 1989 to continue the legacy of Chatham's most distinguished alumna, Rachel Carson, a 1929 alumna of the Pennsylvania College for Women, now known as Chatham College, by promoting the awareness and understanding of significant and current environmental issues through national and regional conferences, debates, lecture series, seminars, panel discussions, and other educational programs. http://www.chatham.edu/rci/pages/rci.html

The *Institute's* programming has three focal points:

1. research, public education, and policy on the role of women as environmental leaders and the impact of environmental issues on women worldwide;
2. campus-based curricular and co-curricular programming in environmental studies, including a campus greening project called "Chatham eCollegie";
3. environmental education programming for area schools.

CLARION UNIVERSITY OF PENNSYLVANIA

In 2001, the *Center for Natural Resources and the Environment* (*CNRE*) was established at Clarion and received its first grant from the Center for Rural Pennsylvania to fund an assessment of agricultural use and potential of reclaimed mine lands in Pennsylvania. *CNRE* serves as an umbrella organization for environmental research, education, and outreach programs at the University. *CNRE* was established to promote trans-disciplinary scholarship and learning in environmental issues, galvanize environmental programs at the University, and to serve as a clearinghouse for

information on environmental issues that effect the region. *CNRE* also sponsors a speaker series that is free and open to the public.
http://www.clarion.edu/news/2001/dece/cnregrant.htm

Clarion University's *Mill Creek Stream Restoration Project* is in its twelfth year. A number of environmental and outdoor groups formed the Mill Creek Coalition to lead an effort to construct wetlands for treating acid mine drainage seeps affecting the 57-square-mile watershed, which flows through Clarion and Jefferson Counties. Clarion University's Department of Biology faculty and students are active participants in the project, which has earned the project numerous grants and conservation awards.
http://wwwartsci.clarion.edu/biology/newslett1_99/newslett4.htm

Along with the Honors Program at Clarion, the Biology Department works with local high schools in ecological partnerships. These partnerships involve taking students into the field and teaching them assessment techniques in aquatic ecology.
http://www.clarion.edu/art-sci/honors/
http://wwwartsci.clarion.edu/biology/index.htm

DELAWARE VALLEY COLLEGE

Delaware Valley College has created a unique sustainable landscape design program. The intent of this program is to present and develop the methodology to restore, manage and design natural systems and landscapes. The focus of the program is on a variety of different habitat types including: woodlands, urban woodlands, grasslands, wetlands, and parkscapes. Also, the Agronomy and Environmental Sciences Program runs a sustainable farm on campus.
For more information on sustainable development programs at Delaware Valley College, see http://devalcol.aspre.net/academics/programs_bach.asp

DICKINSON COLLEGE

ALLARM **2003 Update**

In 1986, Dickinson College created the *Alliance for Aquatic Resource Monitoring (ALLARM). ALLARM*, a project of the Environmental Studies Department at Dickinson College, partners with Pennsylvania communities and individuals who are working to protect and restore watersheds. In the *ALLARM* program, Dickinson students help local grassroots organizations in the fight against water pollution with monitoring assistance. *ALLARM* itself provides continuing long-term services to approximately 18 watershed

associations. This involves mentoring assistance with technical and programmatic aspects of watershed assessment, monitoring, volunteer, and data management.

The program's goals are to:

1. Build an independent database on the health of Pennsylvania's waterways.
2. Identify target areas for mitigation, restoration, and protection in a scientifically sound manner.
3. Empower communities and individuals with scientific knowledge so that they can participate meaningfully in decision-making processes and assure protection of our natural resources.
4. Provide Dickinson College students with opportunities to use their classroom experiences to directly benefit communities.

The Technical Support Center currently provides the following for its partner watershed groups:

- Training workshops to help design and implement programs including chemical, physical, and biological monitoring. These workshops now include expanded habitat assessment, study design for monitoring programs (in cooperation with PADEP), and quality assurance.
- Lab support through quality control split sampling at the Community Aquatic Research Laboratory.
- Analysis for metals and fecal coliform.
- Database management.
- Data analysis and interpretation.
- On-going advice and assistance.
- On-going research into monitoring methods.

ALLARM also works with the Consortium for Scientific Assistance to Watersheds (C-Saw) to provide partner watershed groups with specialists who can help identify solutions and assist the watershed groups in the development of monitoring programs, restoration projects and protection plans.

C-SAW also provides guidance with conducting watershed assessments and science related to various issues and parameters significant to stream and watershed health.

ALLARM also works with the Center for Independent Social Research in Russia. To date half-a-dozen Russian community activists and academic mentors have visited the campus, several for semester-long internships. Using the ALLARM model, they have

received assistance to build meaningful citizen involvement in environmental management in Russia.

ALLARM is also working with Students Monitoring Aquatic Resources Together (SMART). SMART is committed to educating Pennsylvania's youth about issues concerning our streams and how to evaluate them to determine water quality.

SMART's main objectives are:

- To provide students with hands-on experience in monitoring the physical, chemical, and biological aspects of a stream.
- To educate students about the different factors that determine the health of streams.
- To stress the importance of a healthy aquatic ecosystem.
- To teach students how to look at data critically.
- To assist in building respect for the environment.

The SMART program is designed for educators of all types, from scout leaders and schoolteachers, to parents looking for fun ways to engage their children. SMART provides workshops for both educators and students.
http://www.dickinson.edu/storg/allarm/

Dickinson College Student Garden **2003 Update**

The Dickinson College Student Garden is a hands-on organic demonstration garden where students can learn sustainable agricultural practices.

The garden has several composting systems including a worm-enhanced compost pile, a 600-square-foot greenhouse, perennial fruit and berry patches, an irrigations system, a crop rotation system, and is installing on unique water conservation system whereby rainwater collected from the roof of the College Physical Plant can be recycled for crop irrigation.

The Garden donates produce to Project SHARE--a part of the local community food bank

A portion of the garden is dedicated to growing specialty crops for needy families in the area. Students help with weekly food delivers to low income neighborhoods and participate in gleaning outings at local farms.

The Garden has been involved in the development of several environmental education programs with local schools and after school programs utilizing the garden to teach young people about subjects from composting and tree planting, to the realization that

food doesn't grow in the supermarket.
http://www.dickinson.edu/storg/sisa/DG.html

Earth Now! **2003 Update**

Among our student environmental organizations, Earth Now! is involved with environmental action and consciousness raising on pressing issues, while the Campus Greens are part of the national Green (Party) movement. (See Above under "Green Curriculum.")
http://www.dickinson.edu/~earthnow/

DUQUESNE UNIVERSITY

Duquesne University's *The Champions of Sustainability* lecture series, sponsored by Giant Eagle and hosted in conjunction with Sustainable Pittsburgh, typically draws about 100 people. Last year's (2001) speakers included:

- John Hanger - President and CEO, PennFuture "Greening Our Economy and Environment Through Energy and Tax Policy"
- Robert Costanza - Director, University of Maryland Institute for Ecological Economics "Designing a Sustainable and Desirable America"
- Robert Bullard - Director, Environmental Justice Resource Center "Building Just and Sustainable Communities: Making Smart Growth Work for All Communities"
- David Orr - Chair, Environmental Studies Program, Oberlin College
- John Ikerd - Professor Emeritus of Agricultural Economics, University of Missouri Columbia "Sustainable Agriculture for a Sustainable Society: Economics as if People Mattered"
- Myron Orfield - founder, Metropolitan Area Research Corporation "Pittsburgh Metropolitics: A Study of Social Separation and Sprawl"
- Judy Corbett - Executive Director, Local Government Commission "Creating Livable Communities"

Under the Duquesne University's prestigious award-winning *Bayer School of Natural and Environmental Sciences* is the *Center for Environmental Research and Education*, which offers "Sustainable Development" and "Pollution Prevention" curriculum and an inter-municipal, watershed-based environmental management system research project.
http://www.science.duq.edu/esm/eindex.html
http://www.science.duq.edu/index.html

Turtle Creek Watershed: Storm water management system **2003 Update**

With funding from the Heinz Endowments of Pittsburgh, the Center for Environmental Research and Education of Duquesne University (CERE), in collaboration with the 3 Rivers Wet Weather Demonstration Program (3RWWDP) will carry out a project to develop and implement a multi-municipal, multi-county Stormwater Management System (SMS) in the Turtle Creek watershed east of Pittsburgh. This SMS project will develop, test, and disseminate Best Management Practices (BMPs) for stormwater management to improve water quality in the Turtle Creek watershed. To do so, the project will build on the work of both 3RWWDP and CERE in using community- and watershed-based environmental management systems (EMS) to protect and enhance the environmental assets of regional watersheds and municipalities in western Pennsylvania. Partners in the project will include the Turtle Creek Watershed Association and the municipalities of Monroeville, Penn Hills, Murrysville, Penn Township, and Wilkins Township. Dr. Stanley J. Kabala and Mr. Peter Niederberger of CERE will direct the project.

The project will proceed according to the five stages listed here and elaborated in Project Design and Project Schedule below.

1. Stakeholder workshop and drafting of Stormwater Management System (SMS) strategic plan
2. Full development of the SMS Strategic Plan
3. Development of BMPs and identification and design of demonstration projects
4. Implementation of BMPs in demonstration projects and monitoring of indicators/results
5. Project dissemination and replication

Watershed Management System for Municipality of Murrysville **2003 Update**

Utilizing a grant of $76,000 grant from the Pennsylvania Department of Environmental Protection *Growing Greener* Grants Program, the Center for Environmental Research and Education of Duquesne University, in collaboration with the Municipality of Murrysville, will develop a model for municipal best

management practices aimed at protection of watershed quality. This model, called a Watershed Management System (WMS) utilizes a community-based, stakeholder-oriented approach to address non-point sources of water pollution in areas exhibiting complex patterns of development. The WMS is an adaptation of the approach known as Environmental Management Systems (EMS), and relies on an “upstream” assessment of environmental *aspects* of municipal operations and activities that

generate negative impacts on water quality. Partners in Partners in the18-month project beginning in fall 2003 will include the Turtle Creek Watershed Association, the Pucketa-Chartiers Creek Watershed Association, Westmoreland County Conservation District, Smart Growth Partnership of Westmoreland County, and Sustainable Pittsburgh. Successful elements of this model WMS will then be shared with other communities and watershed organizations in southwestern Pennsylvania
and eventually the entire state.

Environmental Management System for Turtle Creek **2003 Update**

The overall goal of this project is to reduce non-point source pollution of stressed streams and prevent non-point source pollution of high-quality streams in the watershed of Turtle Creek, a tributary of the lower Monongahela River in the Ohio River Watershed in southwestern Pennsylvania. Thirty-three municipalities are located in the Turtle Creek watershed, and their activities and operations constitute a major source of non-point pollution. To address this problem, the project will employ an Environmental Management Systems (EMS) approach to advance the use of Best Management Practices (BMP) by municipalities in the watershed to reduce generation and release of pollutants in municipal activities and operations. The use of BMP will be accomplished through a program of outreach, technical assistance, and training for elected officials and employees of municipalities in the watershed. The EMS approach is a highly effective tool for dealing with non-point sources of water pollution because it is expressly designed to address water pollution "upstream" at the source, rather than downstream at the point of discharge or impact. Because watershed and municipal boundaries do not coincide and much can be gained from local government cooperation, the project will place priority on developing multiple-municipality projects.

The goals of this project are to improve water quality in the Turtle Creek watershed and create a statewide model for municipal-based watershed management. These goals will be met through several measurable objectives: training of municipal officials and employees, development of municipal watershed action plans, adoption of municipal BMPs aimed at reducing nonpoint source discharges, development of stakeholder cooperation plans, and revision of municipal codes and ordinances where necessary.

HARRISBURG AREA COMMUNITY COLLEGE

The Paxton Creek Watershed and Educational Association, Inc. (*PCWEA*) was created by a partnership among various community and Harrisburg Area Community College (HACC) stakeholders. The primary goal of the *PCWEA* is to promote education about the watershed and raise appreciation of it through local participation by HACC students and volunteers in awareness activities. Local cooperators include: HACC, the Dauphin

County Parks and Recreation Department, the South Central Regional Office of the Pennsylvania Department of Environmental Protection, and several local technical businesses and agencies. Plans are being formulated to inventory areas suitable for protection, others for enhancement, to perform a watershed assessment, to construct a watershed plan, and to develop site-specific projects for implementing components of the plan. The overall goal is to interface with the education program of HACC's Environmental Specialist and Associate programs. The students will participate in the watershed assessment and planning. http://www.hacc.edu/paxtoncreek/index.html http://www.hacc.edu/PROGRAMS/Divisions/MSAH/envirosci/envirosci.html.

HACC has sponsored an Aquatic Research Laboratory located in the *Benjamin Olewine III Nature Center*, located adjacent to Wildwood Lake in Harrisburg, Pennsylvania. The *Nature Center* provides an opportunity for local residents, and visitors to central Pennsylvania, to explore the natural world of a fresh water wetland. The Aquatic Research Laboratory is a resource location for students of all ages to attend environmental awareness seminars pertaining to watersheds, biological diversity, habitat, and water quality. http://www.wildwoodlake.org/NatureCenter.htm

At HACC campuses, a student-run *Environmental Awareness Club* (*EAC*) is available for promoting and assisting in projects that are beneficial to our environment. The *EAC* advocates awareness for environmental issues on a local and global level. The *EAC* sponsors programs during Earth Week to involve the HACC community. http://www.hacc.edu/SERVICES/studhbook/activities/studorgs.html

JUNIATA COLLEGE

Juniata College's Environmental Sciences Program requires that students identify a local environmental problem and recommend solutions. Juniata strives to have students understand concrete local environmental issues. Along this line, Juniata has become a member of *Juniata Clean Water Partnership* (*JCWP*). The *JCWP* is a regional coalition of citizens, community groups, non-profit conservation organizations, county planning offices, and county conservation districts. Juniata College is working in partnership with *JCW*P to address the environmental and natural resource issues, along with other political and social obstacles affecting the Juniata River watershed.
http://www.jcwp.org/

Juniata College's Environmental Sciences and Studies (ESS) Department **2003 Update**

Juniata students developed a drought management plan for the College (that was accepted by Juniata's President) and increased water conservation in resident halls in 2001. A second example is the work ESS students did in conjunction with Mifflin County to create the Kishacoquillas Creek Watershed website for citizen information, seen at www.kishwatershed.com . Juniata's ESS Department strives to have students understand concrete local environmental issues.
http://departments.juniata.edu/environmental/index.html

Juniata College interns help JCWP with their River Management Plan. The Environmental Science and Studies Department Senior Capstone Course is working this year with JCWP to further their Water Resources Center. The Water Resources Center will be a virtual resource for residents of the watershed. http://www.jcwp.org/

Osprey Restoration **2003 Update**

Juniata College is helping restore wild osprey in Pennsylvania. The osprey, a fish-eating bird of prey related to eagles and hawks, may once again permanently soar over the fish-rich waters of Raystown Lake if a new introduction program created by Juniata College and the Army Corps of Engineers succeeds.

"Populations of osprey declined perilously in the 1960s because of pesticide pollution," explains Chuck Yohn, director of the Juniata College Raystown Field Station. "The population of osprey has since rebounded, but there are no breeding populations in the Susquehanna River basin north of Harrisburg."

Yohn adds that osprey imprint on the area in which they are hatched and mature to the point of flight. "They return to area where they were fledged in order to breed," he says.

To introduce breeding pairs of osprey to the area, Juniata and Jeff Krause, wildlife biologist and resource manager for the Army Corps of Engineers, have collaborated on a breeding project that will raise and release six young ospreys this summer. Over the next three years a total of 18 osprey fledglings will be released at a site near Juniata's boat harbor. http://services.juniata.edu/station/ospreypress.html

Monitoring of Spruce Creek **2003 Update**

Juniata's Geology Department is helping to monitor Spruce Creek. Spruce Creek is one of the nation's top trout streams. It is an important economic powerhouse for the region. Students in Geology and Environmental Science and Studies are helping to assess the condition. http://services.juniata.edu/magazine/winter03/news/news.html

Currents of the Juniata Valley **2003 Update**

The Juniata River has been a constant element in the always-changing history, environment, and culture of Bedford, Blair, Fulton, Huntingdon, Juniata, Mifflin, and Perry counties. **Currents of the Juniata Valley** is an historic project that will serve as a vehicle for interpreting the significant cultural and historical assets of the seven counties of the Juniata River Valley. Four main currents give thematic shape to the project:

- **Making a Living:** commerce, industry, agriculture, and other activities that provided economic sustenance for the people of the valley.
- **Faith and Religion:** the ways in which the belief and worship practices of the people shaped the valley's culture and communities.
- **Humans in the Environment:** awareness and consequences of human interaction with the valley environment.
- **Transportation and Communication:** how natural barriers, access points, and needs for transporting goods and sharing information beyond the valley have shaped the people.

Currents project partners Juniata College and Westsylvania Heritage Corporation. Juniata students in History, Information Technology and Environmental Science and Studies help create the currents. http://projects.juniata.edu/currents/

KING'S COLLEGE

The *Susquehanna River Institute (SRI)* was established at King's College in 2000 to focus public attention on the Susquehanna River as a positive resource for our region. For too long, this river has been viewed as either a sewer for wanton disposal of pollutants, or as an enemy that periodically rises up to smite our communities with

floods. One part of the mission of the *SRI* is to educate a broad range of people living in the Susquehanna Basin of the importance of river/watershed historically, economically, and ecologically. Additionally, *SRI* exists to provide scholars a platform for basic and applied research related to the river in many disciplines including the natural sciences, arts and humanities. Thus far, our education outreach has occurred through formal and informal presentations. For example, numerous presentations have been made to area schoolchildren and in a local children's museum, as well as a graduate course on the Susquehanna River offered to local schoolteachers. We look forward to developing more avenues of outreach for this important message. *SRI* is also poised for service learning with projects such as the restoration of Little Wapwallopen Creek in Luzerne County, made possible through a Pennsylvania Department of Environmental Protection Growing Greener grant support. These and other developments will be posted on our emerging website at http://www.susquehannariverinstitute.org

LAFAYETTE COLLEGE

Watershed Preservation

Faculty and students at Lafayette have been very active in using the Bushkill Creek Watershed adjacent to campus as a central resource for teaching and research in the areas of watershed hydrology, water quality, and environmental management. We are particularly interested in the impacts of land use changes and suburban sprawl, which are rapidly changing the character of the watershed. The watershed has become central to several of our civil engineering courses in environmental engineering and water resources and several geology courses. Our program includes a network of automated stream, groundwater, and weather monitoring stations, outreach with local citizen groups (the Bushkill Stream Conservancy, Retired Seniors Volunteer Project) and high schools, and student-run monitoring. Researchers at Lafayette are currently studying the degradation of the lower Bushkill Creek in collaboration with the Delaware River Basin Commission (DRBC), which has identified Bushkill Creek as a source of impairment to the Delaware River.
http://ww2.lafayette.edu/%7Ebrandesd/bushkill/index.html

LOCK HAVEN UNIVERSITY OF PENNSYLVANIA

Lock Haven University has created the *West Branch Institute (WBI)*. The *WBI* seeks to become a center of expertise on scientific issues relating to the West Branch of the Susquehanna River. http://www.lhup.edu/wbi/home.htm

The goals of the *WBI* are:

1. To gather information already known about the cultural, historical and natural resources of the area composing the West Branch drainage of the Susquehanna River in North Central Pennsylvania and create an archive which is readily available to the public.
2. To use the archive in a directed way to identify gaps in knowledge, to look at the archived data in new ways, and to aid and support the development of new research efforts to add to the knowledge base.
3. To publicize new information, new interpretations of old information and current research efforts in a manner which will insure their consideration by policy makers, planners, researchers and political entities to creatively solve problems or answer questions within the West Branch drainage.

MILLERSVILLE UNIVERSITY OF PENNSYLVANIA

The Millersville University *Environmental Institute* (MUEI) is now in its third year. The *MUEI* is an organization of programs and partnerships dedicated to research and education on matters relating to the understanding, management, and protection of the natural resources of the lower Susquehanna region. The *MUEI* provides a forum for scientists, planners, developers, agriculturalists, educators, manufacturers, government agencies, and community leaders to foster a broad-based information exchange in support of the continuing work of environmental stewardship, holds biennial regional conferences on environmental issues, and is negotiating to become a National Atmosphere Deposition measurement site. *MUEI* promotes research, collaborations, and novel approaches to regional environmental problems in the four major areas of air quality, land use, water resources, and biological resources. Support for research in these areas is available through an annual grant program co-sponsored with the Lancaster Environmental Foundation, resulting in collaborative reports to *MUEI* on: http://muweb.millersville.edu/~muenviro/welcome.html

1. A Preliminary Study on Trophic Level Analysis for Heavy Metals in Aquatic Macroinvertebrates in Two Streams in Columbia, PA

2. The Effects of Large-Scale Global Atmosphere-Ocean Interactions on Local Weather Conditions. A Case Study: Lancaster County
3. Transport and Mixing of Ozone over Lancaster, PA
4. A Synoptic Climatological Evaluation Of Surface Ozone Concentrations In Lancaster, PA
5. An Investigation into the Presence of Organochlorinated Pesticides in Fruits and Vegetables Grown in Lancaster County

In a unique partnership with the Lancaster County Cooperative Extension, Millersville University students and faculty have also been involved in the West Nile Virus survey for Lancaster County, Pennsylvania.
http://www.co.lancaster.pa.us/lanco/cwp/view.asp?A=15&QUESTION_ID=385479

PENNSYLVANIA STATE UNIVERSITY

In 1995, Pennsylvania State University's *Center for Sustainability* was created. At the *Center,* faculty, students, and members of the community are searching for more ecologically sustainable ways of living. Informing this manifold mission are such areas as ecological design, industrial ecology, community sustainability, land stewardship, food security, permaculture, biodiversity and right livelihood. In searching for solutions, necessarily collaborative and multi-disciplinary, the *Center* seeks to act as a catalyst for encouraging the interests and enthusiasm of a wide spectrum of students, faculty, administrators, staff, and residents from the surrounding communities. The *Center* is dedicated to the harmonious integration of human life with the natural world, and to a caring and responsible stewardship of our rich but limited natural endowment.
http://www.psu.edu/dept/cs/

The *Center* strives to achieve its mission through:

1. Teaching that promotes ecological literacy and awareness, and encourages ecological advocacy through hands-on collaborative and innovative projects.
2. Research that advances sustainability in practical as well as theoretical ways using an interdisciplinary approach.
3. Outreach that provides access, support, resources, and education to connect the university, our local community and our ever-widening communities in the interdependent effort to build a more sustainable life-world.

Current projects and initiatives of the *Center* include:

1. Green Design Team
2. Living Machine at Old Botany
3. Constructed wetlands
4. Water-based hydrogen fuel cell research
5. Earthen architecture and construction
6. Passive Solar Roof
7. Bioshelter (a passive solar greenhouse)
8. Biointensive mini-farming
9. Health foods initiative
10. Composting and soil microbiology

SLIPPERY ROCK UNIVERSITY OF PENNSYLVANIA

In order to support the environmental mission of Slippery Rock University, and to provide opportunities for faculty, staff and students to collaborate on interdisciplinary environmental endeavors, including research, community services, and public education, the *Institute for the Environment* was established in 1994. The *Institute* serves as an umbrella organization to bring together members of academic, industrial, and public communities interested in collaborating on solutions of a wide range of environmental problems.
http://www.sru.edu:81/depts/artsci/ges/hathaway/ie/iehistorymission.htm

In 1990, the Master of Science in *Sustainable Systems Program* at Slippery Rock was established and charged with preparing students to face the pressing environmental challenges of the future by considering sustainability as the underlying framework for action. Students study and practice sustainability through the integration of agriculture, natural resource management and the built environment with particular emphasis on the design and management of productive systems that reflect the diversity and resilience of natural systems. The *Program* embraces the human element in the landscape, searching for sustainable ways to satisfy food, energy, shelter and other material and non-material human needs.
http://www.sru.edu/depts/chhs/pree/preehp.htm

The Robert A. Macoskey Center for Sustainable Systems Education and Research is an education and research facility that supports Slippery Rock University's environmental and science-oriented programs. The *Center* is located on eighty-three acres of the university campus and serves as host to a variety of educational, research, and social

activities to the Slippery Rock campus and western Pennsylvania community. http://www.sru.edu/depts/chhs/macoskey/

The *Center* provides:

1. Community-based projects
2. Composting facility
3. Ecological design and building
4. Ecosystem management
5. Interpretive trail system
6. Renewable energy
7. Sustainable agriculture

Harmony Homestead is a demonstration home site serving as a host to a variety of activities associated with Slippery Rock's Masters of Science in *Sustainable Systems and Alternative Living and Energy Research (ALTER) Project*. The *Harmony House*, a farmhouse built in the early 1900s, was renovated for energy conservation, utilizing alternative energy technologies, allergy-free/non-toxic design techniques, and material recycling. A timber frame barn, adjacent to *Harmony House*, illustrates several sustainable modalities. The larger Homestead combines the elements of shelter, energy, and landscape in harmonious and sustainable permaculture design. http://www.sru.edu/depts/chhs/pree/ms3/Harmony.htm

Since its inception in 1985, the *Alternative Living Technology and Energy Research (ALTER) Project* serves as a means to educate students and the public about ways in which they can make contributions to improving the condition of the environment through changes in their own lifestyles. *ALTER* is a community-based organization of Slippery Rock University, which promotes the transition to sustainable systems through education, research and demonstration; its efforts have been focused on *Harmony Homestead* since its inception in 1985.
http://www.sru.edu:81/depts/chhs/pree/ms3/alter.htm

SWARTHMORE COLLEGE

Swarthmore College has developed a program dealing with the protection of Crum Creek, a stream located near the campus. Swarthmore's *Crum Creek Monitoring Project* is devoted to enhancing stewardship, partnerships, monitoring, and restoration of Crum Creek. http://www.swarthmore.edu/NatSci/es/misclinks.html

TEMPLE UNIVERSITY - AMBLER

In 2000, Temple University at its Ambler Campus created the *Center for Sustainable Communities.* The *Center* is committed to promoting an effective, holistic approach to land use planning and management, sustainable development, ecological restoration, and community revitalization. The *Center* was designed to build on Temple University Ambler's historical focus and strengths in horticulture, landscape architecture, and environmental studies, while drawing upon the expertise of all Temple University faculty. The *Center* offers educational programs, conducts interdisciplinary research, and serves as a community resource to address issues of the environment and sustainability. Associated faculty come from various disciplines, including landscape architecture, horticulture, geology, geography, urban and suburban studies, land use policy and planning, environmental economics, environmental justice, and chemistry. http://www.temple.edu/ambler/csc/index.htm

The *Center* and the Temple University Intellectual Heritage Program are sponsoring a conference on Earth Day, April 22, 2003—*The Ecological, Economic, Cultural, and Intellectual Implications of Sustainability*—to promote conversations between scholars of the humanities and social sciences and informed practitioners on the front line of ecological restoration, land use planning, community revitalization, or the physical sciences.
http://www.temple.edu/ambler/csc/sustainconf.htm
http://oll.temple.edu/ih/Default.htm

WILSON COLLEGE

Wilson College has created a special ecological restoration education program. This program provides research and learning opportunities to graduate and undergraduate students. Wilson's Environmental Studies program offers unique interdisciplinary approach to the social, ethical, and scientific aspects of environmental problems from local to global levels: http://www.wilson.edu/Faculty/enviro/windex.htm

- First, the liberal arts emphasis encourages students to develop the creative imagination and critical thinking skills needed to solve the environmental, social, economic, political, and ethical problems of the 21st century.
- Second, several experiential learning opportunities provide students the opportunity to learn by doing. Wilson offers hands-on courses dealing with agriculture, ecological restoration, atmospheric change, and environmental impact assessment.

In 1994, Wilson College created *The Richard Alsina Fulton Center for Sustainable Living* (*FCSL*). *FCSL* operates in conjunction with the Environmental Studies Department to provide a focus for interdisciplinary study and research on a broad range of environmental and social issues and to illustrate practical applications of sustainable living for homes, farms, businesses and communities. Through educational, research, recreational, and internship programs, the *FCSL* serves as an environmental resource on sustainability, addressing issues such as a sustainable food system, resource conservation, energy efficiency, resource flow and watershed management. The *FCSL's* mission is to provide settings, in which people committed to the creation of a more just and sustainable world can come together to think, work, experiment, and create. It is founded on the belief that careful, sustained attention to our enveloping natural and cultural worlds in all their complexity, beauty, and variety provides the basis for deep understanding and engagement, and that questions of right action and right livelihood are continuous with questions of the state of our soul, the state of society, and the state of the earth. http://www.wilson.edu/csl/csl.htm
http://www.wilson.edu/Faculty/enviro/windex.htm

Wilson College has also created a sustainable organic farm—the *Fulton Farm,* which received the 2001 Governor's Aware for Environmental Excellence. The heart of college's *Center for Sustainable Living* is the *Fulton Farm,* a 200-year old, 100-acre farmstead, traversed by the Conococheague Creek, with a historic Germanic farm house and bank barn, pastures, tilled fields, woods, fence rows, and wetlands. The farm's restoration to a model diversified produce farm offers opportunities for practical application of classroom theory and for demonstration of sustainable methods of soil improvement, weed and pest control, cover cropping, use of compost and green manures, crop rotation and biointensive methods.
http://www.wilson.edu/csl/csl.htm
http://www.greenworks.tv/govawards2001/winners/education_outreach/fulton.asp

The *Fulton Farm* continues to produce organic vegetables and fruits for a 100-family *Community Supported Agriculture (CSA)* (subscription) program, the local low-income farmer's market, and the college dining hall. The *Farm* donates surplus produce to the local women's shelter and other needy people. The *Farm* also has undertaken to train two apprentice farmers for a career in sustainable agriculture. Interns live on the *Farm*. Their accommodations include a solar heated shower. CSAs are becoming increasingly popular throughout the country, but Wilson College is a pioneer when it comes to having such an enterprise on a college campus. http://www.csacenter.org/movement.html
Also, Wilson's *Robyn Van En Center For CSA Resources* serves as a national clearinghouse for information on CSAs. http://www.csacenter.org/

Wilson College's Environmental Studies Department recently obtained a Growing Greener grant from the Pennsylvania Department of Environmental Protection, which

has provided funds for a number of educational activities promoting ecological protection and restoration. A one-third mile long public interpretive trail has been established on the campus of Wilson College. Native species have been introduced and invasive exotics are being removed through innovative techniques such as using goats to clear vegetation so that it can be replanted with native species. A 40-50' buffer has been established along a stretch of farmland. College students work on the trail and educate school and community groups on the importance of protecting the native biodiversity of the ecosystems.
http://www.wilson.edu/Faculty/enviro/Greener/frameset.htm

The Growing Greener grant also funds consecutive summer camps for elementary school children from the Franklin County area. *Camp WRAP* (Watershed Restoration and Protection) has just finished its second year and will be held again next year. There are four one-week workshops for different age groups. Students learn how and why to be stewards of different parts of watersheds: including soil, water, vegetation, and wildlife. Students of Wilson College run *Camp WRAP*. As well, faculty from the college, as well as community experts in their field, teach workshop sessions.

Experiential Education Project in Sustainable Energy: Students/Homeowners **2003 Update**

The PP&L Sustainable Energy Fund awarded the Wilson College Department of Environmental Studies and Fulton Center for Sustainable Living a grant in the amount of $24,050 to develop a sustainable energy education and demonstration program at the Institution. The educational package, once designed, will be applicable to other geographic areas. Project activities include:

- Installing *a demonstration windmill with a battery bank and solar backup*. This system will be used to power lights and other basic functions in the main barn at the Fulton Farm.
- Positioning *remote photovoltaic security and pathway lighting* along that road from the college farm to main campus. The lights will be energy efficient, low maintenance LED technology, equipped with motion sensors.
- A *mobile solar demonstration kit* will be assembled for teaching workshops on solar energy to school children and community functions.
- Other *remote solar applications* are already under development such as a solar powered fence charger for containing farm animals and a solar powered batter charger for vehicles. These and other technologies will be used for teaching purposes.
- A *low-tech sustainable energy lab* will be utilized for classes and workshops. Devices such as solar showers, solar ovens, and solar

food dehydrators will be displayed. *Energy conservation* tips be taught at community workshop events.

- An undergraduate *course on sustainable energy* will be developed in the 2003-2004 school year and offered in the fall semester of 2004. The course will cover cultural, economic, ethical, political, and technological aspects of sustainable energy.
- *Community Workshops* will be held for residents in south-central Pennsylvania.
- *Educational events for schoolchildren* on sustainable energy and conservation will be held on a regular basis.

Wilson College Biodiesal Project **2003 Update**

Exciting times are ahead for Fulton Farm as staff and students make progress on the production of Biodiesel fuel. In 2002, the farm won a $5,000 grant from the Community Environmental Legal Defense Fund and the Pennsylvania Farmer's Union to build a biodiesel processor, and to demonstrate its use to students, farmers, and community members.

Biodiesel is a renewable, clean burning fuel made from fat. In this case, Fulton Farm is collecting used fryer oil from the College dining hall, to be converted into a useful alternative fuel. Students and professors from the Department of Chemistry are working with farm manager Matt Steiman to convert the oil in this fairly simple chemical process. The biodiesel produced at the farm will be used to power an irrigation pump, and hopefully someday a diesel tractor. This is a fun, exciting project, and best of all, the burning fuel smells like french fries!

GLOBAL WARMING PROGRAMS

This section lists programs in PCIEP member colleges and universities that are concerned with global warming and climate change.

CARNEGIE MELLON UNIVERSITY

Carnegie Mellon University has created the *Center for the Integrated Study of the Human Dimensions of Global* Change housed in the Engineering and Public Policy Department and funded largely by a grant from the National Science Foundation. The Center is a coordinated research program by 47 collaborators at 22 institutions—13 institutions in the United States, and 9 in seven other countries—interested in interactions of society and the environment. http://hdgc.epp.cmu.edu/index-whoweare.html

The Center's four main goals are:

1. To merge social and scientific knowledge so that we can better understand the patterns of human activity and environmental change.
2. To address key environmental problems.
3. To develop new methods for framing and analyzing environmental problems based on the needs of government and industry decision-makers.
4. To communicate our findings through educational materials, brochures, and government briefings.

PENNSYLVANIA STATE UNIVERSITY

The Pennsylvania State University's *Earth System Science Center* brings together the Departments of Geosciences, Meteorology, Geography, and Energy, Environmental, and Mineral Economics to search for links between the Earth's physical processes and past and future global change. The Center coordinates and conducts extensive research related to the global water cycle, the biogeochemical cycles, Earth System history, and human impacts on the Earth system. http://www.essc.psu.edu/

The *Center for Integrated Regional Assessment* (CIRA) at Penn State was founded in 1996 to facilitate interdisciplinary research and education in the Human Dimensions of Global Change at the regional level of study. The CIRA an inter-college and inter-

university community that operates under the auspices of the *Environment Institute* in the College of Earth and Mineral Sciences at Penn State.
http://www.emsei.psu.edu/cira/ http://www.emsei.psu.edu/

Researchers at Penn State have led the *Mid-Atlantic Regional Assessment* (MARA) program. The MARA aims to analyze and evaluate the potential consequences of climate variability and change for the Mid-Atlantic region's people and resources, in the context of other existing and anticipated pressures. Funded by the U.S. Environmental Protection Agency, MARA is one of nineteen regional assessments being conducted nationwide as part of the U.S. National Assessment, under the auspices of the U.S. Global Change Research Program. http://www.essc.psu.edu/mara/index.html

WIDENER UNIVERSITY SCHOOL OF LAW

The Widener University School of Law has created a special seminar on the *Global Warming and State Governments in the United States.* This seminar has helped educate not only students, but also others concerned with climate change and energy about global warming issues.

INTERDISCIPLINARTY ENVIRONMETAL RESEARCH

Research programs in PCIEP member colleges and universities that integrate various disciplines.

CARNEGIE MELLON UNIVERSITY

Carnegie Mellon has initiated that *Electricity Industry Center,* also in the Department of Engineering and Public Policy. The *Center* is funded by the Sloan Foundation and the Electric Power Research Institute. http://wpweb2k.gsia.cmu.edu/ceic/

The Center has three major goals:

1. To foster change in the electricity industry
2. To consider changes in the way the industry is regulated
3. To promote change in the way industry stakeholders think about the industry by opening new business opportunities and bringing new insights to public policy.

To accomplish these goals, the *Center* has embarked on an ambitious program of research and education. Examples of projects currently underway include studies of long-distance transmission of wind energy, distributed co-generation systems, power generation and distribution during times of political conflict, development of load-shifting technologies, and pollutant emissions trading.

The *Center for Study and Improvement of Regulation* is also in the Department of Engineering and Public Policy. This *Center* is based on the premise that regulation must deal with problems that cannot be readily detected and whose observable effects, if any, may not be seen for decades, and sometimes only in statistical terms, such as climate change. Improving regulation in this context will require new science, incentive structures, and institutional arrangements. http://www.epp.cmu.edu/csir/

To assist in coping with these challenges, the *Center* has established the following goals:

1. To elaborate a framework for considering risks to health, safety and the environment.
2. To analyze a menu of strategies for improving risk management and regulations that are based on a coherent philosophical foundation and

social science, that are economically efficient and socially acceptable, use the best available science and participation processes, and are informed by state-of-the-art analysis.

3. To facilitate and participate in the discourse on improving health, safety and environmental regulation at the federal, state and local level.
4. To carry out the educational mission of the university in a way that informs local, state and national communities.

LEHIGH UNIVERSITY

Lehigh University's *Energy Research Center* is a multidisciplinary research group involving professional staff, faculty, and students, with major emphasis on research dealing with energy conversion, power generation and environmental control. The *Center* was founded in 1973 to provide solutions to the Nation's energy problems. The *Center* manages the University's energy research program and serves as the main energy research contact between the University, industry, and government. Since 1978, the *Center* has operated the *Energy Liaison Program*, which provides consultation and problem-solving assistance to participating industry companies.
http://www.lehigh.edu/~inenr/overview.htm
http://www.lehigh.edu/~inenr/elp/elp_liaisonprogram.htm
http://www3.lehigh.edu/engineering/news/spotlight102.asp

PENNSYLVANIA STATE UNIVERSITY

The *Environmental Consortium* at Penn State was recently created to increase the visibility of Penn State's environmental research, education, and outreach. The *Environmental Consortium* is intended to address current needs and provide new opportunities for faculty and students in interdisciplinary environmental research. A major goal of this initiative is to improve our understanding of the biological and physical environment and its impact on individual and social well being. Penn State's *Environmental Consortium* also seeks to improve our understanding of the relationships between human society and the environment, and develop innovative approaches to achieving societal goals for the environment.
http://www.environment.psu.edu/

The objectives of the *Environmental Consortium* are:

1. To increase the visibility of Penn State's environmental research and education programs.
2. To facilitate the ability of faculty and students to address opportunities that requires interdisciplinary interaction and collaboration.

To engender new research and education directions.

Penn State Institutes of the Environment (PSIE) **2003 Update**

The PSIE facilitates research and education in such cross-disciplinary areas as air and water quality, biodiversity, environmental health, global change, green engineering, and hazardous waste. The mission of the PSIE is to expand Penn State's capacity to pursue the newest frontiers in environmental research by encouraging cooperation across disciplines and the participation of local, state, federal and international stakeholders.

The PSIE is one of six different consortia created to identify and focus Penn State's activities in priority research areas. The PSIE was formed in December 2002 by the synthesis of the Environmental Consortium and the Environmental Resources Research Institute. The PSIE represents Penn State's strength in and commitment to leading-edge environmental science and engineering.

The PSIE is a novel partnership between Penn State's administration and faculty and functions as an innovative and effective mechanism to facilitate opportunities for faculty to cooperate across university departmental and college boundaries while capitalizing on the specialized knowledge and capabilities of environmental centers, institutes, and individual faculty within the colleges. Key activities include:

- Hiring approximately 25 new faculty across 8 colleges;
- Financial support of faculty developing large-scale, interdisciplinary research proposals;
- Development of an undergraduate Environmental Inquiry minor;
- Seed funds for key initiatives such as the Hydrogen Energy Center, Molecular Core Facility in the Center for Molecular Toxicology and Carcinogenesis, and the Center for Advanced Carbon-Cycle Research and Education; and
- Sponsorship of workshops and symposia.

The PSIE coordinates numerous interdisciplinary initiatives across Penn State. Selected affiliates and research initiatives are featured below. For more information visit the PSIE website at www.psie.psu.edu.

Consortium for Atlantic Regional Assessment (CARA) **2003 Update**

Penn State University is a member of the Consortium for Atlantic Regional Assessment (CARA). CARA is a collaboration among Penn State University, Carnegie Mellon University, the University of Rhode Island, the Virginia Institute of Marine Science, the U.S. Environmental Protection Agency, and public and private stakeholders in the Mid- and Upper-Atlantic region. CARA provides scientific information and tools that government agencies, communities, citizens, businesses and other stakeholders can use to assess and adapt to the potential impacts of changes in land use and climate where they live, work, and play.

The focus of CARA is twofold:

1. Understanding climate and land use change and their impacts on food supply, water quality and quantity, outdoor recreation and tourism, ecosystems, public health, electric power supply, storms and floods, transportation, and urban sprawl; and

2. Understanding how we make decisions for adapting to change.

CARA's major aim is to provide resources that decision makers can use for understanding current and future vulnerability to changes in land use and climate and for developing and evaluating adaptation options.

CARA addresses:

- Better stakeholder access to scientific information and to the tools for using it,
- Better understanding of the role of changes in land-use and climate in our future, and
- Better application of scientific knowledge to decisions affecting the region's quality of life.

For more information on the project visit the CARA website at http://www.cara.psu.edu/.

College of Engineering's Environmental Institute (EI) **2003 Update**

Engineering for the Environment: A Penn State Vision - Recognizing the important role that engineers have in environmental activities, the College of Engineering (COE) at Penn State University formed the COE Environmental Institute (EI) to *"Promote the engineering of environmentally sustainable systems and technologies"*. The members of the EI are the faculty in the COE who conduct research in areas that will improve the

quality of the environment and reduce the impact of engineered systems on our environment. The EI members are united under the theme "Engineering for the Environment", and they include researchers in various disciplines including electrical, civil, environmental, aerospace, and others.

For more information on the research activities of the EI please visit the EI website at http://www.engr.psu.edu/ei/. The report "Engineering for the Environment: The Role of Engineers in Environmental Research" can be accessed at http://www.engr.psu.edu/ei/welcome/EngForEnv-Feb-02.doc.

Human-Environment Regional Observatory (HERO) Network **2003 Update**

The Human-Environment Regional Observatory project (HERO) is developing ways to study the local causes and consequences of global environmental change. Currently there is a proliferation of research centers and sites dedicated to studying the local implications of the human dimensions of global environmental change. The local data tend to be place-specific and are difficult to replicate and generalize. This weakness in the data stems directly from a poorly developed scientific infrastructure. This project aims to develop the infrastructure for studying the long-term implications of the human dimensions of global environmental change at small regional and local scales.

Infrastructure development involves implementing four components:

1. Develop protocols for observing, collecting, reporting, storing, and sharing data;
2. Build an intelligent networking environment for data management, Web-based access, and GeoCollaboratory that will help match data with research problems and will facilitate collaboration among scientists at remote sites;
3. Test proof of concept by applying the protocols and intelligent networking environment to local human dimensions of global environmental change research problems; and
4. Build networks by linking the US regional and local research sites through this infrastructure.

The research is being conducted at four HEROs located in different geographical areas: the Southwest-Mexico border region; the High Plains of Kansas; central Pennsylvania; and central Massachusetts. Each represents a diverse set of natural and human environments. Penn State researchers, collaborating with researchers from Clark University, Kansas State University, and the University of Arizona, are approaching infrastructural development by tackling broad human-environment problems, but in the local context. The four HEROs are addressing three core research themes: land-use change, greenhouse-gas emissions, and climate impacts.
For more information visit the HERO website at http://hero.geog.psu.edu/.

The Hydrogen Energy (H2E) Center **2003 Update**

Penn State recently formed the Hydrogen Energy (H2E) Center to serve as a focal point for multi-investigator activities in the various colleges, centers, and institutes on hydrogen production, storage and utilization systems at Penn State. Energy derived from fossil fuels releases carbon dioxide, which accelerates global warming. Hydrogen can be produced from renewable resources, such as water and agricultural products, eliminating the net production of CO_2 and helping to alleviate global warming. An energy infrastructure based on hydrogen will avoid many problems inherent to fossil fuels. Penn State researchers are leading the way in developing new technologies related to hydrogen energy and fuel cells. Their work on hydrogen storage, production, and fuel cell technologies will enhance the growth of a new global hydrogen infrastructure.

The mission of the H2E Center is to:

- Facilitate the development of all types of hydrogen-based (production and consumption) technologies;
- Promote the use of hydrogen for sustainable energy production;
- Develop coupled biological hydrogen production and fuel cell systems for complete conversion of biomass sources to energy;
- Pioneer new hydrogen storage technologies; and
- Identify new uses of hydrogen for environmental remediation.

For more information visit the H2E website at www.engr.psu.edu/ce/enve/H2E.

Center for Advanced Carbon-Cycle Research and Education (ACRE) **2003 Update**

ACRE was formed to facilitate research collaboration and graduate training on carbon-cycle science. The personnel are located in the College of Earth & Mineral Sciences, allied departments, and intercollege research programs across the University. The center builds upon the considerable body of expertise on various elements of the carbon-cycle that exists within the College of Earth & Mineral Sciences and other Penn State colleges, most notably the College of Agricultural Sciences.

Center for Molecular Toxicology and Carcinogenesis **2003 Update**

Prevalent environmental pollution has generated a growing need for a detailed molecular approach to understanding the effect of low dose exposure to toxics on cellular homeostasis. The Center for Molecular Toxicology and Carcinogenesis was established to unite faculty with strong interests in molecular and cellular toxicology.

The Center serves to leverage facilities and abilities in research proposals and to improve graduate education and research.

For more information visit the Center for Molecular Toxicology and Carcinogenesis website at http://moltox.cas.psu.edu/.

UNIVERSITY OF PENNSYLVANIA

The University of Pennsylvania's *Institute for Environmental Studies* is dedicated to enlarging our understanding of key scientific, economic, and political issues and to providing new alternatives to global management of environmental resources. By providing a center of excellence in environmental research and education, the *Institute* contributes directly to an enhanced understanding of the complexity of environmental problems. In addition to many specific interests, the *Institute* has adopted watersheds and urban environmental issues as special priorities. Recently, the University's *Institute* held a conference looking at the strategically important interdisciplinary issues that need to be faced to protect watersheds. http://www.sas.upenn.edu/earth/ies/index.html

UNIVERSITY OF PITTSBURGH

The *Dominion Center for Environment and Energy* (*DCEE*) was established to coordinate the intellectual and physical resources of the School of Engineering with federal, state and local agencies, and with industries and the public, to resolve technical, economic and social challenges associated with environmental and energy resources management, use, and preservation. *DCEE* identifies existing and emerging environmental issues which affect funding and education in environmental and energy science and engineering. It also identifies existing and potential research capabilities, creates new strengths and enhances those strengths already in place. *DCEE*, through its organizational emphasis on education, research, and service, promotes interaction and networking between education and research institutions and industrial partners engaged in addressing local, national and global environmental and energy challenges. http://www.engr.pitt.edu/civil/research/centers.html

The *Green Construction and Sustainable Development Program* was established by a gift from the Heinz Endowments to develop (1) a cross-the-school engineering thrust developing issues of sustainability, and (2) and emphasis within the Department of Civil and Environmental Engineering linking the Construction Management Program to issues of sustainability with the goal of producing a cadre of graduates who understand, appreciate, and advocate the principles of sustainable community and infrastructure development and green/smart building construction. The program promotes

environmentally responsible practices in the building industry through its teaching program. Through symposia and seminars and the annual Heinz Distinguished Lecture Series, the program makes the general public aware and more sensitive to environmental issues and innovations in approach related to the construction and building industry. http://www.engr.pitt.edu/civil/research/centers.html
http://www.engr.pitt.edu/civil/about/faculty/neufeld_ronald.html

VILLANOVA UNIVERSITY

In 1997, the College of Engineering at Villanova University established the *Institute for Environmental Engineering Research*, the goal of which is to develop a multi-disciplinary partnership between Villanova and the public and private sectors, devoted to research and educational aspects of complex environmental problems. The focus is on finding innovative approaches and cost-effective solutions to protecting our environment in this highly mechanized and industrialized society. *The Institute* involves a cross section of Villanova's faculty and staff in multi disciplinary projects. The *Institute* examines all aspects of complex environmental issues, including legal, political, ethical, social, scientific, and engineering considerations.
http://www.engineering.villanova.edu/ieer/

APPENDIX A: THE PENNSYLVANIA STATE UNIVERSITY'S INDICATORS OF SUSTAINABILITY

Source: *The Penn State Indicators Report *2000**, page 5, "Table 2. Penn State in ten categories and the Indicators of Sustainability for each category." http://www.bio.psu.edu/Greendestiny/publications.shtml

PSU CATEGORIES	INDICATORS OF SUSTAINABILITY
Energy	-Total and per capita energy consumption -Consumption of natural gas vs. coal on campus -Carbon dioxide emissions
Water	-Total and per capita water consumption -Ground water quality -Waste water disposal
Material Resources and Waste Disposal	-Total waste production -Recycled solid waste -Paper consumption
Food	-Dining hall diet -Dining hall waste -Food purchasing policies
Land	-Land accumulation and policies -Impervious surfaces -Native vs. exotic plants on campus -Pesticide use in land care
Transportation	-Car dependence -Green space converted to parking space -Transport-related safety
Built Environment	-Building decision process -Building priorities -Ecological design in buildings
Community	-Ecological literacy of graduating seniors -Technology: Enhancing vs. undermining community vitality -Student crime -Student alcohol consumption -Student depression
Research	-Ethical treatment of research subjects -Disposal of laboratory wastes -Research on sustainability -Research priorities
Decision Making	-Core values guiding decisions -Openness

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