SEER News

Steinbrenner Institute for Environmental Education and Research

Issue #3

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Spring 2005

Inside:

Center for Sustainability Engineering Education (CSEE) Established

Carnegie Mellon has two new grants that will enable it to establish the Center for Sustainability Engineering Education. The first is from the Environmental Protection Agency (EPA), a $350,000 two-year program to benchmark sustainability courses and curricula in engineering departments in U.S. colleges and universities. The second is from the National Science Foundation (NSF), a $1.7 million four-year program to disseminate information on engineering sustainability for use at institutions of higher learning around the world. Both grants are team efforts of Carngie Mellon, University of Texas at Austin, and Arizona State University. The University of Texas is lead institution on the EPA grant; Carnegie Mellon is lead institution on the NSF grant.

The EPA benchmarking grant will be used to survey roughly 1500 engineering departments. The surveys will provide factual data on certificate and degree programs in sustainability, courses covering engineering sustainability and environmental concepts included in such courses. In addition, the surveys will provide subjective information on how well existing sustainability courses are achieving their goals, and feelings on what is needed to enhance sustainability engineering education in the future.

The NSF grant will be used to run workshops for engineering faculty who will be incorporating sustainability issues into their curricula, enabling them to develop and improve their courses in both style and content. The NSF grant will also be used to start a peer-reviewed website of educational materials that can be used worldwide.

--Professor Cliff Davidson

SEER News

TOP TEN PROGRAM!

U.S. News and World Report recently ranked Carnegie Mellon's Environmental Engineering Program as one of the top ten in the nation.

SEER 2005 : Seed Funding Grants

Annually, the SEER funds a number of small projects that allow students and faculty to explore ideas that may fall outside the realm of traditional funding sources with the hope that better definition of the subject matter will lead to additional funding. This year's Seed funding was awarded to the following:

Volker Hartkopf and Azizan Aziz, Architecture:
Water-Cycling and Plant Management in the Building as Power Plant/Invention Works

Patricia Stalling and Diana Loviglio, Sustainable Students:
Environmental Book Club

Mitchell Small, Jay Apt and Asmeron Gilau, Tepper School and Engineering and Public Policy:
An Integrated Assessment on Energy, Environment and Economic Development of the Clean Development Mechanism (CDM): Scenario Analysis of Different Development Options

Chriss Swaney, Carnegie Institute of Technology Media Relations:
Media Boot Camp

Cliff Davidson and Shahzeen Attari, Civil and Environmental Engineering:
Improving Environmental Education at Carnegie Mellon

Carolyn Lambert (Bob Bingham and Joel Tarr), Art:
The Ohio River Lifeboat Project

Jeanne VanBriesen and David Dzombak, Civil and Environmental Engineering:
Southwestern PA Urban Water Quality Research Center Workshop Planning Grant

Robert Heard, Material Sciences & Engineering:
Development of a Model for Eco-Material Selection Based on Microstructural Criteria

Steve Lee, Architecture:
Installing, Demonstrating, and Evaluating a Solar Thermal Space Heating System in the Pittsburgh Synergy Solar Decathlon House

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Spotlight on SEER Faculty: Kristen Kurland

Kristen Kurland is an Associate Teaching Professor in Carnegie Mellon's Heinz School of Public Policy and Management where she teaches CAD (Computer Aided Design), 3D Visualization, GIS (Geographic Information Systems), and CAFM (Computer Aided Facility Management). In addition to the technology courses she teaches, Kristen's focus at Carnegie Mellon is in the built environment, urban design, and health care issues. At the Heinz School, Kristen teaches Infrastructure Planning to executive physicians in their Master of Medical Management program and Health GIS in the Health Care Policy Management program. She also has a strong focus on distance education and has been teaching through this medium for many years.

There are two Carnegie Mellon forces that have led Kristen to environmental health projects. One is her involvement with the School of Architecture's Urban Lab and Remaking Cities Institute, where she is working with colleagues on health and the built environment issues. The other impetus for environmental health projects is a Health GIS tutorial workbook that she is co-authoring with Wil Gorr of the Heinz School. Below are some of Kristen's current projects.

Obesity Mapping: Most health care experts agree that there are multiple factors responsible for obesity. One of these is activity levels in daily life, which is in turn affected by the natural and built environment. Many obesity related grants are now requiring input and research by interdisciplinary teams of health care scientists and architects. Kristen is working with endocrinologists at Children's Hospital of Pittsburgh, epidemiologists from Pitt's Graduate School of Public Health, and Highmark Insurance to map features depicting food sources, parks and fields, sidewalk conditions, neighborhood amenities, neighborhood safety and demographic information (such as race and income) in an effort to better understand the interrelationship between and among these factors that may help explain obesity in the population.

Environmental Health Risks: Another health and the environment project that Kristen is working on is an initiative proposed by the Environmental Justice Institute. In this project, Kurland and students from the Heinz School will map environmental risk factors to assess health risks within or near a selected low income neighborhood. Risk factors might include brownfield sites, fume emission sites such as dry cleaners, major transportation arteries, EPA toxic release sites, or toxic sources that are no longer in the neighborhood but may have been there in the past (e.g. gasoline stations). This data will be compared to disease patterns in these neighborhoods to see if there are environmental injustices in these areas.

Additional environmental health projects include childhood lead and food safety projects for a health department, injury prevention studies for emergency room physicians, asthma studies related to housing conditions and exercise, and epidemiological mapping projects. Kristen can be reached at kurland@andrew.cmu.edu.

Carnegie Mellon's New House Wins Award!

Kathleen McGinty, PA Dept. of Environmental Protection Secretary came to campus on April 1 for a ceremony to present the 2004 Governor's Award for Environmental Excellence for Carnegie Mellon's New House Resident Hall. The award was in recognition of the design and construction of New House as a green building in accordance with the US Green Building Council's LEED Green Building Rating System, and achieving a LEED 2.1 Silver Rating. The New House was the first LEED certified building at Carnegie Mellon and is the first LEED certified residence hall at a college or university in the country!

Carnegie Mellon Hosts 14th Annual Society of Environmental Journalists Conference (Fall 2004)

The five day conference, attended by more than 600 journalists, scientists, educators, government officials, businessleaders, environmental advocates and others, began with a celebrity panel headed by actor and Carnegie Mellon alumnus Ted Danson. The conference was designed to tap the expertise of researchers from all over North America, including Carngie Mellon researchers and environmental experts such as Granger Morgan, head of the Climate Decision Making Center, Chris Hendrickson and Lester Lave, co-directors of the university's Green Design Initiative. Presentations made by Carnegie Mellon faculty included:

Peter Adams: *The Nature of Airborne Particles*
Jared Cohon: *When It Rains, It Pours. The Water and Sewage Challenge*
Terry Collins: *Creating Green Chemistry*
Tim Collins: *The Meaning of Public Space*
David Dzombak: *The Water: Why are the creeks orange? Watershed Restoration*
Chris Hendrickson: *The City: Consumer Goods from Cradle to Grave*
Deborah Lange: *Pittsburgh Region: Sprawl, Brownfields and Carngie Mellon*
Lester Lave: *The Case for Cellulosic Ethanol*
Vivan Loftness: *A Darker Shade of Green: The Importance of Architecture, Land Use and Transportation in Environmental Justice*
Granger Morgan: *Climate Change and Climate Policy*
Edward Rubin: *CO2, Capture and Sequestration: What Goes Up... Could Go Down*
Metin Sitti: *Robots to Cure the Environment*
Joel Tarr: *Highlights of Pittsburgh Environmental History*
Scott Thayer: *Inspecting and Mapping Subterranean Spaces*

Media Boot Camp

Carnegie Mellon's Steinbrenner Institute for Environmental Education and Research (SEER) and the College of Engineering kicked off a successful Media Boot Camp Series on March 24.The Media Boot Camp is designed to help faculty and researchers better understand the needs of journalists covering stories related to science and the environment.

Chris Hendrickson, head of Department of Civil and Environmental Engineering at Carnegie Mellon and faculty director of the SEER, was the panel moderator for discussions about how reporters and editors select and cover stories. Panel participants included Don Hopey, environmental reporter of the Pittsburgh Post-Gazette; Jim Bruggers, environmental reporter of The Louisville Courier-Journal; Seth Borenstein, environmental correspondent for Knight-Ridder Newspapers and W. Wayt Gibbs, Senior Writer for Scientific American. "This is a great way to introduce some of our younger, outstanding faculty to the press, and to help them better disseminate our research to the public,'' said Hendrickson. "The series also gives the university campus community an opportunity to hear what the news media is covering and thinking about.''

Deb Lange, Executive Director of the SEER, said the Media Boot Camp Series is designed to capture the momentum created when more than 600 journalists visited campus during the 2004 National Conference of the Society of Environmental Journalists.

In addition to panel sessions, the Media Boot Camp series also gives faculty and researchers an opportunity to practice pitching news stories to editors and reporters. A seed grant of $1,500 from the Steinbrenner Institute makes this program possible. A second Media Boot Camp is scheduled for fall 2005.

Carnegie Mellon Alumni in Environment: David Molder and David Shiller's E-House Company

The E-House Co. was established in 1994 by two Carnegie Mellon alum, David Molder, (H&SS '87) and David Shiller, (MCS '90). They have been active in environmental causes both as students and after graduation, as proprietors. The E-House Co., located in South Side of Pittsburgh, sells environmentally-consicous products, for the home or body, all of which are either recycled, organic or all-natural. Items found at the E-House:

- Organic Clothing
- Natural Body Care
- Energy Efficient Lighting
- Recycled Paper Products
- Air and Water Filters
- Organic Gardening Supplies
- Environmental Books and Magazines
- Homeopathic Remedies

"Our philosophy at the E-House Company is known as the dual bottom line. This means that in addition to the regular dollar bottom line that all businesses have, we are also committed to operating in a socially just and environmentally responsible manner. Examples of our dual bottom line approach include:

- Recycling between 80 and 90 percent of the store's waste, and serving as a recycling drop-off site for household and watch batteries.
- Renovating a dilapidated city building, rather than locating in a "sprawl mall"
- Remodeling the store using least-toxic finishes, energy efficient lighting, and weatherizing the building for efficient heating and cooling.
- Store fixtures constructed from scrap iron and reclaimed barn wood.
- Designating the majority of our advertising budget to support progressive media and non-profit newsletters.
- A commitment to provide the greater Pittsburgh area with products that minimize ecological degradation and maximize environmental awareness.
- Disseminating regional environmental news.

The E-House Company is a "green" retail store offering environmental products to the greater Pittsburgh area, while serving as a catalyst for positive change in our community. We provide quality products that benefit the environment and are healthier for you! -- The E-House Company: Pittsburgh's Home for Eco-Products"

Visit the E-House Company at
1511 East Carson Street
Pittsburgh, PA 15203
Pittsburgh's Historic South Side
phone/fax: (412) 488-7455
1-800-536-9607
theehouseco@southsidepgh.com
http://www.city-net.com/~ehouseco/index.html

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Earth Week 2005

April 19th to 23rd marked our annual Earth Week celebration here at Carnegie Mellon which was brought to us by the Steinbrenner Institute, Sustainable Students, EARTH and New House.

The first day's events were a Community Design Center of Pittsburgh guided tour sponsored by New House and the Steinbrenner Institute. Tour goers were shown the South Side Local Development Company, the Green Building Alliance, The E-House Company (Pittsburgh's home for eco-products) and the historical South Side Market House and City Theater. Sustainable Students also had their environmental book club dinner and discussion on the same day, April 19th which featured organic, vegan, locally grown foods from Maggie's Mercantile in Oakland. The book that was read by the students was *Gaviotas: A Village to Reinvent the World* by Alan Weisman which was about a small village in Columbia that strived to be completely independent and sustainable from the outside world.

Sustainable Students and the Steinbrenner Institute sponsored a kickoff celebration the day before Earth Day, April 21st, by having a hybrid car show which was co-organized with Pittsburgh's Group Against Smog and Pollution. The car show, themed "Cars of Today, Fuels for the Future", featured 2005 hybrid models: Honda's Accord Hybrid, Toyota's Prius, Ford's Escape Hybrid, Lexus' RX400h and others. The show was followed by a speaker and panel discussion featuring Dr. Isaac Porche of the RAND Corporation.

In the spirit of Carnegie Mellon's evolution as a learning environment, the students also initiated a tire pressure study. Recognizing that there is a relationshop between tire pressure and vehicular fuel efficiency, the students measured (with the permission of the car owners, of course) the tire pressures of more than 80 cars parked in campus lots. The students will reduce the data and make some estimates of how much fuel (and ultimately how many barrels of oil) may be saved if the entire campus community had properly inflated tires on their cars.

New House Local Lunch Lecture Series and EARTH's UC Friday celebration fell on Earth Day. The Lecture featured Ann Jones Gerace, the Executive Director of Conservation Consultants, Inc. (CCI), a non-profit organization whose mission is responsible energy use in homes and other buildings. EARTH's celebration was held in the University Center and showcased the Co-op band, poetry readings, Carnegie Mellon's first "Green Pledge" signing by Seniors and giveaways such as wildflower seedlings and cookies baked fresh from the East End Co-op.

The Saturday after Earth Day was a day for Service Projects. Off-campus students had a chance to volunteer their time at the Food Farm, Pittsburgh's Community Food Bank and participate at Schenley Park's Earth Day Clean Up. On-campus, Diane Loviglio of Sustainable Students organized an installation of a Butterfly Garden behind New House.

All the events were designed to remind the Carnegie Mellon community to think about the environment that surrounds them and show how the community members are helping to preserve the natural world.

- Patricia Stallings, Sustainable Students

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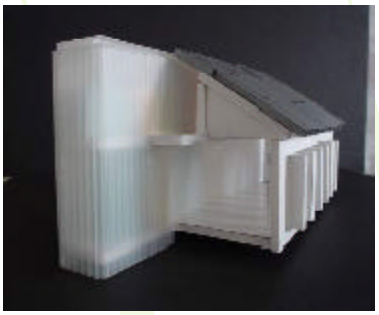
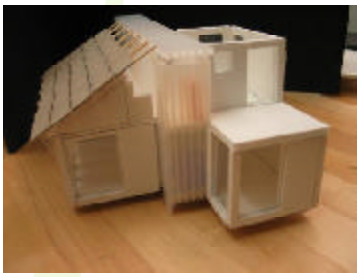


Pittsburgh Synergy Enters Solar Decathlon House Competition



The United States Department of Energy, sponsors of the Solar Decathlon, have selected a total of nineteen collegiate teams, up from 14 in the 2002 competition, from across the United States, Europe and Canada to participate in the 2005 competition. Carnegie Mellon, lead school of the *Pittsburgh Synergy* team, is returning for its second competition and has expanded its team by assembling a multi-disciplinary group representing Pittsburgh's excellent academic community as well as an international contingency. Students from the Schools of Architecture and Design and the Carnegie Institute of Technology will be representing Carnegie Mellon. Regional partners include students from both the University of Pittsburgh's School of Engineering and the Art Institute of Pittsburgh's Departments of Interior Design and Industrial Design Technology. For more information, please see: www.pittsburghsynergy.org. The competition will be held on the Mall in Washington, DC on October 7-16. For more information about the competition, please see: www.eere.energy.gov/solar_decathlon/.

When the 800 square foot house returns to campus in October, it will be permanently installed as the new home for the SEER! The student design of the house is a perfect fit with the program needs of the SEER. The great room of the house will become the meeting/ conference/ library room of the SEER, served by the adjacent compact kitchen. The bedroom/loft will become the director's office and library, and the battery storage room will become the copier center. A permanent "environmental club" truly embodies our interdisciplinary culture, our leadership in experiential learning, and the commitment of our trustees and administration in establishing an institutional model that includes education, research, outreach and good practice.

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RESEARCH: The Center for the Study and Improvement of Regulation (CSIR)

CSIR is a joint research center in the Department of Engineering and Public Policy at Carnegie Mellon and the Institute for Risk Analysis and Risk Communication at the University of Washington. The Center was created because evolving knowledge of natural science and engineering has opened new doors to measuring and understanding environmental health, and safety issues. However, rising control costs, the potential involvement of previously unregulated sectors, and concerns about fairness, participation, and the scope of government action have created both new opportunities and barriers to effective regulation. To have impact in this evolving regulatory environment, the Center brings together researchers from multiple disciplines spanning the hard sciences, the social sciences, and engineering. Our quantitative focus provides it with a comparative advantage in examining the interrelationships between emerging technologies and emerging regulations.

The goals of the center are to:

1) Facilitate the use of scientific information and methods in the regulatory process
2) Develop decision tools for addressing risk and uncertainty in the regulatory process
3) Understand risk perceptions and effective risk communication
4) Examine how stakeholder involvement shapes the regulatory process and influences regulatory outcomes.

For more information please contact:

Executive Director: David Gerard, dgerard@andrew.cmu.edu Faculty Director: Paul Fischbeck, pf12@andrew.cmu.edu
http://www.epp.cmu.edu/httpdocs/csir/index.htm

Carnegie Mellon Participates in the Association of Environmental Engineering and Science Professors Research and Education Conference July 23-27, 2005, Clarkson University, Potsdam, NY

Workshops and Presentations by Carnegie Mellon Faculty & Students:

***Workshops*:**

Economic Input-Output Life Cycle Assessment: Using it to Teach Systems and Life Cycle Concepts; H. Scott Matthews & Chris Hendrickson

Benchmarking of Cmapus-wide Environmental Initiatives; Chris Hendrickson & Deb Lange

Environmental Sustainability: Educating Students, Colleagues and Ourselves; Cliff Davidson

***Posters*:**

Sustainability Science and Engineering Education (SSEE): A National Dissemination Center funded by NSF; Cliff Davidson, H. Scott Matthews, Chris Hendrickson

Intermediates in the Biodegradation of Anthropogenic Chelating Agents, EDTA and NTA; Jeanne VanBriesen and Z. Yuan

Integrated Environmental Modeling for Assessment of Pollutant Transport, Fate, Exposure and Risk; Mitchell Small

***Papers*:**

Introducing Sustainability into Engineering Curriculum: Has the Wheel Finally Been Created?; Cliff Davidson

Sustainability Engineering at Carnegie Mellon: A New Sequence of Graduate Courses; Cliff Davidson, H. Scott Matthews, Chris Hendrickson

Delivering Engineered Iron Nanoparticles to Subsurface DNAPL; Greg Lowry, Yueqiang Liu, Navid Saleh, Robert Tilton, Kevin Sirk, Sara Majetich, Krzysztof Matyjaszewski, Traian Sarbu

Motivating Environmental Systems and Life Cycle Thinking for High School Students; H. Scott Matthews, Chris Hendrickson, Troy Hawkins, Joseph Marriott, Aurora Sharrard

Collaborative Statistical and Molecular Microbiological Research to Elucidate Complex Systems Involved Polychlorinated Biphenyls; Jeanne VanBriesen, Mitch Small, William Brown, Ed Minkley, Sandra Karcher

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