

SEER News

Steinbrenner Institute for Environmental Education and Research

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Systems***

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Governor Rendell Visits SEER with Plan for Alternative Energy

Alternative-energy projects used to be the stuff of high-school science fairs. But pricey oil has changed the game. It seems cool to be green now. In fact, Pennsylvania Governor Ed Rendell is winning over investors and customers and saving the environment by embracing much of the new energy efficient technologies being hatched at university labs statewide.

During a recent stopover at Carnegie Mellon's Steinbrenner Institute for Environmental Education and Research, Gov. Rendell reminded his audience that "America's energy past is grounded in Pennsylvania where the first commercial oil well was drilled and where mountains of coal helped fuel the industrial revolution."

"Why is it bad news that gasoline prices have fallen after having skyrocketed as a result of Hurricane Katrina?" This is the first question that Governor Rendell asked the students on November 16. A student responded by saying that unless economically 'squeezed,' consumers will not be conservative about their energy usage. The Governor acknowledged the correct response then prefaced his further remarks by saying that energy is the single technological issue that is most critical to the economic, environmental and security future of our nation.



Left and right: Gov. Rendell addresses the SEER audience



Researchers Unveil Blueprint to Reduce Greenhouse Gas

Carnegie Mellon University researchers Granger Morgan, Jay Apt, and Lester Lave produced a report that explores the \$250 billion dollar electric power industry's options for reducing its greenhouse gas (GHG) emissions.

The 75-page report given to federal officials in Washington, DC was commissioned by the Pew Center for Global Climate Change. The report explores the electric power industry's options for reducing its GHG emissions over the next half century. Those options include new technologies that are still being developed as well as strategies that rely on existing technologies at different stages of commercial and technical readiness, lower-carbon fuels, and efficiency improvements.

The report's findings offer four main policy recommendations:

- 1) establish a timetable for regulating the reduction of CO2 emissions from the electricity industry that goes hand-in-hand with the reduction of conventional pollutants
- 2) implement policies that address the barriers to development of new and still under-development technologies
- 3) promote end-use efficiency through policies that encourage companies to invest in energy savings
- 4) create a federal requirement that all industry parties invest 1% of R&D on exploring new technologies and problems facing the industry

The report also suggests that the electricity industry can achieve substantial GHG emission reductions without major impacts on the economy or consumer lifestyles. The complete report can be found at http://www.pewclimate.org/global-warming-in-depth/all_reports/electricity/index.cfm.

Alumni Spotlight: Peter Fusaro (H&SS, '72)



Peter C. Fusaro
NEW YORK

Carnegie Mellon alumni (H&SS '72), Peter C. Fusaro is the best selling author of [What Went Wrong at Enron](#) and is an energy industry thought leader noted for his keen insights in emerging energy and environmental issues. He is currently writing a book on global emissions trading markets for Bloomberg Press. Recently, he co-created the Energy Hedge Fund Center, an energy hedge fund directory and newsletter Energy Hedge (www.energyhedgefunds.com). Peter coined the term "Green Trading" as well as created the annual Green Trading Summit held in New York each spring. His experiences and insights have lead him to the leading edge of energy consulting including carbon and emissions trading, renewable energy project finance and venture capital, LNG market developments, coal trading, and hedge funds. He founded New York-based Global Change Associates Inc. (www.global-change.com) in 1991 to focus on the interplay and convergence of energy and environmental financial markets.

At the invitation of Net Impact Chapter President, Andria Thomas, Peter spoke to the student group at the Tepper School on Monday, October 31. In his talk, titled "Green Trading: Innovations in Financial Markets," he stated that greenhouse gas credits will be the first market to challenge the oil market in terms of large cross border dimensions and that carbon dioxide emissions are becoming a fungible commodity. The current market drivers in alternative energy and market development are the US Department of Defense and businesses that see environmental risk management as a corporate fiduciary responsibility, while the science and technology are starting to take root into a transition to more carbon constrained world through clean technology. The US regulatory regime continues to lag at the federal level with the states having to provide needed leadership. Therein lies at least one level of market risk. While the US leads in market development for acid rain (SO2) and ozone trading (NOX), European markets for carbon trading are more established and being influenced by a current push to establish certified credits by 2007 (for Kyoto Protocol deadlines beginning in 2008). Peter closed his presentation by encouraging the students to consider career opportunities with environmental technology companies, hedge funds, venture capitalist groups (in need of analysts), investment banks, trading desks, electric utilities and oil and gas companies, OTC energy & environmental financial brokers, consulting firms (such as Deloitte or KPMG), and journalism. A copy of Peter's presentation can be found at www.cmu.edu/environment/events.html.

Save Gas, Money and the Environment with Properly Inflated Tires

Want to save hundreds at the gasoline pump? It's easy. Instead of hunting for the best price in town, try checking the air pressure in your tires. Proper air pressure results in better gas mileage, which at \$3 per gallon could save you as much as \$432 per year, according to an informal study conducted by Carnegie Mellon students last spring.

And if money isn't a big enough incentive, how about helping to preserve the environment? Less fuel consumption results in less carbon dioxide being emitted into the atmosphere.

If you think this is all a lot of "hot air," think again.

During Earthweek last April, eight students from Carnegie Mellon's Sustainable Earth Club—Diane Loviglio, Aurora Luchser Sharrard, David Kennedy, Staci Wax, Rachel Minkoff, Ryan England, Ryan Menefee and Caroline Chow—used digital tire gauges to measure the air pressure in the tires of 81 cars that were parked in the East Campus Garage, the Doherty Apartments Lot and the Morewood Lot. Based on the assumption that the optimum air pressure for fuel efficiency was the maximum air pressure stated on the tires' sidewall, the four tires of each car were under-inflated by a total average of 20%. Only one of the 81 had the proper air pressure. (The suggested air pressure stated in owner's manuals is based on passenger comfort, not necessarily fuel efficiency.)

If you do the math to calculate the extra fuel cars consume due to under-inflated tires, consider the Environmental Protection Agency standard that a 1% loss of fuel efficiency occurs for every 2 PSI of air under the maximum level. Add to that the 2003 Department of Energy report that states that vehicles average 22.3 miles per gallon and 12,242 miles per year, and you find that each of the 81 cars burned 144 extra gallons of gas due to under-inflated tires. At \$3 per gallon, each car owner is spending \$432 for gas each year that they really don't need.

More than 3,000 individuals in the campus community applied for parking permits last year. Consequently, properly inflated tires would result in an annual savings of more than \$1,296,000 for the campus community.

"After seeing the numbers I was really surprised to see just how much properly inflated tires make a difference," said Loviglio, a fifth-year scholar from Long Island, N.Y. "It really doesn't take that much to save a lot of money and pollute the air less."

Speaking of air pollution, 20.8 pounds of carbon dioxide are emitted into the atmosphere for every one gallon of fuel consumed. Do the math again, and you'll find that each of those 81 cars emit an extra 1 1/2 tons of carbon dioxide annually.

Considering that three trees are needed to absorb 1 1/2 tons of carbon dioxide, more than 9,000 additional trees (22.5 acres) are needed to offset the extra greenhouse gases emitted from the more than 3,000 vehicles that park on campus. Without those additional trees, the extra CO₂ is released into the atmosphere.

The study was sponsored by the Steinbrenner Institute with assistance from David Shiller (S'90), who along with David Molder (HSS'87) owns the E-House Company on Pittsburgh's Southside, a supplier of many environmentally friendly products.

Bruce Gerson
September 21, 2005
(reprinted from *Carnegie Mellon Today* website)



Diane Loviglio was one of eight students from Carnegie Mellon's Sustainable Earth Club to measure the air pressure in the tires of 81 cars parked on campus. "After seeing the numbers I was really surprised to see just how much properly inflated tires make a difference," she

Media Boot Camp

Four journalists specializing in science and the environment participated earlier this year in the second annual Media Boot Camp sponsored by the Steinbrenner Institute for Environmental Education and Research (SEER). The Media Boot Camp series is designed to help faculty and researchers better understand the needs of reporters covering the environment. Participants in the 'camp' included Jennifer Yates of the Associated Press, Karen Schaefer from National Public Radio affiliate station WCPN in Cleveland, OH, Karen Dillon of the Kansas City Star, and Byron Spice of the Pittsburgh Post Gazette. The event was organized by Chris Swaney, Public Relations Director for Carnegie Institute of Technology. Attendees included about 40 faculty members from nearly all schools across the campus.

Each reporter spoke about how they do their job. Following the presentations, certain faculty members briefly presented their work to 'test the waters' and get feedback on the 'newsworthiness' of their efforts. Some key sound bites from the workshop:

- 'what is news' is somewhat dependent other factors such as time of year, other competing events (local, national and international events), controversy and human interest.
- Although reporters may focus on national or international news, it is possible to make a local initiative have broader appeal
- Similarly, reporters often look to researchers for help in taking non-local issues and giving them a local interest or relevance
- Researchers need to develop a rapport with the media – this means keeping them advised of ongoing efforts in advance of the breaking news and learning to be patient and 'connect' with the media in a language that is mutually understandable
- Press releases are important – they keep the media informed and one may never know what new advancement will create a stir
- Stories are about people, so the relevance of our work to the citizenry has to be made clear
- Photographs help to sell a story

Karen Schaeffer said the boot camp gave her valuable insights into the kind of research and expertise available to media from Carnegie Mellon. "It was a great experience because we got to see how the media is perceived, and it helps us do our jobs," said Karen Dillon. Dillon also spoke to undergraduate students at a public relations class during her campus visit.

A third Media Boot Camp event is scheduled for April 2006.

PITTSBURGH SYNERGY Places in Top 10 at Solar Decathlon Competition

The Pittsburgh Synergy Team, a collaboration between students in Carnegie Mellon's schools of Architecture and Design, the University of Pittsburgh's School of Engineering and the Art Institute of Pittsburgh, placed in the top ten overall in the recent Department of Energy Solar Decathlon on the National Mall in Washington, D.C. Pittsburgh Synergy, one of 18 teams to construct a solar energy house, placed fourth in the categories of architecture, dwelling and energy balance.

"Our goal was to make a passive solar house that required minimum external energy to be livable," said **Steve Lee**, School of Architecture faculty advisor. "To that end, we never turned on the heating or cooling systems and our house remained in the expanded thermal comfort zone for 100 percent of the competition. Overall, the level of design and innovation was an order of magnitude better in this competition than 2002." Further information, visit <http://www.pittsburghsynergy.org>



Steinbrenner Fellowship Attracts Top National Journalists

National journalists Seth Borenstein and Katherine Bouma spent 10 days during the summer on the Carnegie Mellon campus, but they weren't working for their respective news outlets. Instead they were getting an up-close and personal look at some of the university's environmental research as the first media fellows of the Steinbrenner Institute for Environmental Education and Research.

Borenstein, a national correspondent for the Knight Ridder Washington bureau, and Bouma, an environmental reporter for The Birmingham News, interviewed more than 40 Carnegie Mellon professors and researchers June 22-July 1.

"I was pleasantly amazed at all the environmental research going on here at Carnegie Mellon," said Bouma, who has been covering the environmental beat for 15 years. She is the past winner of the Edward J. Meeman Award for environmental reporting and the Philip D. Reed award for environmental writing.

The reporters met informally with researchers in labs and in the field. Their interviews spanned everything from green design and green buildings to air quality, water quality, green chemistry, risk management and robots.

"I feel like I learned a great deal about a wide area of research in environment and technology," said Borenstein. "And I still have a lot to learn."

Borenstein covers the environment, science, public health, energy, homeland security, science and aviation safety on a global and national basis for the nation's second largest newspaper chain. He is the winner of the 2004 Society of Environmental Journalists' Outstanding Beat Reporting Award. Borenstein broke stories on the Columbia shuttle accident and investigation and was a key reporter on a team named as a Pulitzer Prize finalist.

Chris Hendrickson, head of Carnegie Mellon's Department of Civil and Environmental Engineering and faculty director of the Steinbrenner Institute for Environmental Education and Research, said the fellowship is an opportunity for Carnegie Mellon to showcase all the environmental activities on campus. "But in a larger sense, it is an opportunity to have a dialogue with the media that can improve public discussion and understanding of critical environmental issues," Hendrickson said.

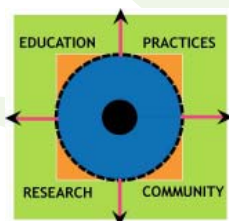
"The thing that impressed me most was the eagerness and enthusiasm of the faculty for this program," said Deb Lange, executive director of the Steinbrenner Institute. "We really wanted the journalists to go away with the knowledge that they can use Carnegie Mellon as a resource for their stories."

Chriss Swaney
July 12, 2005



Seth Borenstein and Katherine Bouma toured Carnegie Mellon's Nanofabrication Center, also known as the "clean room," where they conducted a series of tests and experiments.

New Website!



SEER has a new and improved website! Visit the site for current news, upcoming events and environmentally-related web links. Also, check out the four areas of SEER: education, research, practice and community. Visit SEER at: www.cmu.edu/environment.

SEER Project: Benchmarking Survey

Over the summer, the Steinbrenner Institute for Environmental Education and Research conducted a benchmarking survey to a) begin to understand the goals and objectives of similar university-based centers/institutions; and, b) develop a network for ongoing exchange of information and ideas. The mechanism used to conduct the survey was "Survey Monkey" (www.surveymonkey.com). We posted 10 questions related to mission, operations, and specialty areas for education and research. Responses were received from 2 primary target audiences: attendees of the Association of Environmental Engineering and Science Professors (AEESP) annual conference held in July 2005 (at Clarkson University) and the Carnegie Classification of Institutions of Higher Education. The following institutions completed the survey:

- Arizona State University*
- Auburn University (Environmental Institute)*
- Auburn University (Sustainability Initiative)*
- Carnegie Mellon (Green Design Institute)*
- Carnegie Mellon (Steinbrenner Institute for Environmental Education and Research)*
- Clarkson (Great Rivers Institute)*
- Clarkson University (Center for the Environment)*
- Cornell University*
- Coventry University United Kingdom
- Duke University
- Iowa State University*
- John Hopkins University
- McGill University
- Michigan Technological University
- New Jersey Institute of Technology
- North Carolina State University*
- Northeastern University*
- Oregon State University*
- Penn State University*
- Princeton University*
- Purdue University*
- Stanford University*
- UCLA*
- University of Buffalo*
- University of Cincinnati*
- University of Colorado – Boulder*
- University of Colorado – Denver*
- University of Delaware*
- University of Hawaii at Manoa*
- University of Iowa
- University of Maryland Baltimore County*
- University of Oregon*
- University of Texas – Austin*
- University of Texas at Arlington
- University of Toronto
- University of Wisconsin-Madison*
- US Military Academy

Other contributors to the discussion included Clemson University (Sustainable Universities Initiative), Lehigh University (Environmental Initiative), and the University of Minnesota (Institute for Social, Economic and Ecological Sustainability). Our observations based on the collected data are as follows:

1. Many centers/institutes are not university-wide but rather are housed within a college, school or department. To the extent possible, the data was culled to include those center/institutes that appeared, through their description, to be university-wide. The data from 27 institutes noted with an asterisk (*) was considered in further data reduction.
2. The functions of the institutes/centers appear to be led by internal networking, external visibility, supporting/directing research and outreach, followed by education and fundraising, with green practices being the least of the focus areas.
3. Approximately 50% of the institutes/centers have operating budgets less than \$500,000. Sources of funds are primarily the draw on the endowment, expendables from corporations and expendables from alumni and friends.
4. Institutes with budgets greater than \$500,000 seem to receive the majority of funding from the government; indicating perhaps a stronger research focus.
5. Most institutes/centers have research/education specialties in water, land and energy; with less practicing in air and public policy; followed by decision support, risk, design and ethics; with the fewest in buildings.

Survey data and the associated Powerpoint presentation can be found on the SEER webpage: www.cmu.edu/environment/events.html. Our plan is to continue to engage all 40 respondents in an ongoing dialogue and to add more entities to the group as they are brought to our attention.

Homecoming 2005: Environmental Justice Panel



Edwardo Rhodes

Edwardo Rhodes (Heinz School, Carnegie Mellon University, '78) was the keynote speaker at the "Environmental Justice: What's the Big Deal?" panel discussion that was hosted by the SEER as part of the Homecoming 2005 events. Professor Rhodes currently resides in the Department of Public and Environmental Affairs at Indiana University and is the author of [Environmental Justice in America: A New Paradigm](#) (Indiana University Press, 2003). The session was moderated by Kent Benjamin (Heinz School, Carnegie Mellon University, '90) who was well qualified given his current role as Partnership Team Leader within the Office of Solid Waste and Emergency Response at the US Environmental Protection Agency (USEPA). Edwardo and Kent were joined on the panel by three current faculty members: Peter Madsen (Department of Philosophy and at the H. J. Heinz School of Public Policy and Management), John Soluri (History Department) and Luis Rico- Gutierrez (Architecture and Urban Planning in the College of Fine Arts).

After a warm welcome by President Jared Cohon, Kent provided the audience with the USEPA definition of the term environmental justice (EJ): fair treatment and meaningful involvement of all people regardless of race, color, national origin or income with respect to the development, implementation, and enforcement of environmental laws, regulations and policies. There is additional language to define 'fair treatment' and 'meaningful involvement' but Kent suggested that there is room for interpretation and, fundamentally, negative impacts related to development will never completely go away. Further, the real crux of the issue is that there will always be differentiated impacts. In Edwardo's presentation, he suggested that there is a general lack of acknowledgement of the issue partially because there is no commonly accepted terminology or definition. He then defined the issue by presenting examples (Czech Republic, Haiti, East Germany) where disenfranchised populations live in the shadows of hazardous waste landfills (for instance) and their related policy problems. He suggested that EJ may really be an asymmetric economic/information problem: one side always has more resources than the other. And, he added, entities are not inherently bad or evil but rather they promote what they believe to be in their best interest. Policy solutions are elusive but improving information exchange is important. Edwardo closed by cautioning that EJ is not the 'horse to ride' in solving all of the world's social and economic problems.

The panelists agreed that, internationally, there is a lack of awareness of the issue but more critically, a lack of concern. Dr. Madsen argued that perhaps there is a bigger ethical issue and we need a paradigm shift: we need to strike an appropriate balance between anthropocentrism (human beings as the most significant entity of the universe) and biocentrism (all forms of life on earth are significant.) Dr. Soluri, based on his research in South America, argues that there must be a better balance between conservationists and the need for indigenous populations to survive by living off of the land. Professor Rico-Gutierrez brought the EJ issue back to the role of the urban environment where residents of the urban core have not been afforded the amenities that enhance the quality of life. The discussion took on a life of its own (!) and the issue of EJ became at once more clear and more clouded. Kent noted the complexity by adding: are there really any national EJ problems or are they all international?

So what actions in policy, law or culture will produce changes that lead to EJ? Edwardo, the economist, reiterated that there is no magic bullet and given the existence of subsidies, there is no market control. Luis argues that we need new models to empower disenfranchised populations and promote a bottom up approach. Where John generally agreed with Luis, he cautioned that power at high levels (in control of culture and economy) will be a barrier to the bottom up approach. Peter thinks that, fundamentally, we need to define 'justice' and particularly 'distributive justice.'

The panel was informative and thought-provoking; tune in to see what's in store at next year's homecoming.

SEER News

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