Energy & Environment

When it comes to issues of the environment and sustainability, Carnegie Mellow practices what it preaches. By helping to create a market for wind power, building energy efficient dorms and labs and applying its expertise to overcoming regional environmental challenges, the university imparts environmental awareness to not only its students, but the greater community. In energy, for example, microturbines designed at Carnegie Mellon can run on everything from palm oil to manure gas. Researchers are finding economic value in wind power and waste reduction, old industrial sites are being rebuilt into upscale neighborhoods with Carnegie Mellon's assistance and green design is making the 21st-century workplace both safer and more effective.

Protecting Our Water Resources

With limited oil supplies, natural gas formations like the Marcellus Shale formation in Southwestern Pennsylvania are seen as both tremendous opportunities and significant environmental challenges. Jeanne VanBriesen, professor of civil and environmental engineering, oversees a team of researchers taking a systems-approach to water resources in the Pittsburgh region. VanBriesen says Marcellus Shale gas development requires lots of water and generates a highly salty wastewater that must be managed to prevent its discharge into our waterways. Her team's research in this area underscores the need for companies and policy makers to look critically at the link that exists between drinking water and wastewater treatment. One particular focus of their research is on bromide, which can be found in a variety of sources but is known to be a component of shale gas produced water.

Electricity Industry Center: Supported by a grant from the Sloan Foundation and the Electricity Research Power Institute, the goal of this center is to foster change in the electricity industry, its regulation and the way that industry stakeholders think about opening new businesses and bringing new insights to public policy. Here, researchers work with companies, labor, regulators, the financial community, consumers and technologists to make the electricity industry more competitive and its systems more reliable and secure, to create wealth and to serve the public interest better by enhancing human resources, speeding organizational learning and improving its regulatory environment. *www.cmu.edu/ceic*

Center for the Study and Improvement of Regulation: The improvement of environmental, health and safety regulation is the mission of this non-partisan collaboration between Carnegie Mellow and the University of Washington. Substantive research and analysis of current regulatory methods and future tools serves as a catalyst for a more elaborate framework for considering health, safety and environmental risks and enriching and facilitating debate on the federal, state and local level. *www.epp.cmu.edu/csir*

Census Data Research Center: The CDRC provides researchers with access to detailed and confidential economic and demographic data collected by the Bureau of Census. The center's mission is to turn the power of this research on immediate issues of public interest, such as the relationship between environmental regulation, economic activity and levels of pollution; causes and effects of regional economic growth; and the relationship between economic growth and crime.

Center for Business, Technology and the Environment: This center highlights the relevance of historical studies to understanding present-day concerns and formulating sound policies related to business, technology and the environment. Examples of such work include demonstrating how the development of transportation infrastructure influenced regional economic growth, exploring the history of particular sites to appraise them for environmental risks (such as soil and subsoil contamination) and developing long-term trends in various environmental quality measures to provide benchmarks for current environmental policy. *www.history.cmu.edu/research/btectr.html*

Masters Degree Program in Energy, Science, Technology and Policy

Carnegie Mellon University's College of Engineering, has launched an innovative new graduate program to produce tomorrow's energy leaders. The ESTP program covers a wide range of issues, including national and global socioeconomic issues that govern energy policy and legislation, the fundamental scientific principles governing and limiting energy conversion and transport, and the technical and regulatory barriers that exist today for developing future power systems. Graduates from the program will be provided with the skills to engineer new energy technologies that will improve efficiency, reduce environmental harm, increase sustainable power sources and build new infrastructure for distribution.
http://neon.materials.cmu.edu/energy

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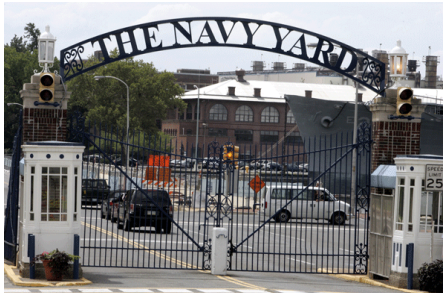
Carnegie Mellon Joins Research Consortium to Pioneer Energy Efficient Building Designs for the Department of Energy



Carnegie Mellon University is part of a team that will receive up to $122 million over the next five years from the Department of Energy (DOE) to establish an Energy Innovation Hub focused on developing technologies to make buildings more energy efficient. The Energy Innovation Hub will be located at the Philadelphia Navy Yard Clean Energy campus, and will bring together leading researchers from academia, two U.S. National Laboratories and the private sector in an ambitious effort to develop energy efficient building designs that will save energy, cut pollution and position the United States as a leader in this industry. The grant will support six Carnegie Mellon Ph.D. candidates per year who will work with faculty from the School of Architecture's Center for Building Performance and Diagnostics and the departments of Civil and Environmental Engineering, and Electrical and Computer Engineering.

The Western Pennsylvania Brownfields Center: This multi-disciplinary center seeks to create new vitality and economic growth within urban areas by reusing former industrial sites that have been abandoned over time. Urban renewal, neighborhood planning and environmental mitigation and repair are all important components of the Brownfields Center's research and the future of the urban areas it studies. *www.cmu.edu/steinbrenner/brownfields*

Center for Integrated Study of Human Dimensions of Global Change: A coordinated research program between 22 institutes that seek to understand how human activity changes the preexisting environment, its research measures global temperature, atmosphere and land use to draw conclusions and better inform the public debate about future economic and social developments. *www.hdgc.epp.cmu.edu*

Green Design Institute: A major interdisciplinary effort, the Green Design Institute encourages safe economic growth by developing pollution-preventing green design tools for industry, government and the public. Research programs aim to reduce environmental damage by lowering environmental discharges, minimizing the use of non-renewable resources and reducing the use of renewable resources to sustainable levels. Partnerships with industrial corporations, foundations and government agencies develop joint research and education programs, which improve environmental quality while encouraging sustainable economic development, are a key component of this initiative. *www.ce.cmu.edu/GreenDesign*

Institute for the Green Oxidation of Chemistry: This research, education and development center is studying ways to use "green chemistry" to deal with three major problem areas: renewable energy technologies, especially solar technologies; reducing reliance and dependence on fossilized carbon; and protecting the atmosphere by obtaining chemical feedstock from renewable resources and the replacement of polluting technologies with benign alternatives. *www.chem.cmu.edu/groups/collins*

Pittsburgh Supercomputing Center: The PSC houses the most powerful computing system in the world dedicated to non classified research. Funded by a $45 million National Science Foundation grant, the terascale system can process six trillion calculations per second. Available to scientists and engineers nationwide, its research capabilities bear on a wide range of important scientific problems such as earthquake modeling, storm-scale weather forecasting, global climate change and protein genomics. *www.psc.edu*

Intelligent Workplace: This "office of the future" is a living laboratory of the advanced workplace that serves as a test bed for innovations in building enclosure, design, HVAC and telecommunications systems. Located on top of one of the oldest buildings on campus, it was created to help researchers test and develop technologies to improve the office environment for the U.S. work force. As a "lived-in" office, the Intelligent Workplace provides a flexible environment to assess the performance of new products in an integrated, occupied setting. *www.cmu.edu/architecture*

Center for Building Performance and Diagnostics: The first center in the nation to focus on the building industry, the CBPD is engaged in ground-breaking work that investigates the impact of advanced technology on the physical, environmental, and social settings in office buildings. The CBPD receives support from the National Science Foundation, and is a NSF Industry/University Cooperative Research Center. *www.arc.cmu.edu/cbpd*

Advanced Building Systems Integration Consortium: Established in 1988, ABSIC is a university-industry-government partnership to pursue research, demonstration and development toward improving the quality and performance of commercial buildings and building systems. Consortium research topics range from increasing the satisfaction, health, well-being and productivity of a building's occupants to improving the technological adaptability and energy efficiency of the building. *www.cmu.edu/architecture*

WaterQUEST Center: Newly established in 2005, the WaterQUEST Center is dedicated to the study of urban water quality. Co-directors Jeanne VanBriesen and David Dzombak point to current research that shows the health and quality of life of Americans in urban watersheds are at risk from antiquated water systems that are in need of upgrading and repair. WaterQUEST explores ways to keep our drinking water safe from sewage infiltration, pollution and leakage. *www.ce.cmu.edu/~wquest*

Center for the Environmental Implications of Nanotechnology (CEINT)
CEINT is an interdisciplinary center within the Institute for Complex Engineered Systems (ICES). Funded by the National Science Foundation (NSF), the vision of this center is to elucidate the relationship between the vast array of nanomaterials and properties to their environmental and human health risks. Graduate students and faculty from seven departments within the Carnegie Institute of Technology and the Mellon College of Science study the occurrences, transport, transformations, fate, and toxicity of engineered nanomaterials in the environment, aiming to understand the potential environmental exposure, biological effects, and ecological consequences. *www.ices.cmu.edu/ceint/index.html*