

NEWS RELEASE

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Portland State University Study Aims to Support Use of Ecoroofs

Research will lay foundation for broader adoption through better tools

(Portland, Ore.) January 30, 2007 – Many buildings across the country now have ecoroofs (or green roofs, as they are sometimes called), but beyond the aesthetic and marketing appeal, a question remains: how well do green roofs actually work? Portland State University researchers aim to find out.

PSU researchers will create computer models of ecoroofs based upon thorough research into their energy savings and stormwater abatement benefits. This engineering research will be combined with a detailed modeling of economic costs and benefits. The combined result will be integrated into an industry standard software design tool allowing building professionals to evaluate the right plants, soil, and a host of other critical factors including cost to ensure the best roof performance for the local conditions, design, and business objectives.

Researchers and those supporting the study think this information could dramatically expand the market for ecoroofs, since design professionals will have the tools necessary to evaluate the roofs' performance in each particular climate.

Ecoroofs use vegetation and soil over a waterproof membrane. The plants and soil absorb much of the water that falls on ecoroofs, helping to abate stormwater during heavy rainfalls. In addition, water-borne pollutants are filtered from by the soil, and are therefore less likely to run into nearby waterways, reducing the load on the city's wastewater treatment system. A building's energy use can be reduced as the soil and plants provide added insulation in the winter and a combination of insulation, shading, and evaporative cooling during the summer.

While there is a growing body of research about the individual attributes of ecoroof performance, none of the research has produced sufficient information to create a system design tool that will allow the optimization of ecoroof performance in different climates, with varying materials, and that integrates the economic costs and benefits.

"Ecoroofs have been shown to help reduce stormwater runoff and save energy. Given the wide range of ecoroof design options, however, it is important to understand how to optimize these effects in different climates and for

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Ecoroof Research

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different kinds of buildings,” said David Sailor, project director and associate professor in Mechanical and Materials Engineering at Portland State University’s Maseeh College of Engineering and Computer Science. “Our multidisciplinary research will assess the energy, environmental and economic performance of alternative ecoroof designs. Ultimately, this will allow architects and engineers to change the parameters of their design—from what kind of plants to use or whether to use supplemental irrigation—and see how those design changes affect overall roof performance and economics.”

In addition to Professor Sailor’s work, Portland State Professor Graig Spolek will lead the stormwater assessment, and Professor David Ervin will direct the economic analysis.

The research is a public-private collaboration facilitated by Portland State’s Center for Sustainable Processes and Practices (http://www.pdx.edu/sustainability/ap_research.html). External support comes from the Ecoworks Foundation (<http://www.ecoworksfoundation.org/>), a venture philanthropy foundation committed to sustainable development; the City of Portland’s Office of Sustainable Development (www.portlandonline.com/osd); and Gerding Edlen Development (www.gerdingedlen.com), a leading developer of sustainable, mixed-use urban projects.

“We are very excited about the potential for this project since it builds upon core competencies and a strong market in green building here in Oregon,” said Brad Zenger, president of Ecoworks Foundation. “These local attributes when combined with the strong applied research capability provided by PSU could ultimately lead to commercial products and services that support the local economy while improving the health and environment of our world’s cities.”

“This is groundbreaking work demonstrating the economic potential resulting from successful public-private collaboration,” said Portland City Commissioner Dan Saltzman. “The City will continue to support initiatives that ensure Portland’s leadership in green building technologies,” he added.

“In our development projects our goal today is to reduce energy consumption and waste by 50 percent; in five years we want our buildings to generate more energy than they consume and consume more waste than they generate,” said Dennis Wilde, Gerding Edlen partner and the firm’s sustainability leader. “Ecoroofs are a key strategy toward that goal. Since we started implementing ecoroofs five years ago, we’ve seen them go from reducing stormwater runoff by about 25 percent in the M Financial building to 40 percent at South Waterfront, not to mention the other benefits. We now try to incorporate them in each project, and learning from this study will assist in making them even more effective which will bring us that much closer to our sustainable goals.”

Results from the wide-ranging Portland State University study, which will look at ecoroofs on campus as well as elsewhere throughout the Portland, Oregon metropolitan area and in other regions, are due in 2007 and 2008.

For more information, please visit <http://www.pdx.edu/sustainability/>

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PSU Ecoroof Fact Sheet

According to a recent survey of the industry by the Green Roofs for Healthy Cities network (www.greenroofs.net), the square footage of ecoroofs in the United States increased 80 percent in the United States in 2004 and 2005. The network estimates that one square meter of uncut grass on an ecoroof provides enough oxygen to sustain one person for a year.

The Portland State research will examine the water and energy benefits of ecoroofs on different buildings throughout Portland, including several green roofs located on campus at Portland State University. Portland State University currently has two LEED-certified green buildings with a third certification expected in the near future.

Portland State University is widely known for its research and academic focus on sustainability, offering sustainability programs for undergraduates, graduate students and working professionals. In 2004, 700 students, professors, administrators and community members signed a grassroots declaration in support of making the university more sustainable.

Portland, a leading city in green building, provides an excellent opportunity to quickly put the results of the research into practice, as evidenced in the support for this study by Gerding Edlen, one of the city's leading private developers. Gerding Edlen has a national reputation for green development throughout the West Coast.

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