UMD Solar Decathlon team unveils 'WaterShed'

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Watershed's butterfly roof helps collect rain and sun. Credit: UMD

The University of Maryland Solar Decathlon Team has unveiled its entry in the U.S. Department of Energy competition - a high-tech structure they call WaterShed, because it integrates a unique array of sustainable features designed to protect and make the most of the Chesapeake Bay.

The unveiling ceremony brought together officials and the dozens of students, faculty and mentors that make up the Maryland team, one of only 20 finalists in the international competition. Each team designs and builds a house that runs on solar power. The final Solar Decathlon 2011 competition will take place in Washington, D.C. next October.

"This will be a lot more than a great house - think of it as a mini-

ecosystem," said WaterShed's principal investigator, University of Maryland Associate Professor of Architecture Amy Gardner. "We're building it to be a desirable and significant expression of sustainability. Our goal is to capture sun, wind, rain, as well as the wastes from the house, and make the very most of them - all as part of a great place to live."

The power of the design comes from its twin focus on efficient, renewable energy and water quality and conservation.

"It's been said that the planet will run out of water before it runs out of oil," Gardner added. "Linking these twin concerns will help design communities that make sense environmentally, economically, aesthetically."

Among WaterShed's principal design features:

- Constructed wetlands that filter storm water and "greywater"
- Green roof to retain rainwater and promote efficient cooling
- Optimally sized photovoltaic array to harvest enough energy from the sun to power WaterShed year-round
- Edible landscapes that support community-based agriculture
- Interior waterfall (with liquid desiccant) to provide high-efficiency humidity control
- Efficient, cost-effective, durable, time-tested structural system

The house is formed by two rectangular units capped by a butterfly roof,

which is well-suited to capturing and using both sunlight and rainwater.

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University of Maryland President Wallace Loh described WaterShed as "a model for how to live in harmony with the complex ecosystem of the largest estuary in the United States." The project, he added, "fulfills the mission of a 21st century Land Grant University by applying intellectual resources to make "a real-life impact" - in this case, "contributing to sustainability."

Speaking via a video message, Maryland Gov. Martin O'Malley said he was "excited by the bid" - the state's only entry in the elite competition - because it addresses a significant source of Chesapeake Bay pollution. "This is an important step towards doing a better job managing storm water runoff."

WaterShed is "one of the most impressive designs in the competition," said the U.S. Department of Energy's director of the Solar Decathlon. "These Decathletes are building a better future for us and a better place to live."

BUILDING ON SUCCESS

In 2007, the Maryland team placed second overall and first among U.S. participants. WaterShed builds on the success of that entry - LEAFHouse - and carries the design to the next level.

Parlin Meyer, student construction leader, said WaterShed embodies a "pertinent and resonant message about water conservation and use."

FROM DOODLE TO BUILDING - TEAM EFFORT

The Maryland Decathlon team draws on dozens of students from majors across campus. As project leader Amy Gardner put it, "It takes a village to build this house."

Architecture student leader Allison Wilson described the dramatic commitment of time and energy made by students on the project. "It's like a truck going 90 miles per hour at all times and needs to be in three places at once." The payoff, she added, comes in watching WaterShed go from "a doodle to a building."

"This is the University of Maryland at its BEST, and I say that in all honesty," said Clark School of Engineering Dean Darryl Pines, stressing the cross-campus collaboration involved in the process. "This truly embodies one Maryland."

"They seek to change the future, and to do it NOW," added David Cronrath, dean of the School of Architecture, Planning and Preservation.

Specifically, the Maryland Solar Decathlon Team involves students and faculty from the Maryland School of Architecture, Planning and Preservation, the A. James Clark School of Engineering, the College of Computer, Mathematical, and Natural Sciences, the University Libraries, and the School of Agriculture and Natural Resources. Maryland

businesses and professional groups are providing significant support as well.

In the fall, when construction is complete, WaterShed will be disassembled and transported to Washington, D.C. for the final competition.

Provided by University of Maryland