To design and construct meltwater, UWM has brought together a diverse team of faculty, students, and professional collaborators. These participants, from across the campus and city, will collectively work to create a sustainable solution for the growing need for fresh water. Each of the students and faculty contributing to the project must balance the goals of their profession with the goals of the rest of the team.

Through efforts to design, build, and eventually operate meltwater, team members will pioneer new uses for existing technologies and develop new standards for integrated practice. As a result of this interdisciplinary and aggressive process, meltwater will protect Lake Michigan.

The Solar Decathlon is a global contest, run by the US Department of Energy, in which university students compete to design, build, and operate a solar-powered home more efficiently than other competitors in ten categories: architecture, market viability, engineering, lighting design, communications, comfort zone, hot water, appliances, home entertainment, and net metering.

When UWM’s house, meltwater, is completed in the fall 2009, it will travel to Washington, D.C., where it will be erected on the National Mall. At that time the project will be judged with the 19 other teams from around the world, and will be viewed by over 150,000 visitors, including officials from the U.S. Department of Energy and members of Congress.

After the Solar Decathlon, meltwater will be returned to the Menomonee Valley in Milwaukee to be used as a teaching facility for the Urban Ecology Center, a neighborhood-based, environmental education, nonprofit community center. In its role as a satellite classroom, meltwater will demonstrate the potential of sustainable design to Milwaukee area residents, including solar energy harvesting, water collection, and the use of recycled materials in residential applications.

The formation of the Great Lake exhibits nature’s capacity for renewal, reciprocity and life, as well as the potential to harness the energy embodied in solar rays and water. This renewal is exhibited each year in Wisconsin as the melting snow and ice allows for a fertile, plentiful landscape.

You can help. Contact your representatives and let them know that their support of legal frameworks that protect our valuable freshwater resources is important to you.

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what is meltwater?
At the end of the Last Glacial Period 10,000 years ago, also called the Wisconsin Glaciation Period, the intense power of the sun began melting the glaciers that blanketed Wisconsin. The sun released the energy embodied in the ice, and the meltwater running off glacial ice in Wisconsin transported and reworked the stratified drift, carves, river valleys and basins into our topography – creating the largest body of freshwater on earth: the Great Lakes. Lying in between Lake Michigan and the Mississippi River, Wisconsin is in a unique position to marshal these valuable freshwater resources.

The ability to harness the limitless power of solar energy, and foster the collection of our finite freshwater resources is the genesis of our idea. Just as the glaciers transformed our landscape thousands of years ago, many components of our design have the ability to change states, breathing new life and energy into their forms.

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Using nature not only as a resource, but as a model, meltwater raises awareness of the possibilities of our particular region and the distinct responsibilities we have to it.

what is the solar decathlon?
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Despite the importance of accessible, potable freshwater to our growing population, Lake Michigan is under the threat of pollution from oil refineries moving in to our north, damage from invasive species, and decreased water levels as a consequence of global warming and stormwater systems. Meltwater seeks to address these issues in its form, systems, branding, and messaging in an effort to raise awareness of the areas for opportunity still available in our region to protect our valuable natural resource.
The energy release inherent in the change-of-state from glacier to meltwater thousands of years ago, and from frozen landscape to fertile fields each season was the inspiration for the adaptable components of the home. Using nature as a model, Meltwater has employed glacial processes to express these components and functions within the home.

The adaptable components allow for optimal livability within the home's small footprint, and decreases the amount of materials needed to serve the various purposes and functions that take place in the home.

The target market

CURRENT TRENDS
As a requirement of the competition the meltwater team has selected a target market for the home based on current regional and national trends. In particular, we focused on the 'boomerang parent' trend as the number of parents moving back in with adult children over the past seven years has increased by more than 50%.

THE PEOPLE
As a result of this research, the target market is a married, baby-boomer couple looking to buy a new home close to their adult children and grandchildren. The couple is eco-conscious, as they know their decisions today will effect the environment in which their grandchildren will grow and inherit. The couple is financially secure, however they will not be around to see an investment in sustainable features to their maturation.

THE SITE
Meltwater will be an ancillary unit placed in the backyard of the adult child's home in the Merrill Park neighborhood of Milwaukee, WI.

The complex systems that power the home in a net-zero energy fashion, wedded with the simple and elegant design allow the grandparents to entertain family and friends without having to maintain and power the excess square footage and landscaping associated with a larger stand alone single-family home. As an ancillary unit, the families will also be able to share resource and tasks, such as babysitting and shoveling without sacrificing independence.

Although these complex systems can be expensive, the couple saved money by not having to buy property, and each month, they save money on their energy bills. Additionally, their adult children and grandchildren will have the opportunity to see their investment through to its payback.

MELT WATER harnesses the power of our limitless solar energy, and stores it in the service bar located along the north elevation. Meltwater’s energy independence reduces dependence on foreign oil, as well as the need for oil refining along the coasts of the Great Lakes region. The carved out valley of the roof directs water into the rain garden, to filter the runoff back into the ecosystem.

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The ancillary units are a positive addition to the neighborhood as they add density on an as-needed basis, yet retain the fabric of the Merrill Park. As more people in Merrill Park follow this model, the neighborhood becomes safer as areas that typically are empty are filled with responsible adults.

MATERIALS
The materials, construction techniques, and systems used for meltwater have been carefully chosen for their performance, their appropriateness for Wisconsin climate, their sustainable qualities, and their locality. As an example, the undulating topographical rainscreen facade is made up of sustainably harvested white pine from the Aldo Leopold Center near Baraboo, WI.

CARBON NEUTRALITY
Utilizing materials, such as sustainably harvested wood and reclaimed metal, the initial carbon footprint of meltwater is substantially smaller than a conventional home. Additionally, meltwater employs the use of photovoltaics and a solar hot water system to further diminish its carbon footprint over time. Not only is meltwater improving the environment, its also generating financial revenue from the power its producing from the photovoltaics and selling back to the electric company, this being something a conventional home can not accomplish.

MODULES
In addition to the other factors that make meltwater an energy efficient home, modular home building is a inherently sustainably process. Superior recycling facilities, climate controlled environments, and the ability to purchase materials in bulk allow for factories to operate at a more sustainable level than standard on-site construction. Modular construction is also superior in quality, economic and speed considerations.

The meltwater home will be shipped to the competition on library mall in 4 modules where they will be combined for the competition. Following the competition, the modules will be taken apart and shipped back to the Menomonee Valley where they will be re-combined for the use as a classroom by the Urban Ecology Center.

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