Visitors Guide 2011

National Mall
West Potomac Park
Washington, D.C.
September 23–October 2, 2011
Welcome
to the fifth
U.S. Department of
Energy Solar Decathlon.

The Teams

Here they are: the Solar Decathlon 2011 teams. As you tour their houses, think of the creative spirit, sense of place, and positive energy they embody. Ask questions, search for ideas for your own home, and pick your favorites.

The 2011 teams may share a common goal—to design and build the best energy-efficient house powered by the sun—but their strategies are different. One house is made of precast concrete, while another “dances” in response to its environment. Another house is meant to sit atop a building, proving the sky’s the limit for energy innovation. Whatever your idea of sustainable living may be, you are bound to find it at the Solar Decathlon.

New Zealand

VICTORIA UNIVERSITY OF WELLINGTON

New Zealand is the first country to greet the sun at the start of a new day. The First Light house is designed to harvest this sunlight, reflect the relaxed lifestyle associated with the traditional “Kiwi bach” holiday home, and connect residents with the outdoor environment.

Must See: A triple-glazed skylight and large bifold doors illuminate the central section of the house.
ENJOY House approaches sustainable design from a different angle. Featuring an inverted-hip roof shape and constructed of precast concrete panels, this house redefines coastal living with an architecture informed by performance criteria.

User Friendly: The team used universal design principles to make this house accessible to people of all generations and levels of mobility.

Purdue’s INhome, short for Indiana home, offers a realistic and balanced vision for ultra-efficient housing while demonstrating some of the many ways to live sustainably without sacrificing quality or comfort. Although the exterior could blend in well in the typical Midwestern neighborhood, the house includes innovative features that are anything but ordinary.

Cool Solution: A shading structure with cypress louvers shields the roof and walls from the hot sun in Florida and Washington, D.C.

Changing Spaces: The open-air porch converts to a passive heating sunspace in colder months via large motorized windows.

Wall Flower: The biowall of vertically arranged plants is self-watering.

Visit www.solardecathlon.gov
Empowerhouse uses cross-disciplinary, integrative design techniques and a community-based approach to realize a sustainable, comfortable, and affordable house. The shape, building envelope, window placement, and shading were optimized through feedback from energy modeling.

Greater Good: Following the Solar Decathlon, the house will be a Habitat for Humanity home in Washington, D.C.

The Living Light house incorporates the knowledge of Tennesseans past and present. Following in the footsteps of the state’s early settlers, the team employs scalable energy strategies to suit the climatic extremes of the Appalachian Mountains.

Don’t Miss: The ventilated double façade system is composed of alternating translucent and transparent panes and horizontal blinds.

This house is named after Emerson’s essay “Self-Reliance,” which challenges people to think independently and to question the status quo. From recycled insulation to a greenhouse wall, the design reevaluates residential building practices and demonstrates that healthy, sustainable living can be comfortable.

Old Is New: A New England farmhouse design combines with energy efficiency features to suit the 21st-century family.

The Solar Homestead reflects the independent spirit of traditional homesteaders. The combination of architecturally integrated technologies and sustainable design creates a distinctive dwelling for the modern homesteader—the person who values independence, the land, and the environment.

Energy Saver: A reinvented phase-change Trombe wall passively collects heat throughout the day and radiates it inside at night.
E-Cube takes a straightforward approach to solar living. Stripped of nonessential components and finishes, this prototype house is conceived as a do-it-yourself building kit with pre-engineered, factory-built parts that are easily assembled without special skills.

**Budget Friendly:** Team Belgium’s primary interest was to create a comfortable, solar-powered house with a lot of space on a small budget.

Y Container embodies the belief that one can live anywhere freely. This affordable, transportable, solar-powered house comprises six recycled shipping modules that contain the energy, water, and plants required for an individual to enjoy an independent lifestyle.

**Sun Inspired:** The rounded, tipi-like form and east-facing entrance acknowledge the sun as a traditional source of energy and life.

Canada’s house is designed for the native peoples in Southern Alberta—the First Nations of Treaty 7. TRTL (pronounced “turtle”) is a healthy, safe, durable, and affordable house that also has appeal in the broader market of the more than 600 native groups in Canada.

**Balancing Act:** A counterbalance mechanism allows the perimeter louvers to swing upward, forming a wide canopy.

The ever-changing nature of perFORM[D]ance House is driven by environmental conditions, resulting in an interactive performance that showcases sustainable strategies and technologies. Operable louvers raise and lower as needed for privacy, shading, passive ventilation, and protection from hurricane-force winds.

**Fresh Air:** A natural ventilation tunnel in the middle of the house regulates air distribution and the fresh air supply without consuming energy.
The 4D Home demonstrates how dynamic interior spaces can make compact living viable for a small family. Combining adaptability, affordability, and energy efficiency, the house is designed to adjust to a family’s evolving needs over time.

Crafty Students: Team members designed and fabricated the furniture, decor, and housewares.

CHIP’s angular design is motivated by California’s soaring land costs and increasing urban sprawl. The north side is lifted to create a car park. The house wears thermal performance on its proverbial sleeve, showcasing a unique exterior envelope made from vinyl-coated fabric mesh.

Wow Factor: The team aimed to achieve extraordinary results in affordable, attainable ways.

Re_home consists of two modules that can be transported on one trailer for rapid response to disaster situations. By combining good design, smart planning, and low-cost solutions, this house brings environmentally aware living to the forefront of community-led recovery efforts.

Panels With Purpose: A building-integrated photovoltaic system provides a source of energy while providing shade to reduce solar heat gain.

Water Works: WaterShed’s design features constructed wetlands that capture rainwater runoff and filter greywater.

Inspired by the Chesapeake Bay ecosystem, WaterShed manages storm water, filters pollutants, and neutralizes waste. By managing water and energy consumption, the house demonstrates how the built environment can help preserve watersheds everywhere.
Team New York’s Solar Roofpod responds to the fact that urban rooftops are largely underused. Intended for existing mid-rise buildings, this house enables eco-conscious city dwellers to live lightly by producing solar power, cultivating roof gardens, and retaining storm water.

**Market Ready:** This “penthouse with a purpose” is designed to respond to the market for economical new housing in cities.

The Ohio State University’s enCORE represents The Ohio State University’s second Solar Decathlon effort. To address the trend of expanding home square footage despite shrinking family sizes, the 2011 team creates more usable space within a smaller area by concentrating the functional systems in a central core.

**Second Act:** An adjustable exterior screen provides privacy and protection from the sun.
The Contests

Teams earn points based on how their houses perform in 10 contests, each worth 100 points.

1. Architecture
Teams are challenged to design and build attractive, high-performance houses that integrate solar and energy efficiency technologies seamlessly into the design. A jury of professional architects evaluates drawings, construction specifications, an audiovisual presentation, and the house itself.

2. Market Appeal
Houses are built for a target client defined by the team. A jury of professionals from the homebuilding industry evaluates how well the design responds to the characteristics and requirements of the target client. Jurors also consider livability, marketability, and buildability.

3. Engineering
A jury of professional engineers assigns a score to each team based on its drawings, construction specifications, energy analysis results and discussion, and audiovisual engineering presentation. Jurors also evaluate the houses on-site.

4. Communications
All communications materials should educate students and the public about the project. A jury of communications professionals assigns a score based on the team’s final website, public exhibit materials, public exhibit presentation, and video walkthrough.

5. Affordability  New for 2011
The challenge is to design and build cost-effective houses that combine energy-efficient construction and appliances with renewable energy systems. A professional estimator determines the estimated construction cost of each house. Full points are awarded for a construction cost of $250,000 or less. A sliding point scale is applied to houses between $250,000 and $600,000. Houses that cost $600,000 or more receive zero points.

6. Comfort Zone
House temperatures and humidity levels should remain steady, uniform, and comfortable. Full points are awarded for staying within target temperature ranges of 71°F (22.2°C) to 76°F (24.4°C) and maintaining relative humidity below 60% during specified time periods.

7. Hot Water
This contest measures the ability of the water-heating system to supply all the hot water needed for daily tasks. Teams must provide at least 15 gallons (56.8 L) of hot water in 10 minutes or less during water draws. Full points are awarded for an average temperature above 110°F (43.3°C). Fewer points are awarded for cooler temperatures, reducing to no points for hot water below 100°F.

8. Appliances
This contest mimics the appliance use of an average U.S. home. Teams earn points for operating the refrigerator, freezer, washer, dryer, and dishwasher within set parameters.

9. Home Entertainment
To demonstrate that houses powered by the sun can provide a comfortable setting with modern conveniences, teams host two dinner parties and one movie night. They also complete operational tasks with their lights, televisions, and computers.

10. Energy Balance
A bidirectional utility meter measures the net energy each house produces or consumes over the course of the competition. Full points are awarded for producing at least as much energy as the house needs during the competition. Fewer points are awarded for a net electrical energy balance between 0 and –50 kilowatt-hours (kWh), meaning the house consumed more energy than it produced. No points are awarded for balances less than –50 kWh.

Visit www.solardecathlon.gov
Food Available

Free Wi-Fi

House Tours and Exhibits
Friday, Sept. 23–Sunday, Oct. 2
Weekdays: 10 a.m.–2 p.m.
Weekends: 10 a.m.–5:30 p.m.

Scan QR code for more info

Time to shine
The Workshops
Find out how to apply solar technologies and efficiency strategies in your own home by attending a workshop. Various topics are offered throughout the day; they include creating an energy-efficient home, selecting and operating a solar-electric system, and building a more sustainable future. Sept. 23 is Building Industry Day, with all workshops tailored to builders, architects, engineers, and green building professionals. No workshops will be held on Sept. 26 and 27, which are Solar Education Days for local students.

Visit the Main Tent for a list of the day’s topics. These free educational sessions are held in the Main Tent at the times listed below.

### September

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Visit www.solardecathlon.gov
The Sponsors

They are leaders in their fields, generous with their time and support, and committed to the ideals of the Solar Decathlon. They have stepped up to share their expertise and resources with the decathletes and the public. They are making a difference now and for the future of our planet. Some have been sponsors since the first Solar Decathlon in 2002, and others signed on for the first time this year. Everyone involved with the Solar Decathlon expresses a heartfelt thank you to each of them.

Dow Corning

As part of its commitment to drive innovation in the solar industry, Dow Corning’s sponsorship of the Solar Decathlon includes overseeing creation of an educational curriculum and on-site learning center to help strengthen students’ understanding of solar energy and sustainability.

A global leader in silicones, silicon-based technology, and innovation, Dow Corning and its joint venture, the Hemlock Semiconductor Group, have announced investments of more than $5 billion over the past six years to research, develop, and expand production of materials critical to the solar industry.

Through the Solar Decathlon and beyond, Dow Corning will continue to be an active collaborator with students, researchers, manufacturers, and governments to advance science, technology, engineering, and math (STEM) education.
Lowe's

Lowe's is committed to providing the education, tools, services, and products needed for consumers to make their homes more efficient so they can save both energy and money. The Solar Decathlon is a prime example of how whole-home energy efficiency can be achieved aesthetically and affordably.

Lowe's is contributing volunteers from its stores and nonprofit partnerships, hosting the consumer workshop series, and supporting local and national media outreach efforts. In addition, the company is actively supporting the decathletes during the assembly period with resources, including Kobalt construction tools, supplies, and staff expertise.

M.C. Dean

M.C. Dean Inc. is proud to be a first-time sponsor of the Solar Decathlon. For more than 60 years, M.C. Dean has provided engineering and technology services and systems for mission-critical systems and facilities in the D.C. area—and throughout the world.

For its event sponsorship, M.C. Dean is providing the Solar Decathlon with grid-connected solar power system design, installation, operation, and monitoring to deliver reliable service to the teams, sponsors, attendees, U.S. Department of Energy, and everyone involved in the competition. M.C. Dean salutes the solar decathletes for their designs, engineering, determination, passion, and drive for a more energy-efficient world.

Schneider Electric

Schneider Electric, a global specialist in energy management, is committed to producing innovative and effective solutions that make energy safe, reliable, efficient, productive, and green. Fulfilling its mission to help people make the most of their energy, it has been involved in the Solar Decathlon as a sustaining sponsor since 2009.

Schneider Electric is the supplier of the microgrid solution enabling a safe and reliable electrical connection between the solar village and the utility service for the duration of the event. The company has also provided energy management products in more than half of the houses through direct donations to the competing universities as well as consulting services from its energy experts.

Pepco

As one of the largest electric utility companies in the mid-Atlantic region, Pepco has provided service to customers in the Washington, D.C., metropolitan area for 115 years. Pepco is proud to again serve as a sustaining sponsor of the Solar Decathlon, which it views as an important showcase of the potential of solar power.

In 2011 as in 2009, Pepco is supporting the Solar Decathlon by providing an expert team of Pepco engineers and project managers to arrange for electrical power and net-metering services for the student-built houses. The company is also providing volunteers to serve as greeters, speakers, and docents.

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Visit www.solardecathlon.gov
BP Solar—a leading designer, manufacturer, and marketer of solar energy products and services—continues the legacy of BP by once again sponsoring the Solar Decathlon. BP Solar is providing advertisements in *The Washington Post* and is co-sponsoring a congressional reception.

DC-Net – District of Columbia Office of the Chief Technology Officer

DC-Net provides telecommunications services for government and public safety purposes throughout Washington, D.C. The service provider is supplying Internet, LAN, and Wi-Fi connections for the event.

Applied Materials, a leader in scaling green manufacturing, returns to support the Solar Decathlon and engage the innovators of tomorrow. Applied Materials helps recognize decathlete achievements, is co-sponsoring a congressional reception, and is providing outreach via *The Washington Post*.

Bosch is proud to support the commitment to innovation for a sustainable future. This global supplier of technology and services is contributing to the Solar Decathlon Opening Reception and volunteer uniforms.

Meteor Lighting is proud to be a part of the Solar Decathlon again. As the sponsor of the event’s architectural exterior pathway lighting, Meteor’s involvement reflects the company’s commitment to sustainable lighting solutions.
Wells Fargo supports the Solar Decathlon as part of its dedication to effecting positive environmental change. In addition to its sustainable business practices, Wells Fargo makes significant lending and investment commitments to the clean tech industry.

Perkins+Will, one of the world’s foremost architecture and design firms, is sponsoring the bike partnership and bike valet program. The firm is committed to sustainable design and creating solutions that contribute to human and environmental health.

Perkins+Will

My Green Neighborhood works to supply price-friendly renewable energy solutions to urban households. It is providing full-service meals for all team members at the event.

My Green Neighborhood

National Association of Home Builders
NAHB supports the growth of energy-efficient, solar-powered houses. Decathletes displayed models of their houses at NAHB’s International Builders’ Show—the world’s largest residential construction expo.

National Association of Home Builders

Popular Mechanics, a second-time Solar Decathlon sponsor, helps readers demystify complex science and technology, leaving them feeling competent in their personal lives and informed about the issues that shape their future.

Popular Mechanics

The NEA, a second-time Solar Decathlon sponsor, is organizing Solar Education Days for local K-12 schools again. By providing support to develop and broadcast educational programming, NEA helps spread knowledge about the Solar Decathlon to school kids and teachers.

National Education Association

Wells Fargo supports the Solar Decathlon as part of its dedication to effecting positive environmental change. In addition to its sustainable business practices, Wells Fargo makes significant lending and investment commitments to the clean tech industry.

Wells Fargo
Experience
Solar Decathlon 2011!

Tour the houses. Enjoy the exhibits. Be enlightened.

Friday, Sept. 23, through Sunday, Oct. 2, 2011

Weekdays: 10 a.m.–2 p.m.
Weekends: 10 a.m.–5:30 p.m.

House Tours
The solar village is open for visitors to explore the houses, meet the decathletes who designed and built them, and learn more about clean energy technologies.

Public Exhibits

• • Anatomy of a House—Take advantage of energy-saving tips. Learn about the building technologies used in the competition houses.

• • Electric Vehicle Charging Station—Check out a plug-in hybrid electric vehicle and see how it is charged.

• • Education Tent—Have fun with interactive exhibits related to various renewable energy technologies.

• • Energy & Your Home—Visit this tent showcasing an array of energy efficiency and renewable energy technologies. Learn how you can save energy and money.

Visit www.solardecathlon.gov

Please recycle this Visitors Guide in one of our welcome tents unless you would like it as a souvenir.