

TEAM OVERVIEW

The U.S. Department of Energy Solar Decathlon 2011 is a competition that challenges collegiate students from around the world to design, build and operate solar-powered houses that are affordable, highly energy efficient, attractive, and easy to live in. The competition shows consumers how to save money and energy with affordable clean energy products that are available today. The Solar Decathlon also provides participating students with hands-on experience and unique training that prepares them to enter our nation's clean energy workforce.

The teams selected for Solar Decathlon 2011 hail from five countries and four continents. These innovative students represent a diverse range of design approaches; building technologies; and geographic locations, climates, and regions (including urban, suburban, and rural settings). Get an overview of the teams below and visit their websites for more information:



APPALACHIAN STATE

Overview: Appalachian State University's Solar Homestead was inspired by traditional Appalachian settlements and is composed of multiple buildings that form a self-sufficient ensemble.

Technology Highlight: Outbuildings, inspired by traditional lean-to sheds, function as standalone solar collector sites. These buildings provide heat and power to the dwelling by generating photovoltaic electricity and solar thermal energy.

Team Website: www.thesolarhomestead.com

Team Blog: www.thesolarhomestead.blogspot.com



CANADA

Overview: The University of Calgary's entry is a unique response to the culture of Treaty 7 Native Peoples in Southern Alberta. Inspired by Canada's Southern Alberta Aboriginal people, TRTL (which stands for Technological Residence, Traditional Living) has a rounded form and is aptly nicknamed "Turtle." The house's east-facing entrance and south-facing windows acknowledge the sun as a traditional source of energy and life.

Technology Highlight: TRTL features a photovoltaic system that operates at 93% of its optimal efficiency.

Team Website: www.solardecathlon.ca

Team Blog: solardecathlon.ca/latest-news

FLORIDA INT'L



Overview: Florida International University's perFORM[D]ance House includes a contemporary interpretation of traditional porches. Its canopy features a versatile design that adapts to Florida's hot, humid, and sunny climate by allowing various levels of enclosure.

Technology Highlight: Since the roof of the house is flat, the photovoltaic solar panels are tilted to an angle appropriate for either Miami or Washington D.C. This angle allows the panels to collect the maximum amount of energy from direct exposure to the sun's rays.

Team Website: solardecathlon.fiu.edu

ILLINOIS



Overview: The University of Illinois at Urbana-Champaign returns to their third consecutive Solar Decathlon with Re_home, a rapid-response solution for rebuilding after a natural disaster. Re_home uses a swift deployment strategy to offer an immediate and sustainable solution for a family left without a home.

Technology Highlight: Conditioning system fans exchange interior and exterior air while energy is recovered across the heat-pump refrigeration cycle.

Team Website: www.solardecathlon.illinois.edu

Team Blog: solardecathlonuiuc.wordpress.com

MARYLAND



Overview: University of Maryland's Solar Decathlon entry is inspired by the Chesapeake Bay ecosystem. Their house, WaterShed, is a model of how the built environment can help preserve watersheds everywhere by managing storm water on site, filtering pollutants from greywater, and minimizing water use.

Technology Highlight: The green roof slows rainwater runoff to the landscape while simultaneously improving the house's energy efficiency. Rainwater is collected in a cistern, while grey water from the shower, lavatory, clothes washer, and dishwasher is collected and filtered through constructed wetlands.

Team Website: 2011.solarteam.org

Team Blog: 2011.solarteam.org/news



MIDDLEBURY COLLEGE

Overview: Middlebury College's Self-Reliance is a comfortable, functional family house inspired by the timeless New England farmhouse. The construction uses natural materials, including sustainably forested timber and Vermont slate.

Technology Highlight: The house features a gable roof that sheds snow in winter and provides an appropriate slope for a south-facing photovoltaic array and solar water heating panels.

Team Website: solardecathlon.middlebury.edu

Team Blog: solardecathlon.middlebury.edu/blog



NEW ZEALAND

Overview: Victoria University of Wellington's First Light entry is inspired by the traditional New Zealand holiday home— the "Kiwi bach." First Light's design reflects a relaxed lifestyle in which socializing and connecting with the outdoors are central to living. The house is named First Light because the sun's first rays land on New Zealand each day as the earth rotates.

Technology Highlight: The house plays host to an innovative drying cupboard that dries clothes quickly by pumping solar-heated hot water through a heat exchanger in addition to using recycled sheep's wool as insulation.

Team Website: firstlighthouse.ac.nz

Team Blog: firstlighthouse.ac.nz/blog



OHIO STATE

Overview: The Ohio State University's enCORE presents a family-friendly solution for residential needs while addressing the world's growing energy problem. enCORE features living spaces arranged around a central core that contains the house's mechanical and plumbing systems.

Technology Highlight: The house features a unique solar thermal hot air system that maximizes occupant comfort and minimizes energy consumption.

Team Website: solardecathlon.osu.edu

Team Blog: solardecathlon.osu.edu/blog

PARSONS NS STEVENS



Overview: Parsons the New School for Design and Stevens Institute of Technology’s Empowerhouse is being developed in partnership with Habitat for Humanity of Washington, D.C., and the D.C. Department of Housing and Community Development. Immediately following the Solar Decathlon 2011, the house will become a home for a family in the Greater Deanwood neighborhood, east of the Anacostia River in Washington, D.C.

Technology Highlight: The Empowerhouse requires up to 90 percent less energy for space heating and cooling compared to an ordinary home—and up to 40 percent less than typical high-efficiency homes—thanks to the incorporation of passive house principles.

Team Website: parsit.parsons.edu

Team Blog: parsit.parsons.edu/blog

PURDUE



Overview: Blending technological innovation and functional aesthetics, Purdue University’s INhome (short for “Indiana home”) is an innovative, yet practical, house that meets the needs of a typical Midwestern consumer in today’s cost-competitive residential market.

Technology Highlight: Purdue’s INhome is equipped with carefully placed ductwork that allows for conservation of warm and cool air as it is distributed throughout the house.

Team Website: www.purdue.edu/inhome/

Team Blog: purdueinhome.wordpress.com

SCI-ARC/CALTECH



Overview: The Southern California Institute of Architecture and California Institute of Technology’s CHIP house is inspired by California’s soaring land costs and urban sprawl. It features a flexible central space with large apertures that can open for coastal life in Southern California.

Technology Highlight: CHIP house has a unique exterior envelope strategy: PUFT, a skin and insulation assembly, which turns conventional wisdom on its head, wearing its thermal performance “on its sleeve”. The name is a combination of the insulation’s “puffy” feature with the skin’s tufting strategies that give CHIP its signature look, not unlike the look of a space suit or down jacket.

Team Website: www.chip2011.com

Team Blog: www.chip2011.com/blog

TEAM BELGIUM

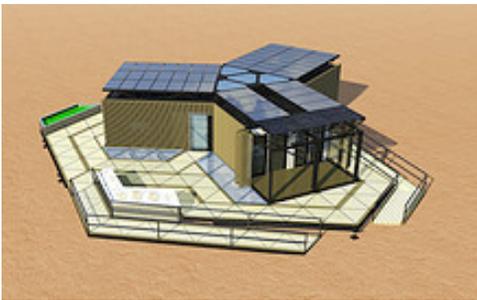


Overview: Aiming for simplicity with E-Cube, Ghent University's ultra-efficient house is conceived as an affordable building kit that can be assembled in days rather than months.

Technology Highlight: E-Cube follows the Passive House Standard, which implies that the performance of the building envelope ensures that the house can be heated without a conventional heating system. The additional cost required to achieve such benefits is recovered through the reduced energy demand (which allows for a smaller number of PV panels to be installed).

Team Website: www.solardecathlon.ugent.be/nl

TEAM CHINA



Overview: Tongji University's entry, Y Container, combines six recycled shipping containers into a succinct, Y-shaped house. Y Container is easy to transport, assemble, and expand—providing the freedom to live anywhere with low costs and clean energy.

Technology Highlight: Y Container includes vacuum insulation materials and phase-change materials that block heat transfer and moderate the interior temperature passively.

Team Website: solardecathlon.tongji.edu.cn

TEAM FLORIDA



Overview: The University of South Florida, Florida State University, the University of Central Florida, and the University of Florida have joined forces to build FLeX House, which is tailor-made for Florida's hot, humid climate and sized for a young, moderate income couple. The house opens up to take advantage of passive cooling during mild months and closes down to take advantage of the highly efficient mechanical systems during months of temperature extremes.

Technology Highlight: FLeX House includes a landscape that provides food, reduces solar heat gain, and prevents storm water runoff.

Team Website: www.flexhouse.org

Team Blog: www.flexhouse.org/media

TEAM MASSACHUSETTS



Overview: Massachusetts College of Art and Design and University of Massachusetts at Lowell's 4D Home is an affordable, ultra-efficient house that can adapt to a family's changing needs. The team hopes it will serve as a precedent for homebuilders and designers creating sustainable homes in New England.

Technology Highlight: The 4D Home employs building-integrated photovoltaic panels to reduce cost and improve its exterior appearance. High-efficiency PV panels are integrated into the southern trellis over the deck, where they generate the house's electricity, and also shade the deck and living room in the summer, while still allowing low-angle sunlight to penetrate in the winter.

Team Website: 4dhome.us

Team Blog: 4dhome.us/blog

TEAM NEW JERSEY



Overview: Rutgers - The State University of New Jersey and New Jersey Institute of Technology's melded cutting-edge fabrication techniques and the age-old technology of concrete to finalize their Solar Decathlon entry. ENJOY House's inverted-hip shape roof is calibrated for optimal solar energy and rainwater collection, contributing to an architecture informed by performance criteria.

Technology Highlight: Innovation comes from the seamless, complimentary integration of the mechanical and electrical systems. A centralized computer monitors and controls the house's climate, lighting, and entertainment, making a home that is intuitive, easy to use, and encourages its owners to think about energy in a whole new way.

Team Website: www.solarteamnewjersey.com

TEAM NEW YORK



Overview: Team New York (The City College of New York)'s Solar Roofpod proposes a solution to urban rooftops that are largely under-used. Intended for existing mid-rise buildings, the house enables eco-conscious city dwellers to live lightly by producing solar power, cultivating roof gardens, and retaining and recycling storm water.

Technology Highlight: A thermal storage system that uses paraffin as the phase-change material to reduce the size of the tank by half.

Team Website: www.ccnyolardecathlon.com

Team Blog: ccnyolardecathlon.com/the-news

TENNESSEE



Overview: The University of Tennessee's Living Light: UT Solar Decathlon House was inspired by the cantilever barns of southern Appalachia. The systems in the dynamic façade and integrated roof array are scalable and tunable to a range of climates and applications.

Technology Highlight: An energy recovery ventilator harvests air through the double façade system to supply the house with passively warmed or cooled fresh air.

Team Website: www.livinglightutk.com

Team Blog: livinglightutk.com/blog

TIDEWATER VIRGINIA



Overview: Old Dominion University and Hampton University worked together to create Unit 6 Unplugged – a modular house that blends seamlessly into a historic center-city neighborhood. Unit 6 is conceived of as part of a larger, six-unit multifamily building. By sharing infrastructure costs between units of the building, this energy-efficient house is made more affordable.

Technology Highlight: A hot water storage tank replaces the auxiliary heating coil with an inline heater to minimize losses.

Team Website: www.teamtidewaterva.org

Team Blog: teamtidewaterva.blogspot.com