



U.S. Department of Energy's

# SOLAR DECATHLON



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SOLAR DECATHLON

## Overview

- Why is it important for schools to participate?
- Examples of some of the things being done



skyblue



## Objectives

- Build capacity – technical and physical
- Demonstrate net-zero energy houses are feasible
- Show that these houses can be attractive and marketable



## Why Do Schools Participate?

- An interdisciplinary project - thus will enhance interdisciplinary learning and inter-professional training, (4 Colleges / 16 Departments or Centers involved)
- A project which can directly be applied in classroom and homework projects (more “teachable moments”),
- Addresses an issue which has significant personal impact on everyone – will engage research and scholarship which addresses significant, current and relevant problems that face the Commonwealth,
- Can have significant undergraduate and graduate applied research projects,
- Will prepare students with knowledge for leadership in a growing economy.





## Additional Reasons for Participation

- Enhance school's stature among peers by participating in an elite international group competition due to its very high visibility and significant PR upside potential
- Will be an intellectual endeavor that improves communities by demonstrating that sustainable net-zero energy houses are possible in their home locations,
- Builds upon current research and teaching strengths in the emerging interests of sustainable, energy efficient building design and construction, and
- Can serve as an economic development partner by providing intellectual and research materials which will be used by qualified students in a developing industry



## UK Teams

- Communications
- Architecture
- Engineering
  - PV / Electrical Distribution
  - PV Cooling
  - Water Heating
  - HVAC
  - Energy Management
  - Frame & Deployment





## Concepts

- Living under the sun
- Connection with our surroundings
- “Floating roof”
- Setup / deployment quick and easy
- Self contained
- ADA Compliant
- Energy efficiency first, renewables second







## Unique Features

- 13 KW Photovoltaics (42 panels)
- 4 Inverters
- Single axis tracking (Altitude)
- Evacuated tube solar water heater (60 tubes)
- Air-source water heater heat pump
- Water thermal storage tank
- Central switched circuits for chargers
- Extensive use of high efficiency lighting
- Electrochromic glass
- Weather-forecast-based building control optimization
- ...



## Uses after the '09 Solar Decathlon

- World Equestrian Games
- State Fair
- Home Shows
- Test and Experimental Uses



