Sandy Stannard, Professor of Architecture
Cal Poly San Luis Obispo
2015 Teams
California Polytechnic State University, San Luis Obispo
California State University, Sacramento
Clemson University
Crowder College and Drury University
Missouri University of Science and Technology
New York City College of Technology
State University of New York at Alfred College of Technology and Alfred University
Stevens Institute of Technology
University of Florida, National University of Singapore, and Santa Fe College
The University of Texas at Austin and Technische Universitaet Muenchen
University at Buffalo, The State University of New York
University of California, Davis
University of California, Irvine; Saddleback College; Chapman University; and Irvine Valley College
Vanderbilt University and Middle Tennessee State University
West Virginia University and University of Roma Tor Vergata
Western New England University, Universidad Tecnológica de Panamá, and Universidad Tecnológica Centroamericana
Yale University
2015 Competition: Ten Contests
• Architecture Contest (juried)
• Market Appeal Contest (juried)
• Engineering Contest (juried)
• Communications Contest (juried)
• Affordability Contest (juried)
• Comfort Zone Contest (measured)
• Appliances Contest (measured)
• Home Life Contest (measured)
• Commuting Contest (measured)
• Energy Balance Contest (measured)
### A-1. Overview Event Calendar

This calendar provides an overview of daily activities. Refer to the Detailed Event Schedule (Appendix A-3) for a complete list and schedule of daily activities.

<table>
<thead>
<tr>
<th>SUNDAY</th>
<th>MONDAY</th>
<th>TUESDAY</th>
<th>WEDNESDAY</th>
<th>THURSDAY</th>
<th>FRIDAY</th>
<th>SATURDAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAY 0 - SEPT 27</td>
<td>DAY 1 - SEPT 28</td>
<td>DAY 2 - SEPT 29</td>
<td>DAY 3 - SEPT 30</td>
<td>DAY 4 - OCT 1</td>
<td>DAY 5 - OCT 2</td>
<td>DAY 6 - OCT 3</td>
</tr>
<tr>
<td>REGISTRATION (12 p.m. - 2 p.m.; 4 p.m. - 7 p.m.)</td>
<td>REGISTRATION (6:30 a.m. - 6:30 p.m. Daily)</td>
<td>STAND-ALONE ASSEMBLY (Begins at 7 a.m.)</td>
<td>STAND-ALONE ASSEMBLY</td>
<td>STAND-ALONE ASSEMBLY</td>
<td>STAND-ALONE ASSEMBLY</td>
<td>STAND-ALONE or GRID-TIE ASSEMBLY</td>
</tr>
<tr>
<td>ALL-TEAM MEETING (2 p.m. - 4 p.m.)</td>
<td>STAND-ALONE or GRID-TIE ASSEMBLY (Until 12 p.m.)</td>
<td>GRID-TIE ASSEMBLY (Until 8 a.m.)</td>
<td>FINAL SITE CLEANUP, STAGING AND SIGNAGE (8 a.m. - 12 p.m.)</td>
<td>REST DAY</td>
<td>CONTESTS (11:00 a.m. - Midnight)</td>
<td>CONTESTS (24 hours)</td>
</tr>
<tr>
<td>WATER DELIVERY (9 a.m. - 5 p.m.)</td>
<td>GRID-TIE ASSEMBLY (After 12 p.m.)</td>
<td>STOP WORK FOR LAST-CHANCE FINAL INSPECTIONS*</td>
<td>OPENING REHEARSAL (3 p.m. - 3:30 p.m.)</td>
<td>OPENING CEREMONY (9:30 a.m. - 11 a.m.)</td>
<td>PUBLIC EXHIBIT (11 a.m. - 7 p.m.)</td>
<td>PUBLIC EXHIBIT (11 a.m. - 7 p.m.)</td>
</tr>
<tr>
<td>CONTESTS (24 hours)</td>
<td>CONTESTS (24 hours)</td>
<td>JURY WALKTHROUGHS (7:30 a.m. - 12:30 p.m.) and (7:30 p.m. to 9:30 p.m.)</td>
<td>JURY WALKTHROUGHS (7:30 a.m. - 12:30 p.m.) and (7:30 p.m. to 9:30 p.m.)</td>
<td>JURY WALKTHROUGHS (7:30 a.m. - 10:00 a.m.) and (7:30 p.m. - 9:30 p.m.)</td>
<td>AFFORDABILITY &amp; MARKET APPEAL RESULTS (10:00 a.m. - 11 a.m.)</td>
<td>PUBLIC EXHIBIT (11 a.m. - 7 p.m.)</td>
</tr>
<tr>
<td>PUBLIC EXHIBIT (11 a.m. - 7 p.m.)</td>
<td>DISASSEMBLY (Begins at 7 p.m.)</td>
<td>DISASSEMBLY</td>
<td>DISASSEMBLY</td>
<td>DISASSEMBLY</td>
<td>DISASSEMBLY</td>
<td>VICTORY CELEBRATION (7:30 p.m. - 10:30 p.m.)</td>
</tr>
</tbody>
</table>

**Last Updated On:** 2014-06-09

* Significant precipitation or the occurrence of an unforeseen circumstance that equally affects all teams' progress during the assembly phase may result in a postponement of the last chance final inspections. The remainder of the schedule will remain unchanged.
People
Place
Resources
The best way to achieve comfort with few mechanical systems is to use double pane windows, utilize internal heat gain in the winter and place glass in the south while keeping it completely shaded during the summer.

- Shading
- Insulation
- Mass
- Natural Ventilation
US Energy Use by Sector

“A reorganization of existing data - combining the energy required to run residential, commercial, and industrial buildings along with the embodied energy of industry-produced materials like carpet, tile, and hardware - exposes architecture as the hidden polluter.”

METROPOLIS October 2003
INhouse.

interactive
intuitive
integrated

SOLAR CAL POLY
The creation of an environment that enables the resident to adjust the house to meet changing needs.
Project location: Irvine, CA
Sun study start date time: 10/10/2010 7:15:00 AM
Sun study end date time: 10/20/2010 4:19:00 PM
Cumulative

Schema A (BTU/ft²)

- 8629
- 4729
- 830
Constructing Wetlands

Every drop has a purpose.

The goal is to keep as much water that enters the site, on the site. We've accomplished this by distributing rainwater from the roof into bioswales and directing greywater from inside the home into a tank of constructed wetlands to be filtered for irrigation use.

What is greywater?

Water from the kitchen, bathroom, and laundry facilities (greywater) is collected and directed to a tank of constructed wetlands to be filtered for irrigation use. Greywater is not potable, but it can be used for non-potable purposes such as irrigation.

Are they dead or alive?

The plants you see at your feet represent a group of species referred to as "resurrection plants" because they can survive drought by reducing their relative water content to less than 5%. They may appear dead now, but when rehydroated, they will revive!
intuitive.

With feedback from monitoring systems and a short learning curve, all passive and active systems soon become a lifestyle.
Shading
Insulation
Mass
Natural Ventilation

Lutron Caséta. Wireless
Control your lights, shades and temperature from anywhere

New! PRO Models
During the day, interior air is run through the duct and heat is collected in the phasechange material. This keeps the indoor air temperature low because the phase-change material absorbs and stores the heat.

At night, cold air from the exterior is run through the duct and heat from the day is slowly released, emptying the material of its thermal energy so it can collect more heat the next day.

collects heat → melts
releases heat → solidifies
The resident dwells between the core and the envelope, in open and comfortable spaces where active and passive systems meet.
Bifacial Panels

What is a bifacial panel?
Bifacial panels are double-sided solar panels that can collect energy from both of their faces.

How are we using them?
We have blended indoor and outdoor space by covering a patio with the translucent bifacial panels, allowing residents to enjoy the outdoor environment under diffused light, while the home simultaneously generates energy.

Give it a spin!
See the panel suspended to your left? Go ahead, give it a gentle twist. While you do, try to make out the two sets of cells.

Bifacial Solar Panels
Light is absorbed from both sides.

Conventional Solar Panels
Light is absorbed from one side.
[California]
[Madrid]
[Cincinnati]
[Texas A+M]
It is time for us to lead in the race against dangerous climate change.

In the year 2035, three quarters of the built environment in the U.S. will be either new or renovated. This transformation over the next 30 years represents a historic opportunity for the architecture and building community to reverse the most significant crisis of modern time, climate change.

Source: Architecture 2030
College of Architecture + Environmental Design faculty

College of Engineering faculty
Kim Shollenberger (mechanical engineering) Dale Dolan (electrical engineering) John Clements (computer science)

College of Liberal Arts faculty
Howard Vogl (graphic communication)

web: calpolysolardecathlon.org contact: solarcalpoly@gmail.com

Student Leaders
Project Managers: Lisa-Marie Mueller, Alyssa Parr
Architectural Project Managers: Michael Fletcher, Brian Murillo
Construction Manager: Eric Pinuelas

….plus many additional architecture, engineering, computer science, graphic communications, etc. students who have been part of the journey!