



CS/EE/ME 75 - Solar Decathlon

27 September 2010



Harry Atwater

Melany Hunt

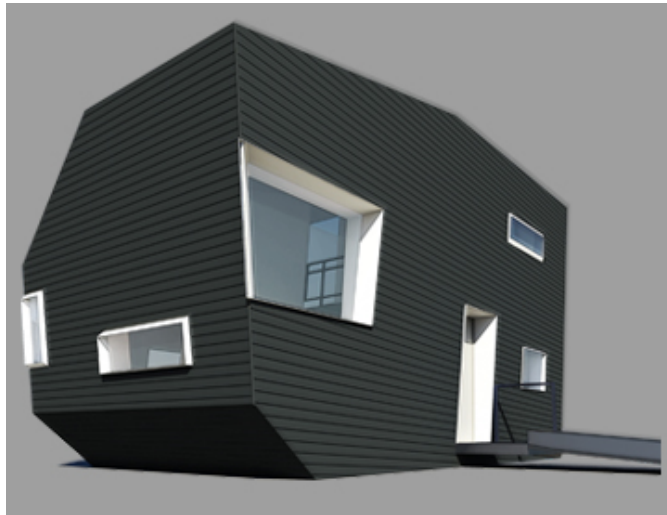
Richard Murray

Annie Liu

Prakhar Mehrotra

Dan Turner-Evans

Engineering and Applied Science
California Institute of Technology



Meeting Goals and Agenda

Goals

- Provide an overview of the 2011 Solar Decathlon and baseline design
- Review the course structure for CS/EE/ME 75 and describe how to participate

Agenda

- 3:00 Goals, Agenda, Notetaker
- 3:05 2011 Solar Decathlon review (Reed Finlay, SCI-Arc)
- 3:20 Engineering team baseline design status (Fei Yang, Caltech)
- 3:35 CS/EE/ME 75 course overview and organization
- 3:50 Q&A
- 3:55 Adjourn

Notetaker: _____

- Record notes and action items from meeting; post on wiki

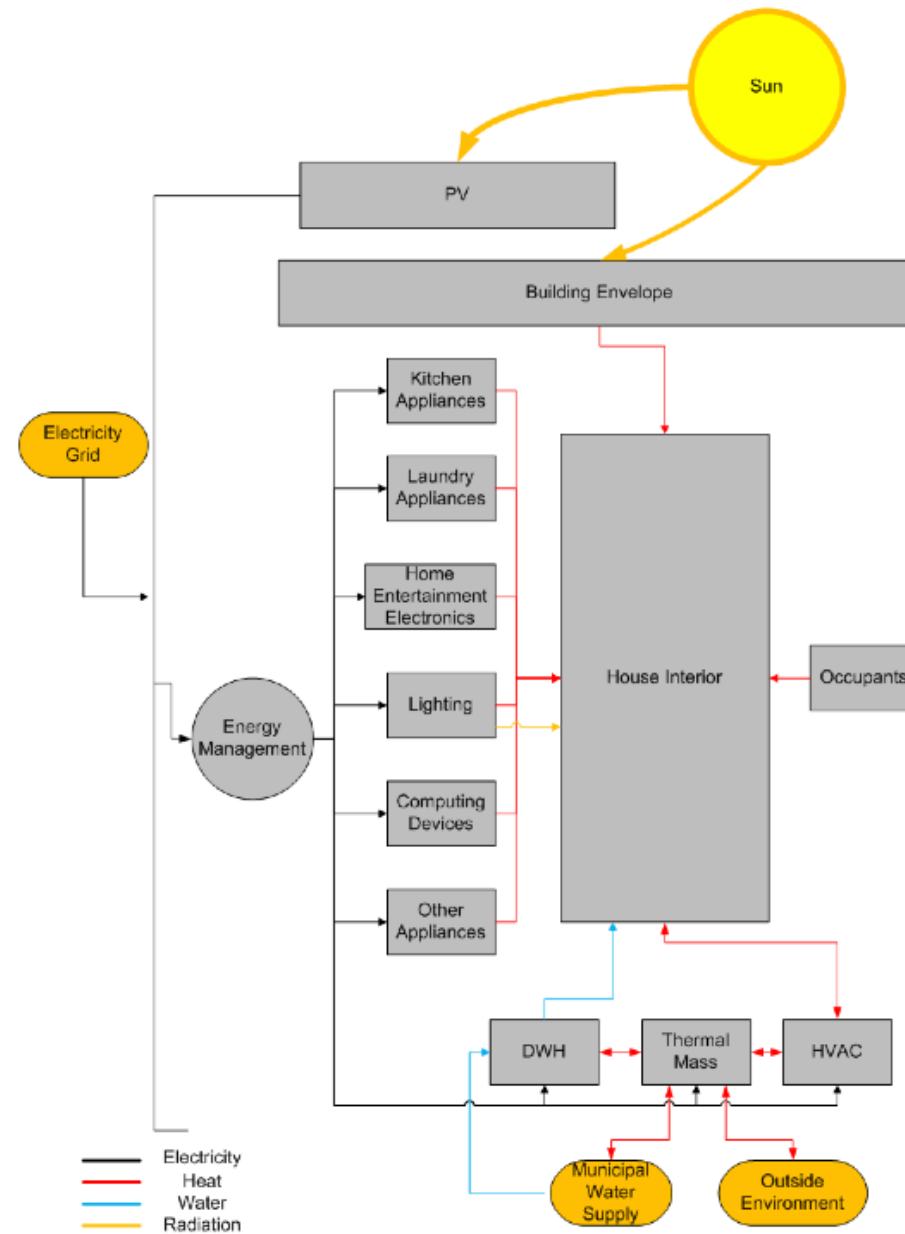
Solar Decathlon Overview (Reed)

SCI-Arc/Caltech Solar Decathlon Team

Overview Presentation
August 26th, 2010



Baseline Design (Fei)



CS/EE/ME 75 Organization

Integrated Product Team (IPT) Project manager (staff) Project engineer: TBD (ug; 9u)			
Mechanical Systems Instr: M. Hunt TA: Prakhar Mehrotra Team rep: TBD (ug; 9u)	Electrical Systems Instr: H. Atwater TA: Dan Turner-Evans Team rep: TBD (ug; 9u)	Computing Systems Instr: R. Murray TA: Annie Liue Team rep: TBD (ug; 9u)	SCI-Arc Lead: Reed Finlay Instr: Jones, Oyler Team reps: 2
• 8-12 Caltech ug • 2-4 SCI-Arc ug/gr • 2-4 advisors • HVAC • Water systems • Building shell • Appliances • Fire protection	• 8-12 Caltech ug • 2-4 SCI-Arc ug/gr • 2-4 advisors • Electrical power • Photovoltaics • Lighting • Consumer electronics	• 8-12 Caltech ug • 2-4 SCI-Arc ug/gr • 2-4 advisors • Energy monitoring • Security system • Home automation • Weather modeling	• 24-30 SCI-Arc students • 4-8 Caltech ug • 2-4 advisors • Interior design • Exterior design • Communications • Documentation • Modeling • Mock up

Add'l support teams

- System admin
- Facilities
- Others as needed

Team assignment guidelines

- All CS/EE/ME 75 students on 1 subsystem team (1-4 per subsys)
- Students w/ 6-9 hrs/week on add'l supporting team (CIT, SCI-Arc)
- IPT role requires 9 hrs/week; rotate assignments each term

CS/EE/ME 75 Goals, Objectives and Schedule

Fall 2010 Goals

- Build integrated team that can win the 2011 Solar Decathlon
- Complete design development phase; submit design (23 Nov)
- Explore options for providing technology *sizzle* in our design

Objectives

- For subsystems with existing baseline designs:
 - Revalidate the baseline design; verify max points possible
 - Agree on specifications and choices with IPT, SCI-Arc
 - Model-based analysis of system performance
 - Documented baseline design → DD phase deliverable
 - Evaluate technology options; perform cost analysis for each
- For subsystems without existing baseline designs:
 - Analyze design options: perf, cost, electric/thermal loads
 - Establish baseline design to achieve max points
 - Documented baseline design → DD phase deliverable
- Develop and maintain system-level cost/energy budgets and verify max points are possible
 - Provide design capable of max points on 95th percentile day
 - Provide design capable of 90% max points on worst case day (over last 20 years)

Schedule

- Weeks 1-4: team formation, planning, baseline design analysis
- Week 6-8: design refinement, document'n, design reviews
- Week 9-10: technology options, Q2 planning

Milestones

- 13 Oct: subsystem teams know SD rules + baseline status
- 27 Oct: revalidated/preliminary baseline designs complete
- 10 Nov: rigorous design analysis and documentation complete
- 23 Nov: design development document due
- 10 Dec: final reports due

CS/EE/ME 75 Course Administration

Class homepage: http://www.cds.caltech.edu/~murray/wiki/CS-EE-ME_75

Course meetings (first term)

- Project meetings: time and location TBD (1 hr, weekly)
- Team meetings: time and location TBD (1.5 hr, weekly)

Units (default = 3; file signed add card by end of week 3 to change)

- 3 units: participate in one design team; meetings + help with presentations
- 6 units: additional design work and/or participation in second (non-design) team
- 9 units: even more design work; required for all team rep roles

Grading

- 20% Homework (weeks 1-4 only)
- 20% Subsystem presentations (team effort)
- 40% Documentation of work for the term (individual writeup)
- 20% Participation (attendance, discussion, contributions)

Collaboration policy: full collaboration *required*. (Write up your own final report)

Signup sheets due Wed (29 Sep) at noon in box outside 109 Steele