



## Societal Outreach and Impact through the Undergraduate Program

While Engineering is quintessentially a social activity, traditional engineering undergraduate education has focused more on “the object”, be it a component or a small system, rather than on systems and their interaction with society. Here I discuss some interesting new shifts in student projects and the implications for the curriculum. This will be followed by a detailed look at the project “Engineers for a Sustainable World” (formerly “Engineers Without Frontiers”) by Regina Clewlow and Rachel Davidson.

Engineering College Council Meeting, April 15, 2004  
Zellman Warhaft, Associate Dean for Diversity and Professor,  
Mechanical & Aerospace Engineering



## *The Solar Decathlon*

- Ten competitions focused on architecture, climate control, energy production and consumption, marketability, etc.
- Sponsored by the US Dept of Energy, NREL, BP Solar, Home Depot
- Competition took place in 2002, 14 teams, 1<sup>st</sup> Colorado, 2<sup>nd</sup> UVA, 3<sup>rd</sup> Auburn
- Competition week in Oct. 2005, on National Mall, 19 teams





### *The CUSD Team*

- Composed of primarily architecture, engineering, and business students
- Started in Spring 2003 with team of engineers and architects writing proposal for admission
- Two different opportunities for credit
  - ▣ M&AE 490
  - ▣ Architecture Studio



### *The CUSD Team Makeup*

- 55 students on the team
  - ▣ 20 Engineers
  - ▣ 15 Architects in Studio
  - ▣ 6 MBAs
  - ▣ 14 from Arts, HumEc, CALS, etc
- 1-1 Male/Female ratio
- Degrees:
  - ▣ 43 Undergrad
  - ▣ 8 Masters
  - ▣ 4 Ph. D.



## *The CUSD Team*

- Group split into 5 subteams by function

- HVAC
- Controls
- Appliances
- Business
- Architecture



## *The CUSD Team Experience for Students*

- Learn sustainable design principles
- Learn passive solar strategies
- Develop communication skills
- Gain research experience
- Familiarize with professional fields
- Develop hands-on skills
- Gain experience with practical applications
- Gain academic credit



### *Educational Outreach*

- Students at Ithaca HS helping with publicity in local schools
- Outreach to local middle and elementary schools



### *The CUSD Highlights*

- Several points of innovation, including new construction techniques and residential desiccant cooling system
- Developing relationship with GE for sponsorship
- Large, interdisciplinary, and productive team of students assembled
- Design phase almost complete, looking forward to construction in Fall 2004



**WHICH IS YOUR CORNELL?**





## “KYOTO NOW”

Student grassroots organization formed in Spring '02

### Present Activities:

Task force with administration, utilities and faculty. Regular meetings covering:

- Energy conservation in buildings across campus
- Wind power initiative for Cornell campus (13MW)
- Winter break energy conservation
- Outreach to campus & community
- Energy monitoring
- Solar energy for west campus



### Kyoto Now! Current Projects

#### Renewable Energy Initiative

The Kyoto Task team, an official Cornell committee dedicated to creating changes on campus that will help reduce Cornell's greenhouse gas emissions

***To learn more about our past projects, check out our website at***

***<http://www.rso.cornell.edu/kyotonow/atcornell>***





### Implications

CUSD, “Kyoto Now” and “Engineers for a Sustainable World” are all recent projects. There is strong engineering undergraduate representation, a high proportion of women, and a new sense of interdisciplinary activity.

There are also new courses on energy and the environment and on the societal impacts of engineering. Such courses and projects indicate ways to enhance the engineering curriculum to make it more attractive to women and other groups that are motivated not only by traditional engineering activities, but by social and environmental issues for which technology can have a direct influence.