



# **Educational Programs at DOE and NREL:**

*Attracting the next generation to careers  
in renewable energy technologies  
through student competitions*

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November 30, 2000  
Electric Energy Systems and Sustainability Workshop

# Outline

- Rationale
- Role of DOE and NREL
- Competition at the high school level
- Collegiate competition - Sunrayce
- Sunrayce success stories
- A new challenge

# Rationale

- Robust high-tech job market exists
- We need to attract best and brightest
- Exposure to renewables is key
- Student competitions provide
  - Motive
  - Opportunity

# Role of DOE and NREL

- Long history of government - academic programs
- DOE commitment within PV program
- Partnerships with laboratory, industry and professional organizations
  - Link graduates with career paths in renewables

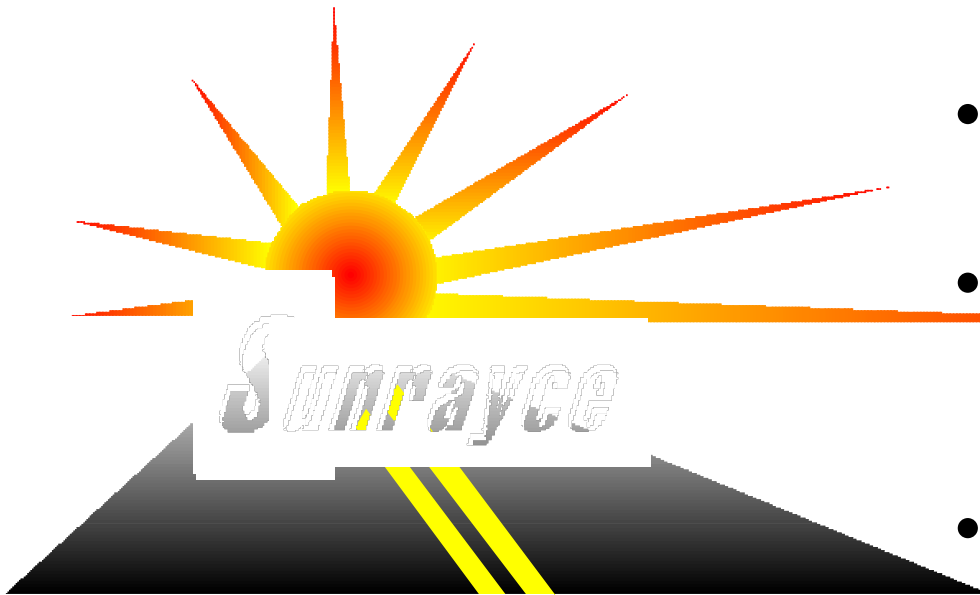
# Competition at the High School level

- PV design competition held in conjunction with IEEE PV Specialists Conference every 18mos.
- Showcases PV as a technology and a career
  - Demonstrates practical applications
  - Science fair format familiar to students
  - Provides opportunity to meet the experts
- Typical project takes ~2-6 months
- Getting students involved: science teachers and/or mentors are critical to success

# Collegiate Competitions

- Bring focus to specific technologies
- Provide hands-on opportunities to address real-world problems
- Stimulate curriculum evolution
- Encourage students to promote renewables

# Sunrayce (1990, 1993, 1995, 1997, 1999)



- DOE primary sponsor since 1993
- Cross-country races have provided national technology exposure
- ~2-year cycle with ~1-week race

**“Race for the Future”**

# Sunrayce--typical scene





# Sunrayce chronology

- DOE/NREL released an RFP to colleges inviting entries, 2 yrs. prior to each event
  - RFP Selection Criteria:
    - Design
    - Organization, teaming, fundraising
    - Academic focus
- 30-40 teams were selected to participate
- Each team spent nearly 2 years learning, designing, fundraising, fabricating, modeling, testing, & qualifying before the race began.

# Sunrayce sunsets...



...to become the American Solar Challenge

# Sunrayce Success Stories

- More than 100 colleges and universities across North America have participated in at least one Sunrayce.
- New renewable energy curricula have been developed
- Thousands of students participated
  - Many are now in the automotive industry
  - All understand the challenge and promise of PV
- Solar-powered cars are part of our society
  - *Racing the Sun* - a Hollywood movie featuring engineering students as heroes
  - Mattel's *Hot Wheels* modeled after a California team
- New, successful businesses have been launched

# Solar Decathlon



- New, 10-event competition in 2002
- Targets renewables in housing, design, and transportation
- RFP released Oct. 2000, proposals due Feb. 2001

<http://www.solardecathlon.net>

# Solar Decathlon



- Only renewable energy is allowed to power the 10 contests
- Entries will be judged on design as well as performance
- The event will be held on the Mall in Washington, DC
- The solar decathlon challenges engineering and architecture students to collaborate

# The 10 contests:

- Design and Livability
- Graphics and Communication
- Design Presentation and Simulation
- The Comfort Zone
- Refrigeration
- Hot Water
- Daily Tasks
- Lighting
- Home Business
- Getting Around

# Proposal Evaluation Criteria

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- 50%      Technical Innovation and Content
- 20%      Organization and Project Planning
- 15%      Curriculum Integration
- 15%      Fund Raising and Team Support

# Solar Decathlon on the Mall





# Solar Decathlon Plan View

