

**NATIONAL SCIENCE BOARD
TASK FORCE ON SUSTAINABLE ENERGY**

**Roundtable Discussion #2
on Science and Engineering (S&E) Challenges
Related to the Development of Sustainable Energy**

National Renewable Energy Laboratory (NREL) Visitors Center
15013 Denver West Parkway
Golden, CO 80401
June 19, 2008
8:00 a.m. – 5:00 p.m.

AGENDA

June 19, 2008

- 7:30 a.m. **Registration Begins** (*coffee and breakfast refreshments available to invited participants*)
- 7:30 a.m. **Shuttle van departs the Denver Marriott West Hotel to transport roundtable participants to NREL’s Visitors Center. Please meet at the fireplace in the main lobby of the hotel.**
- 8:00 a.m. **Welcoming Remarks**
- Dr. Steven C. Beering, Chairman, National Science Board
- 8:05 a.m. **Summary of the First Task Force Roundtable Discussion on February 8, 2008; Overview, Purpose, and Goals of Today’s Roundtable Discussion**
- Dr. Dan E. Arvizu and Dr. Jon C. Strauss, Co-Chairmen, Task Force on Sustainable Energy
- 8:20 a.m. **Process and Logistics for Board Roundtable Discussions**
- Dr. Craig Robinson, Acting Executive Officer, National Science Board
- 8:25 a.m. **Introduction of Participants**
- 8:35 a.m. **Presentation: Sustainable Energy Supplies to Power Higher Education: Challenges and Opportunities**
Speaker: Mr. Dave Newport, Director, Environmental Center, University of Colorado-Boulder (*Confirmed*)

9:00 a.m. **Discussion: Linking Regional and Higher Education Activities to a National S&E Research and Education Initiative in Sustainable Energy**
Co-Moderators: Dr. Dan Arvizu and Dr. Jon Strauss

Focus Questions:

- 1) How can research and educational initiatives in energy conservation, energy efficiency, and sustainable energy be coordinated and expanded on local, state, and Federal levels?
- 2) What are the specific opportunities for institutions of higher education in educating the sustainable energy workforce and in educating the greater public? How can NSF contribute in this endeavor?

10:00 a.m. **Break**

10:15 a.m. **Presentation: *Renewable Energy Technologies***
Speaker: Dr. Douglas Arent, Director, Strategic Energy Analysis and Applications Center, National Renewable Energy Laboratory (Confirmed)

10:45 a.m. **Discussion: New Generation Sustainable Energy Technologies**
Co-Moderators: Dr. Dan Arvizu and Dr. Jon Strauss

Focus Questions:

- 1) What are the basic S&E funding gaps in renewable energy technologies that NSF can fill?
- 2) What are the S&E research needs and technology options that exist in a sustainable energy economy? What are the technology options that have the best opportunity for successful deployment?
- 3) What does the international landscape look like in regards to sustainable energy technologies? What are some current and potential opportunities for international collaboration?
- 4) What are some of the sustainability and life-cycle concerns and issues for these sustainable energy technologies?

12:15 p.m. **Lunch** (*provided to roundtable participants*)

Luncheon Presentation: *The U.S. Department of Energy Solar Decathlon*
Speaker: Mr. Mike Wassmer, Senior Engineer, National Center for Photovoltaics, National Renewable Energy Laboratory (Confirmed)

1:30 p.m. **Break**

1:45 p.m. **Presentation: *Nuclear Science and Technology***
Speaker: Dr. David Hill, Deputy Director, Idaho National Laboratory (Confirmed)

2:00 p.m. **Discussion: Sustainable Nuclear Technology Status and Potential**
Co-Moderators: Dr. Dan Arvizu and Dr. Jon Strauss

Focus Questions:

- 1) What are the current advanced nuclear recycling and reactor research initiatives directed towards a sustainable nuclear fission energy source?
- 2) What is NSF's current role in S&E research for sustainable nuclear energy technologies? What are new opportunities for NSF to further contribute to this research?
- 3) What does the international landscape look like in regards to nuclear energy technology? What are some current and potential opportunities for international collaboration?

2:25 p.m. **Presentation: *Clean Coal Technology***
Speaker: Mr. Carl Bauer, Director, National Energy Technology Laboratory
(Confirmed)

2:40 p.m. **Discussion: Advanced Clean Coal Technologies**
Co-Moderators: Dr. Dan Arvizu and Dr. Jon Strauss

Focus Question:

- 1) What is the role of clean coal technologies in working towards a more sustainable energy economy?
- 2) What does the international landscape look like in regards to clean coal technologies? What are some current and potential opportunities for international collaboration?
- 3) What are some of the sustainability and life-cycle concerns and issues for these clean coal technologies?

3:00 p.m. **Break**

3:15 p.m. **Presentation: *Colorado's Clean Energy Initiatives***
Speaker: Ms. Heidi VanGnderen, Senior Adviser on Climate Change and Energy, Office of the Governor, State of Colorado *(Confirmed)*

3:40 p.m. **Discussion: Role of Federal, State, and Local Education Initiatives to Respond to Workforce Needs in the Sustainable Energy Sector**
Co-Moderators: Dr. Dan Arvizu and Dr. Jon Strauss

Focus Questions:

- 1) What education initiatives exist or are needed at the elementary, secondary, and undergraduate levels to shape a literate society in sustainable energy issues? What education initiatives are needed to train and develop a competent workforce in sustainable energy fields?
- 2) What potential opportunities does NSF have in workforce training and development in the sustainable energy sector?

4:45 p.m. **Summary and Next Steps for the Task Force**
• Dr. Dan Arvizu and Dr. Jon Strauss

5:00 p.m. Shuttle van departs NREL to take roundtable participants back to the Denver Marriott West Hotel

**Task Force on Sustainable Energy
Roundtable Discussion
June 19, 2008
Golden, Colorado**

**National Science Board
Task Force on Sustainable Energy Members**

Name	Title
Mark Abbott	Dean and Professor, College of Oceanic and Atmospheric Sciences, Oregon State University
Dan Arvizu	Director and Chief Executive, National Renewable Energy Laboratory Co-Chair, Task Force on Sustainable Energy, National Science Board
Steven Beering	Chairman, National Science Board President Emeritus, Purdue University
Camilla Benbow	Patricia and Rodes Hart Dean of Education and Human Development, Peabody College of Education and Human Development, Vanderbilt University
John Bruer	President, The James S. McDonnell Foundation
Patricia Galloway	Chief Executive Officer, Pegasus Global Holdings, Inc.
José-Marie Griffiths	Dean, School of Information and Library Science, University of North Carolina
Douglas Randall	Professor and Thomas Jefferson Fellow Director, Interdisciplinary Plant Group, University of Missouri
Arthur Reilly	Senior Director, Strategic Technology Policy, Cisco Systems
Jon Strauss	President Emeritus, Harvey Mudd College Co-Chair, Task Force on Sustainable Energy, National Science Board

Confirmed Participants & Speakers

Name	Title
Douglas Arent	Director, Strategic Energy Analysis and Applications Center, National Renewable Energy Laboratory
Carl Bauer	Director, National Energy Technology Laboratory (NETL)
Richard Buckius	Assistant Director, Directorate for Engineering, National Science Foundation

David Hill	Deputy Laboratory Director for Science & Technology, Idaho National Laboratory
Douglas Hittle	Professor, Department of Mechanical Engineering, Colorado State University
Zakya Kafafi	Division Director, Division of Materials Research, National Science Foundation
Carl Koval	Faculty Director, Dept. of Chemistry and Biochemistry, University of Colorado at Boulder
Mark Lusk	Professor of Physics Director, Golden Energy Computing Organization Colorado School of Mines
Nigel Middleton	Provost and Senior Vice-President for Strategic Enterprises, Colorado School of Mines
Joan Miller	Senior Vice President, Energy and Chemicals Group, CH2M HILL
Chris Namovicz	Operations Research Analyst, EIA's Office of Integrated Analysis and Forecasting
Dave Newport	Director, University of Colorado at Boulder Environmental Center
Trung Van Nguyen	Director of the Energy for Sustainability Program, National Science Foundation
Anu Ramaswami	Professor of Environmental Engineering, and Director of the Sustainable Urban Infrastructure program, University of Colorado Denver
Craig Robinson	Acting Executive Officer, National Science Board
Dmitri Routkevitch	Product Manager, Synkera Technologies, Inc.
Ann Russell	Program Director, Division of Environmental Biology, National Science Foundation
James Spaeth	Director, Office of Commercialization & Project Management, U.S. Department of Energy
Rita Teutonico	Advisor for Integrative Activities, Directorate for Social, Behavioral, and Economic Sciences, National Science Foundation
Heidi VanGenderen	Senior Adviser on Climate Change and Energy, Office of the Governor, State of Colorado
Michael Wassmer	Senior Engineer, National Renewable Energy Laboratory; Competition Manager, DOE Solar Decathlon
Bryan Willson	Director, Clean Energy Supercluster, Colorado State University; Chief Scientific Officer, Cenergy; Professor, Department of Mechanical Engineering, Colorado State University