
*Champions for Sustainability
Member Workshop Summary Series*

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Climate Change Uncertainties: Opportunities for Business Innovation

**Workshop Date:
MARCH 27, 2008**

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Climate Change Uncertainties: Opportunities for Business Innovation

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Matthew M. Mehalik, Ph.D.
*Program Manager
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Executive Summary

Three of Pittsburgh's business, engineering and environmental professional organizations came together to convene a regional conversation about climate change, its impacts and responses. Climate change, global warming, greenhouse gases, carbon footprint--all of these terms and issues continue to appear in conversations in the media. These issues will present challenges to businesses and individuals, simply because of the degree of interest people have in the topics and resulting worldwide concern and debate. Interest in climate change topics has already prompted foreign, federal, and state governmental considerations and actions. To meet these challenges, the Pittsburgh section of the American Society of Civil Engineers' (ASCE) Environmental and Water Resources Institute (EWRI), in association with the Allegheny Mountain section of the Air & Waste Management Association (AWMA), and Sustainable Pittsburgh's Champions for Sustainability (C4S) network invited the region's business, engineering, and environmental professionals to a one-day seminar focusing on climate change.

C4S Workshop Series

Champions for Sustainability engages its members by convening a series of events and workshops for its membership approximately six times per year. Each workshop event explores a strategic topic of interest for the membership. Events make accessible current trends and challenges, provide access to tools, knowledge, and examples, and engage the membership in assessments and reflections to help craft the regional practice of sustainability. This publication series summarizes and makes accessible the most important outcomes from these workshop events.

About C4S

Champions for Sustainability brings together companies large and small, from many different industries, entrepreneurs, community leaders, university researchers, educators, and other social ventures to put sustainability into practice. C4S aspires to be the most effective region-based collaboration of leaders accelerating the practice and policy of sustainability in business and civic circles. Champions for Sustainability provides value to firms and organizations that seek sustainable solutions to operational practices through convening, networking, and direct consulting.

Memberships and Information:

- Champions for Sustainability www.C4SPgh.org
- Sustainable Pittsburgh www.sustainablepittsburgh.org

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1 Event Summary

Title: *Climate Change Uncertainties: Opportunities for Business Innovation*

Location: Four Points by Sheraton Pittsburgh North, Mars, PA

Date: March 27, 2008

1.1 Agenda

- | | |
|-----------------|--|
| 7:30 – 8:30am | Registration & Continental Breakfast/Introductions Jason McBride, EWRI President & Jerry Swart, FedEx Ground |
| 8:30 – 9:10am | Human Impact on Climate Change
William Easterling, Dean, Pennsylvania State University,
College of Earth & Mineral Sciences,
Member of the Intergovernmental Panel on Climate Change |
| 9:15 – 9:55am | Natural Cycles of Climate Change
S. Fred Singer, Science & Environmental Policy Project |
| 10:00 – 10:15am | Q&A Session |
| 10:15 – 10:30am | Break |
| 10:30 – 11:00am | Regulatory Issues
Krish Ramamurthy, Chief, Division of Permits, Bureau of Air
Quality, Pennsylvania Department of Environmental Protection |
| 11:05 – 11:35am | Impact on Business
Allison Robinson, PhD, MS, Director, Environmental Initiatives
University of
Pittsburgh Medical Center |
| 11:40 – 12:00pm | Q&A Session |
| 12:00– 1:00pm | Lunch |
| 1:00 – 1:30pm | Measuring Our Impact – Carbon Footprint
H. Scott Matthews, Assistant Professor of Civil and Environmental
Engineering
and Engineering and Public Policy at Carnegie Mellon University |
| 1:35 – 2:05pm | Legal Framework and Carbon Emission Trading
Harry Klodowski, Esquire, Betts, Hull & Klodowski LLC |
| 2:10 – 2:25pm | Q&A Session |

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2:30 – 2:45pm	Break
2:50 – 3:20pm	Possibilities of Offsetting Carbon George Hoguet, NativeEnergy, Director of Mid-Atlantic Operations
3:25– 3:55pm	Climate Action and Leadership Chris Steffy, P.E., Industrial Energy Engineering
4:00 – 4:30pm	Q&A Session / Forum Discussion / Adjourn Matthew Mehalik, Sustainable Pittsburgh & Jason McBride, EWRI President

1.2 Event Speakers

William Ewart Easterling, III
Dean, College of Earth and Mineral Sciences
The Pennsylvania State University
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Dr. William E. Easterling grew up in Chapel Hill, NC and earned his bachelor's, masters and doctorate degrees from the University of North Carolina. He worked as a Fellow in a Washington, DC think tank known as Resources for the Future, and his first faculty appointment in 1991 was in the Department of Agricultural Meteorology at the University of Nebraska. In 1997, Dr. Easterling joined Penn State as an Associate Professor of Geography and a Faculty Affiliate in the EMS Environment Institute. Before his appointment as Dean of the College of Earth and Mineral Sciences in July 2007, he served as Director of the Penn State Institutes of Energy and the Environment (2001-2007). Professor Easterling's research interests focus on global warming and its potential effects on the world's food supply. He is also interested in the use of weather and climate information in practical decision making. He was a convening lead author in the most recent report of the Intergovernmental Panel on Climate Change (IPCC), and last Fall, was a co-recipient of the Nobel Peace Prize with his colleagues on the IPCC and with former Vice President Al Gore.

S. Fred Singer
Professor Emeritus of Environmental Sciences, University of Virginia
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S. Fred Singer is professor emeritus of environmental sciences at the University of Virginia, a distinguished research professor at George Mason University, and president of the Science and Environmental Policy Project. He did his undergraduate studies at Ohio

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State University and earned his Ph.D. in Physics from Princeton University. He was the founding dean of the School of Environmental and Planetary Sciences at the University of Miami, the founding director of the U.S. National Weather Satellite Service, and served for five years as vice chairman of the U.S. National Advisory Committee on Oceans and Atmosphere. Dr. Singer has written or edited over a dozen books and monographs, including, most recently, *Unstoppable Global Warming: Every 1,500 Years*.

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Krish Ramamurthy is an Environmental Manager with Bureau of Air Quality of Pennsylvania Department of Environmental Protection. He is working with the Department for more than 27 years. He is currently the Chief of the Division of Permits. Previous to this reassignment, he was the Chief of the Division of Compliance and Enforcement. He holds B.S and M.S degrees in Chemical Engineering.

Allison Robinson, PhD
robinsonal2@upmc.edu

Dr. Allison Robinson is the University of Pittsburgh Medical Center's Director of Environmental Initiatives. In this position, she promotes the adoption and incorporation of environmental stewardship practices and procedures across a multi-facility system. The program goals will be reduced environmental impact and improved environmental health. Dr. Robinson comes to the University of Pittsburgh Medical Center from the Urban League of Greater Pittsburgh. As Health Advocate for the Urban League, Dr. Allison Robinson raised public awareness, promoted behavioral change toward beneficial health habits activities, and advocated the interest of underrepresented publics on policies. Prior to being the Urban League's Health Advocate, Dr. Robinson was an Associations of Schools of Public Health (ASPH) postdoctoral fellow at the United States Environmental Protection Agency (USEPA). While at the USEPA, Dr. Allison Robinson worked in the Office of Research and Development. She served on a nanotechnology workgroup, a public health tracking network workgroup, and investigated definitions of vulnerability and vulnerable people for the Risk Assessment Forum. Prior to the fellowship, Dr. Robinson earned her doctoral of degree from the University of Pittsburgh's Graduate School of Public Health in disciplines of Environmental and Occupational Health. Before she entered the doctoral program, Dr. Robinson participated in a National Institute of Environmental Health and Safety summer internship at Harvard's Graduate School of Public Health. Previously to the internship, she earned a Master's of Science degree from Duquesne University in Environmental Science and Management.



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H. Scott Matthews is the Research Director of the Green Design Institute and a faculty member in the Departments of Civil and Environmental Engineering and Engineering & Public Policy at Carnegie Mellon University. The Green Design Institute is an interdisciplinary research consortium at Carnegie Mellon focused on identifying and assessing the environmental impacts of systems and helping businesses manage their use of resources and toxic materials. His research and consulting interests are in the area of valuing the socio-economic implications of environmental systems and infrastructure and industrial ecology. Of particular interest are using the Internet to facilitate environmental life cycle assessment of products and processes, estimating and tracking carbon emissions across the supply chain, and the sustainability of infrastructure. At Carnegie Mellon, he has taught graduate and undergraduate courses in the Departments of Economics, Civil and Environmental Engineering, Engineering and Public Policy, and Computer Science. Mr. Matthews holds a Ph.D. and MS in Economics from the Graduate School of Industrial Administration, and a BS in Computer Engineering and Engineering and Public Policy at Carnegie Mellon

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Mr. Klodowski is a principal in the Pittsburgh law firm of Betts, Hull and Klodowski LLC. He has practiced environmental law since 1979, for clients including steel mills, chemical plants, mines, power plants and other industrial facilities. He has advised clients on environmental compliance issues, air construction permitting, emissions trading, negotiating permits and resolving enforcement cases. Since 1992, Harry has completed more than twenty Emission Reduction Credit transfer transactions. Mr. Klodowski recently completed a term on the Board of Directors of the Air & Waste Management Association, and is past chair of A&WMA's Education Council and its Allegheny Mountain Section. In addition, he has served as chair of the Southwest Pennsylvania Air Quality Partnership, Inc. and the Allegheny County Bar Association's Environmental Law Section. Mr. Klodowski's publications include a chapter in Principles of Environmental Sampling, published by the American Chemical Society, and articles on air pollution emission trading, New Source Review, voluntary disclosure in environmental audits and measurement error in enforcement situations. He received BA degrees in Biology and Geography, and his JD degree from the State University of New York at Buffalo, where he was on the Law Review and did graduate work in Environmental Studies.

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George F. Hoguet
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Mr. Hoguet is located at NativeEnergy's headquarters in Vermont, where he is responsible for expanding the company's marketing outreach with key business partners and non-profit organizations. He recently relocated from Pennsylvania, where he was developing the market for renewable energy from animal waste on family dairy farms. George holds a BSEE from the University of Dayton, Ohio, and worked in the electrical power and controls industry from the 1970's - 1990's advancing from field sales engineer through Director of Marketing roles. In 2001, he shifted into the environmental field as Coordinator for the Million Solar Roofs and Cool Pennsylvania programs. He is one of the trained presenters for Al Gore's slideshow from the film, An Inconvenient Truth, and has been a member of Citizens for Pennsylvania's Future, Penn Environment, and a Steering Committee member of the Sustainable Business Network of Greater Philadelphia.

Chris Steffy, P.E.
Industrial Energy Engineering
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Chris Steffy is President of Industrial Energy Engineering, a company dedicated to assisting industrial manufacturers to minimize the energy utilized for production. Over the past 15 years Mr. Steffy has assisted major industrial clients with energy and environmental issues including IBM, Pitney Bowes, US Steel, Chrysler Corporation, Honda of America, C/G Electrodes, CRODA, Hercules, Ranbar and PPG Industries. Using a standardized Energy Assessment Protocol, plant energy flows are mapped and analyzed to uncover the essential energy value added to the product. Optimization of energy use is aligned with production, resulting in recommendations for the enhancement of production equipment, production procedures, energy delivery systems, measurement systems, and management.

1.3 Event Highlights

At the conclusion of this event, the participants had the opportunity to reflect on some of the major themes that emerged during the day's discussions. First and foremost, the participants remarked on the large degree of agreement that existed on many of the issues of climate change. What was expected to be a large differences turned out to be rather narrow differences. Any points of disagreement were very narrow and technical, and therefore could be focused upon by the scientific community.

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Second, it was pointed out that most people follow a precautionary approach towards actions and responses related to climate change. Like in any complex system, some responses will not be successful or even make sense; however, systems that test different ideas and approaches and adapt from their initiatives. Jared Diamond made this point about societies that survive and those that do not in his book *Collapse*.

Pennsylvania is a state that has much at stake regarding the benefits of using CO₂ as a focus of innovation initiatives. Many will have the benefit of energy efficiency as well as saving CO₂. Businesses and municipalities in the state can benefit from technical assistance because CO₂ is difficult to measure and quantify, it is difficult to provide useful information to consumers for helping them make choices, and it is difficult to verify that reductions are actually taking place. Nevertheless, resources to support such technical assistance should be forthcoming to help the state's businesses and municipalities engage with understanding their carbon footprint.

2 Workshop Report Results—Participant Information

2.1 Event Attendees:

The following organizations had representatives attend this workshop on Climate Change:

Air/Compliance Consultants, Inc.
Alcoa
American Refining Group, Inc
Babst, Clelland, Clemements and Zomnir, P.C.
Bayer Material Science
Betts, Hull & Klodowski LLC
Bloom Engineering
Carnegie Mellon University
Civil and Environmental Consultants
Clearchoice Energy
Department of Energy's National Energy Technology Laboratory
Environmental Logic
ETAC/Northampton Community College
FedEx Ground
GAI Consultant, Inc.
Gannett Fleming
Green Building Alliance
Hatch Mott MacDonald
Industrial Energy Engineering
Janet S. Lauer Consulting
L. Robert Kimball & Assoc.
Lanxess Corp.
Leonardo Technologies Inc.

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MACTEC Engineering and Consulting, Inc.
 Michael Baker
 National Fuel Gas Supply
 NativeEnergy
 Office of Surface Mining
 Pennsylvania Department of Environmental Protection
 PPG Industries
 SE Technologies
 Student Conservation Association
 Sustainable Pittsburgh
 Tetra Tech
 The Hillcrest Group, LLC
 The Pennsylvania State University
 UPMC
 Veolia Water

A total of 53 people attended the event. Of the 53 attendees, 40 were from the private sector, 6 were from nonprofit institutions, 3 were from government, 4 were from educational institutions.

Of the 40 private sector attendees, 15 were from civil and environmental engineering/consulting, 6 were manufacturers, and 5 were from the energy industry. The remaining people were from sole proprietorship consulting firms, transportation, or development industries.

2.2 Business needs survey

Q1: In what ways do climate change issues affect your business activities?

<u>Impact</u>	<u>Frequency</u>
New market opportunities	*** (3)
Energy efficiency	*** (3)
Energy costs	** (2)
Operational impacts	** (1)
Organizational identity	* (1)
Regulatory requirements	* (1)
Capital investment opportunity	* (1)

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Q2: In what ways will climate change issues affect you business in the future?

<u>Impact</u>	<u>Frequency</u>
New market opportunities	***** (4)
Energy efficiency	*** (3)
Operational impacts	*** (3)
Energy costs	** (2)
Organizational identity	* (1)
Regulatory requirements	* (1)
Capital investment opportunity	* (1)
Higher standards	* (1)
CO2 footprinting	* (1)
CO2 offsets	* (1)

Q3: What resources do you know about that can help or are helping with your climate impact issues?

<u>Resource</u>	<u>Frequency</u>
NGO/Nonprofit assistance	*****
Industry/Trade Group/Professional Org.	***
US EPA	**
Consultants	**
Internal sources	*
Other government	*
University	*

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Q4: What are barriers that limit the ability for you and your organization to access these resources?

<u>Barrier</u>	<u>Frequency</u>
Availability of alternatives	** (2)
Lack of awareness	** (2)
Reporting system inadequate	* (1)
Cost	* (1)
Internal resources	* (1)
Time	* (1)
Lack of guidance	* (1)

Q5: What innovation opportunities do you see resulting from addressing climate change?

<u>Initiative</u>	<u>Frequency</u>
New materials	** (2)
New processes	** (2)
More audits/regulations	** (2)
New jobs	* (1)
New technology	* (1)
Energy security policy	* (1)
Alternative fuels	* (1)
Different distribution of energy	* (1)
Lifecycle analysis	* (1)
Alternative sources of energy	* (1)
Energy efficiency initiatives	* (1)
Education	* (1)

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Q6: Which of the following do you view as advantageous for addressing climate change issues for your business? In what ways?

<u>Initiative</u>	<u>Frequency</u>
Others	***** (5)
Regulation of carbon by government	*** (3)
Voluntary Cap & Trade	** (2)
Mandatory Cap & Trade	** (2)
Unconstrained Market	** (2)

Notes:

“Each strategy is advantageous from an auditing perspective as each involves analysis of emissions, fuel usage, hydrocarbon emissions, etc...”

“Carbon tax”

“Consumer taxation: consumers should be responsible for management of greenhouse gas by seeing directly the increase or decrease in cost of purchased goods that are manufactured with greenhouse gas reductions in mind.”

Q7: What competitive advantages do you see resulting from a carbon-constrained approach to business?

<u>Advantage</u>	<u>Frequency</u>
Energy savings	*** (3)
Carbon offsets	* (1)
New market opportunity	* (1)
Innovation	* (1)

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Q8: What sorts of technical assistance would be helpful for your business regarding climate change issues?

<u>Assistance Area</u>	<u>Frequency</u>
Measurement	***** (7)
Education	***** (6)
Purchasing credits/renewables	***** (5)
Strategy	*** (3)
Marketing	*** (3)
Other areas	** (2)

Q9: To what extent are you aware of carbon footprint issues in your supply chain?

<u>Response</u>	<u>Frequency</u>
Minimally/little	***** (5)
Learned about it today	* (1)
Know it is a concern	* (1)

Q10: Are you currently under pressure by your suppliers or customers regarding climate change issues?

Yes	***** (6)
No	**** (4)

In what ways?

- “Carbon footprint for production and distribution”
- “Life cycle analysis”
- “Customers”
- “For certification purposes”
- “Self-imposed”