

# INCREASING PUBLIC UNDERSTANDING OF CLIMATE RISKS & CHOICES:

Learning from Social Science Research and Practice



Report of the Workshop on Climate Communication  
January 19—21, 2012  
Ross School of Business  
University of Michigan, Ann Arbor, MI

## REPORT AUTHOR

Arielle Balbus is a Health Outreach Intern in the Climate and Energy Program at the Union of Concerned Scientists.

## CONFERENCE ORGANIZERS

The workshop was jointly organized by Andrew Hoffman, Director of the Erb Institute, Peter Frumhoff, Director of Science and Policy at UCS., and Kate Cell, Outreach Coordinator at UCS. Collaborators at the Erb Institute included Dominique Abed; Rick Bunch; Dawn Evans; Frank Fanzone; Sabrina Sullivan, and Shelly Whitmer. Collaborators at the Union of Concerned Scientists included Arielle Balbus; Nancy Cole; Aaron Huertas; and Suzanne Shaw.

## FACILITATOR

Tim Mealey is co-founder and senior partner of the Meridian Institute.

All workshop photographs courtesy Mike Gould (<http://mondodyne.com/photo.shtml>).

*Organizational affiliations are for identification purposes only. The opinions expressed in this report are the sole responsibility of the participants quoted.*

©May 2012

Erb Institute/Union of Concerned Scientists  
All rights reserved.

**The Erb Institute** is committed to creating a socially and environmentally sustainable society through the power of business. Building on nearly two decades of research, teaching, and direct engagement, the Institute has become one of the world's leading sources of innovative knowledge on the culture, technologies, operations and governance of business in a changing world. The Institute's impact is realized most powerfully through our vibrant global network of students and alumni who are the transformative change agents in business, government and the non-profit worlds.

**The Union of Concerned Scientists** is a nonprofit partnership of scientists and citizens combining rigorous scientific analysis, innovative policy development, and effective citizen advocacy to achieve practical environmental solutions. Established in 1969, we seek to ensure that all people have clean air, energy, and transportation, as well as food that is produced in a safe and sustainable manner. We strive for a future that is free from the threats of global warming and nuclear war, and a planet that supports a rich diversity of life. Sound science guides our efforts to secure changes in government policy, corporate practices, and consumer choices that will protect and improve the health of our environment globally, nationally, and in communities throughout the United States.

# CONTENTS

3	<b>Welcome from the organizers: Seeking a social consensus on climate change</b>
5	<b>Introduction</b>
8	<b>We have a scientific consensus on climate change, but not a social consensus</b>
10	<b>Define the target audience for communication strategies</b>
13	<b>Meet the audience members where they are</b>
15	<b>Focus on risks versus rewards</b>
18	<b>Conclusion</b>
21	<b>Endnotes</b>
22	<b>Interviews with selected participants</b>
26	<b>Appendix A: List of workshop participants</b>
29	<b>Appendix B: Workshop agenda</b>
32	<b>Appendix C: “Six Americas” and their views on climate change</b>
33	<b>Appendix D: Selected media citations</b>
34	<b>Appendix E. Better understanding and improving climate communications—Bud Ward</b>
38	<b>Acknowledgements</b>

## Welcome from the organizers: Seeking a social consensus on climate change<sup>1</sup>

**O**ur national dialogue about climate change has become corrosive. Stolen documents and e-mails, opaque corporate financing of interest groups, and a simple lack of civility have come to define the public discourse.

But there is a better way, and we at the Erb Institute for Global Sustainable Enterprise and the Union of Concerned Scientists are very pleased to have collaborated on a workshop that sought to find it. We convened a meeting between top social scientists—psychologists, sociologists, anthropologists, political scientists and others—and climate scientists, business leaders, politicians, faith leaders and communications professionals to help us better understand why people reject the science of climate change and how we can elevate the dialogue to address this most pressing issue.

The truth is that the scientific community has reached a consensus on climate change. The buildup of heat-trapping emissions from burning fossil fuels and clearing forests is changing the climate, posing significant risks to our well-being. Reducing emissions and preparing for unavoidable changes would greatly reduce those risks. That is the conclusion of the U.S. National Academy of Sciences, the world's leading scientific societies, and the overwhelming majority of practicing climate scientists.

But many people don't accept the facts. When we examine the public opinion data on climate change, we see what Yale and George Mason University researchers identify as "Six Americas." They range from "Dismissives," who are hostile to the science, to the "Alarmed," who worry that we are running out of time to reduce emissions.

How can a divided America come together and address climate change? According to social scientists, when people hear scientific evidence about societal risks - whether they concern climate change, disposal of nuclear waste, or vaccines - they actively filter it. They accept evidence they find consistent with deeply held cultural values and reject evidence they feel challenges those values.



Conference organizers Andrew Hoffman of the University of Michigan (left) and Peter Frumhoff of the Union of Concerned Scientists.

A powerful way to break through this filter is for respected leaders to speak out and bring shared values to bear on climate risks and choices. Many people who spoke at the conference are doing just that and helping to build a respectful, fact-based dialogue about climate change.

For businesses, climate change can be framed as a risk and an opportunity. Steve Percy, the former head of BP America, said "the train has left the station" when it comes to businesses dealing with climate change. Many major corporations accept the science and have already begun to integrate considerations about climate change into their products and business plans.

For people of faith, the Rev. Sally Bingham invokes the second commandment. If we love our neighbors as we love ourselves, she said, it is wrong to pollute our shared atmosphere. Richard Cizik, the president of the New Evangelical Partnership for the Common Good, says speaking to other evangelicals about stewardship and respecting creation makes it so that "they cannot walk away from this issue."

For conservatives, climate change action is about accountability, said Bob Inglis, a former Republican congressman from South Carolina who enjoyed high ratings from the National Rifle Association and the American Conservative Union. He supports axing taxpayer subsidies for fuels because "we don't want the government picking winners and losers." He also supports building the health and environmental costs of pollution into the price of fuels so the marketplace can properly judge them.

There's no straight line between scientists identifying a major risk and society agreeing on how to address it. The surgeon general's 1964 report on the dangers of smoking was followed by decades of industry attempts to

discredit the science. Building a social consensus that smoking is harmful required public-health campaigns that raised awareness and generated support for legislative action.

Similarly, the climate challenge is now largely a social one. Meeting it will mean continued coalition-building and expanding the community of people who care about climate change to include unions, religious groups, taxpayer groups, and businesses from Wall Street to Main Street. That means engaging on this issue at the local level, in face-to-face conversations at Kiwanis clubs, church groups, bowling leagues, and town halls.

The task before us is nothing short of monumental. But the path forward is becoming clearer. And we must take it - together. This summary workshop is one step in that journey.



Andrew J. Hoffman, PhD  
Director, Erb Institute for Global Sustainable Enterprise  
University of Michigan



Peter C. Frumhoff, PhD  
Director of Science and Policy  
Union of Concerned Scientists

## Introduction

On the fundamental facts of climate change, the scientific evidence is clear: the warming of the climate is “due primarily to human-induced emissions of heat-trapping gases”<sup>2</sup> and “poses significant risks for—and in some cases is already affecting—a broad range of human and natural systems.”<sup>3</sup> Even if we could keep heat-trapping gases in the atmosphere at today’s levels, the earth would still be committed to further warming, an increase in global average temperature of around 2.3° F (1.3° C) above pre-industrial levels.<sup>4</sup> In reality, we are rapidly exceeding our “better case” scenarios for further emissions and moving towards a temperature increase well in excess of the 3.6° F (2.0° C) target established by the international community in the 2009 Copenhagen Accord.<sup>5</sup> Climate change at this scale is a driver of increasingly severe floods, and droughts; more intense heat waves; considerable sea level rise; and other severe disruptions to the health and well-being of the United States and other nations. This is the conclusion of the major scientific agencies around the world, including the U.S. National Academies of Science,<sup>6</sup> established by President Abraham Lincoln to advise the federal government on issues of scientific and national importance.

Yet as the build-up of heat-trapping gases continues to accelerate, the increasingly solid scientific consensus on climate change has been met with a sluggish and even contrary trend in public opinion. Far from a “social consensus” that climate change is happening due to human activity, we have

seen a decline in public belief over the last several years. In 2011, around 51% of Americans understood that global warming has already begun; this was a 14% decline from the 2008 peak in public understanding.<sup>7</sup> According to “Global Warming’s Six Americas,”<sup>8</sup> a research series from George Mason and Yale Universities, 12% of Americans are “alarmed” about climate change and consider it an urgent threat, 10% are “dismissive” of the very possibility that the climate is changing while the remaining 78% of Americans fall on a spectrum from “concerned” to “doubtful” about the threat of global warming. The report posits that these people are generally open to changing their minds. With environmental, public health, military and business figures calling for urgent action, and a lack of national political leadership and action to address this issue,



**Sally Bingham of The Regeneration Project, Interfaith Power and Light.**

changes in American public opinion can have concrete results in promoting (or preventing) the policy, technology, and consumer changes that will shape our climate future.

To explore the underlying dynamics by which public opinion is formed and changes on this critical issue, the Union of Concerned Scientists and the Erb Institute for Global Sustainable Enterprise jointly convened “Increasing Public Understanding of Climate

vital to incorporate into the analysis of the debate. This workshop focused the discussion on climate communication with diverse U.S. constituencies, and the challenge of building awareness among the disengaged and the unconvinced that climate change is occurring due to human causes, poses significant risks to our well-being, and can be addressed through changes in energy technologies, public policies and the actions of individuals. Specifically, the conversation

## **We focused on the challenge of building awareness among the disengaged and the unconvinced that climate change is occurring due to human causes and poses significant risks to our well-being.**

Risks and Choices: What We Can Learn from Social Science Research and Practice,” an interdisciplinary workshop that took place January 19—21, 2012. One hundred and five social scientists, climate scientists, business leaders, political leaders, religious leaders, and other climate communication professionals and students gathered at the University of Michigan’s Ann Arbor campus to share perspectives from experience and from the scholarly literature on the shaping of public opinion around climate change. The list of participants can be found in Appendix A.

While the workshop was built upon the advances that physics, geochemistry, biology, and physical sciences have made in defining the causes of climate change and economics in defining its solutions, the meeting was predicated on the shared recognition among participants that building shared understanding of climate risks and choices in the United States is now as much a psychological and social issue as it is a scientific issue. The contributions of the social sciences (psychology, sociology, political science and others) are increasingly

addressed questions surrounding the processes of public opinion formation on climate change and approached these questions by considering (a) how social scientists can most effectively support climate communicators and (b) what insights from practice can inform ongoing social science research on climate communication. A fuller description of the workshop’s objectives and design can be found in Appendix B. The meeting culminated in a public town hall entitled “Cures for Climate Confusion,” which was designed to open the conversation from the workshop to a broader audience, to share the workshop participants’ perspectives on best practice and to offer a forum for Michigan residents and academics to share their experiences on the “front lines” of climate change communication. The event featured the two hosts of the meeting, Andrew Hoffman from the University of Michigan and Peter Frumhoff from the Union of Concerned Scientists, as well as three workshop participants who are known for their creative, pragmatic and deeply personal climate communication styles: Reverend Sally Bingham, President and

Founder of Interfaith Power and Light; Steve Percy, the former Chief Executive Officer of BP America, Inc; and Robert Inglis, former U.S. representative from South Carolina's 4<sup>th</sup> Congressional district. The event was attended by 300 in-person and approximately 300 online listeners, and it spurred a robust dialogue on how to build community around such this increasingly pressing, increasingly polarizing issue. The event can be watched in full on this website: <http://erb.umich.edu/blog/2012/01/04/town-hall-cures-for-climate-confusion-live-stream/>

What follows in the rest of this report is a summary of the workshop and town hall, designed to highlight four prevalent themes from the three days of discussion:

- 1) We have a scientific consensus on climate change, but not a social consensus;
- 2) Define the target audience for communication strategies;
- 3) Meet the audience members where they are; and
- 4) Focus on risks versus rewards.

In aggregating the conference dialogue in this way, this report is not attempting to capture the full scope of ideas from the workshop, which have since been developed in published articles, op-eds, and other forums (described in Appendix D). Instead, we are seeking to advance this important discussion by drawing key elements of our dialogue upon which others may build.



The Town Hall event was attended by 300 in-person and roughly 300 online participants.

## We have a scientific consensus on climate change, but not a social consensus

**W**hy have so many American's acceptance of the findings of climate science dropped off in recent years? (Surveys conducted since the date of the workshop show a recent upward trend in public belief in the science of climate change – perhaps due to patterns of extreme weather across much of the United States in 2011-12<sup>9</sup>.) Initial discussion of this question focused on three central issues. First, the economic recession may have displaced environmental concerns in general, and climate change in particular, from the list of critical issues. Second, unusually snowy winters of 2009-10 and 2010-11 in much of the United States may have played into public misperception

of consistency of heavy snow with rising temperatures. And third, the content of climate scientists' emails stolen from the University of East Anglia ("Climategate") and small errors in the 2007 Intergovernmental Panel on Climate Change report, both quoted extensively out of context in the media and blogosphere, may have caused many to doubt the legitimacy of the scientific establishment.

But, going beyond these proximate causes, the increasingly pervasive politicization of climate change in the United States has been a primary barrier to uniting public understanding of climate change. Riley Dunlap, Regents Professor of Sociology at Oklahoma State University, pointed to the multiple studies that show political affiliation as one of the strongest correlates of individual uncertainty about climate change, not scientific knowledge.<sup>10</sup> His research has shown that the percentage of conservatives and Republicans who believe that the effects of global warming have already begun to happen declined from roughly 50% in 2001 to about 30% in 2010 while the corresponding percentage of liberals and Democrats increased from roughly 60% in 2001 to about 70% in 2010.<sup>11</sup> Feeding this widening partisan divide, he said, was a "denial industry"<sup>12</sup> of powerful individuals, think tanks, lobbying firms, and other forces that undermine the scientific evidence around climate change



**Peggy Shepard of WE ACT for Environmental Justice (left); Jim Ball of the Evangelical Environmental Network.**



and paint it as a liberal political cause or fabricated conspiracy.

Others pointed to sparse or misleading media coverage of climate change as a key factor in dividing public opinion. While declining media coverage was cited often as an important factor in shaping public opinion, some participants were more concerned with the content of the coverage than its frequency. Eric Pooley of the

“cultural cognition,” humans process information according to an extrinsic goal or the dominant view within a group that is part of their identity. This research finds that individuals will tend to discount information that isn’t “what a person like me thinks about an issue like this.” This line of discussion led participants to focus on the importance of finding ways to affirm rather than deny these deeply-held values, and to highlight connections between them and the

## Even the media outlets that prioritize scientifically sound environmental reporting seem to be “bored with climate change as an issue” because “there is nothing new in it.”

Environmental Defense Fund posited that journalists’ perceived professional obligation to represent “both sides” of the climate change “controversy” and can ultimately perpetuate the notion that climate deniers represent a sizable percentage of the climate science community. Others pointed out that even the media outlets that prioritize scientifically sound environmental reporting seem to be “bored with climate change as an issue” because “there is nothing new in it,” as Ana Unruh Cohen, Congressional staffer, told the group. Some participants also described a polarization of national media consumption based on political, geographical, age, ethnic, and other identity groups, and noted that sources of information for some of these groups present climate change primarily as a colorful conspiracy story.

There is a rich body of social science research that analyzes how the American public sorts through, internalizes, and acts upon this sprawling range of information and opinions on climate change. According to Dan Kahan of the Yale Law School, climate change skepticism is not a matter of deficient comprehension; it is one of “motivated reasoning.”<sup>12</sup> According to research on

threats—and opportunities—that confront us in the face of a changing climate.



Irina Feygina of New York University (left); Dan Kahan of the Yale University School of Law.

## Define the target audience for communication strategies

**A**nthony Leiserowitz of the Yale Project on Climate Change Communication argued that “the proper model for thinking about the climate debate is not a “boxing match, but a jury trial. We can never convince the die-hard skeptics, just like a prosecutor will never convince the defense lawyer- and doesn’t try. Rather, we should focus on convincing the silent jury of the mass public.” Research and experience has convinced him and many other attendees that the “persuadable middle” of the climate change debate will make the critical difference in changing public opinion, behavior and policy, and will most effectively drive the evolution of discourse and societal values.

“How the scientific community talks about

climate change needs to change,” claimed Peter Frumhoff, Director of Science and Policy at the Union of Concerned Scientists. He called for less technical, more relatable explanations of the complicated processes of climate change. In particular, he alluded to the fact that the public tends to interpret scientific uncertainty as a lack of confidence in data or methodology as opposed to an inherent reality of the scientific process. Dr. Frumhoff called for scientists to translate uncertainty into “language that people will get,” with expressions, where appropriate such as “beyond a reasonable doubt” instead of more formalized descriptions of scientific confidence that are often misinterpreted or misunderstood. He also warned scientists to use some caution when calling for more funding for study in order to avoid the perception that the fundamental facts about climate change are still unclear.

Arthur Lupia, Professor of Political Science at the University of Michigan, further defined the communications role of scientific professionals when he urged the group to “remember that scientists do not necessarily share the same framework for values as the audiences they are trying to persuade. So we have to be careful in transitioning from saying “the facts are X’ to ‘therefore, you should do Y.’ The latter is a value-laden statement that people may find offensive if it does not align with their own way of seeing the world.”



**Anthony Leiserowitz of the Yale Project on Climate Change Communication.**

Discussing climate change on a local level was consistently raised as a priority for climate change communicators. Barry Rabe, Professor of Public Policy at the University of Michigan, observed that climatologists at the state level tend to be more effective at communicating than those at the federal level. “State-level experts are more equipped to speak to their audience’s day-to-day experiences.” Michael Gordon, Professor of Business at the University of Michigan, noted

suggested the potential power of a ripple effect throughout the rest of the public.

On a different but complementary note, Steve Percy, the former CEO of BP America, Inc., told the group that many “businesses are finding and preaching solutions,” and that there are numerous innovative solutions that can and must be pursued more rapidly than the pace of public opinion change. The more that these solutions are

## Some argued that moving the needle on public opinion should be less of a priority than more effectively activating the public that is already concerned.

that his students were less motivated by scientific data or environmental policy than “what works and what is implementable.” He identified the need for more granular technology that would allow users to understand what specific mitigation and adaption options exist at a very local level and what economic tradeoffs would follow for each. A number of participants suggested that discussing local adaptation with communities could sensitize them to the argument for mitigation, and identified the absence of social science research on communicating local adaptation as a key area for future research.

Some participants argued that focusing on moving the needle on public opinion should be considered less of a priority than more effectively activating the public that is already concerned, and pursuing solutions in sectoral or geographical areas that are amenable to action on climate change. Cara Pike of the Social Capital Project sees many would-be activists “so fed up with politics that they would rather plant their own gardens than get on the blogs.” She and others argued for more sustained capacity-building among the “alarmed,” and some

developed and publicized, he argued, the more paths there will be to “get on board” with climate change action. Some business participants went further to consider whether focusing on communication is less important than bypassing public opinion through corporate action. Tom Catania, retired executive from Whirlpool, for example, argued that far more could be accomplished through the development of energy efficient technologies than seeking to create a social consensus on the issue.



**Bob Inglis, former Congressman from South Carolina.**

### **Interview with Peggy Shepard WE ACT for Environmental Justice**

The environmental justice community has already developed a context and a story. We know where our communities are. We know the impacts there. And we've been working for the past twenty-four years to really educate, inform, train folks so that they can be engaged in policy-making, so that the solutions come from the grassroots. Because we have already engaged people, certainly leaders in environmental health, redefining this as a climate justice [issue] in our context I think is pretty clear[ly] [necessary] for people in our community.

I think we do that by showing people how they benefit and how they individually save. We have homeowner sections in our community, lots of new co-ops in our community. How do we target those for a certain kind of message around energy conservation, water conservation, because those things are all in their best interests? Then there are other issues that are more community level, and then you have to organize and really engage people in thinking broader than themselves, a bit about the sustainability of the entire neighborhood and community.

---

### **Interview with Ruth Greenspan Bell World Resources Institute**

If a weatherman told you there was a 65% chance of rain, would you bring an umbrella? That changes your frame of mind.

While some participants advocated the avoidance of engagement with climate dismissives, others stressed the importance of responding quickly and publicly to climate misinformation. Peter Sinclair, producer of the YouTube series "Climate Denial Crock of the Week," stressed the importance of swift and comprehensive responses to misinformation; "when you take action," he said, "people are galvanized and motivated. If you want to draw a crowd, start a fight." A consistent theme at the workshop was the need for a more engaged grassroots effort to reliably respond to the proliferation of anti-climate messages on the internet and in the media; the lingering question was how to most effectively balance offensive and defensive tactics in a setting of limited time and resources.

Finally, the importance of educating and mobilizing the Millennial generation was a theme throughout the workshop. Ed Maibach, Director of the George Mason Center for Climate Change Communication, stressed that beyond children's ability to influence their parents and shape household behavior, they are consumers, employees, and future voters in their own right, and they will experience an increasingly large share of the burdens and opportunities associated with climate change. Ana Unruh Cohen observed that youth mobilization was an essential piece of the momentum behind the 2009 American Clean Energy and Security Act, but that young people were not at the table for key discussions that could have benefitted from their input. Reverend Jim Ball, the Executive Vice President for Policy and Climate Change at the Evangelical Environmental Network, added that he is working with youthful congregants to educate older evangelicals on climate solutions. Increasing numbers of younger evangelicals identify as "New Evangelicals," a progressive subgroup that Rev. Richard Cizik estimated at 24% of evangelicals, and one that he sees as the future leaders of the community.

## Meet the audience members where they are

**M**any attendees identified a recurrent theme that climate communication is not primarily about sharing facts, but about speaking to values. Anthony Leiserowitz suggested that awareness of the scientific consensus around climate change is a “gateway belief” to support for taking action on the issue; other participants separated that awareness from scientific explanations and cautioned that continually responding to doubt with more facts can often entrench rather than ease opposition. As Bud Ward, editor of the Yale Climate Forum, put it, “basing your views primarily on the much-ballyhooed ‘knowledge deficit,’ ‘science illiteracy,’ and ‘knowledge gap’ assumptions leads only to a fool’s errand” that fails to address the more important psychological, social and political barriers. To overcome them, Susanne Moser, Director and Principal Researcher of Susanne Moser Research & Consulting, encouraged climate change communicators to “come as a friend” and present climate change in a way that affirms the listener’s sense of self and emphasizes the linkages between his or her values and environmentally benign behavior. She further suggested that we strive to build a “heroic culture” around climate change, while Andrew Hoffman argued that we need to emphasize examples of “positive deviance” to inspire more people to push the envelope in sustainable living.

The scientific facts alone will not sway the American public on climate change, and the crucial link between learning concepts and

experiencing conversion may be personal and shared values. Climate scientist Katharine Hayhoe stressed that almost all audiences share certain core values that encourage action around climate change; for example, ensuring that their children live safe and healthy lives, and that their favorite landscapes are preserved for future generations to enjoy. She and others also reinforced that messengers must be sensitive to the particular values of their audience, whether they correlate with religious observance, political ideology, or other cultural factors. Susan Hassol, Director of Climate Communication, suggested some value-laden public debates that link strongly to climate change, including human health and air pollution reduction; national security and climate change as a “threat multiplier”; and economic progress with a frame of green energy as “the economy of the future.”



**Town Hall participant April LaCroix of the University of Michigan (left), Katharine Hayhoe of Texas Tech University.**

She also stressed that the right messenger is at least as important as his or her message; people with credibility and some level of shared experience with a given community have a far greater chance of earning trust on a message that could seem threatening.

Particularly powerful examples of linking climate change and values were presented by representatives of communities not historically associated with environmental

spur innovation in renewable fuels.

A dominant theme at the workshop was the imperative to move beyond traditional media and communicate through a more diverse array of venues. A number of participants emphasized that we live in an age dominated by visual information, and that climate science should be communicated through info-graphics, interactive web-based activities, and online

## The right messenger is at least as important as his or her message.

issues. Reverend Richard Cizik has been a powerful voice on climate within the evangelical community. He argued that the human-centric vocabulary often used to discuss climate change must be supplemented or replaced by a “cosmo-centric view,” in which “God cares” about how our actions impact creation. As in most religious texts, myriad concepts in the Bible, such as “love thy neighbor as thyself,” translate readily into a mandate to protect the planet and its inhabitants from degradation and suffering. Reverend Sally Bingham begins her climate change sermons by stressing “humans are stewards of creation. After you have them convinced that their behavior has to be changed, then you can bring in the scientists. Religion and science is a one-two punch.”

Former Representative Bob Inglis (R-SC) has similarly developed innovative messaging to link what he sees as a core value of political conservatives – accountability – with climate policy solutions. As conservatives believe that “there’s no such thing as a free lunch,” he said to the workshop participants, a conservative approach to climate would acknowledge that fossil fuel prices are artificially low (given the economic, military and health related externalities) and attach the “hidden costs” to fossil fuels. He advocates eliminating all subsidies for all fuels, and believes that the market would subsequently drive up fossil fuel costs and

social media in order to convey information most effectively. Suzanne Shaw, Director of Communications for the Union of Concerned Scientists, urged the group to translate the weather anomalies of 2011 into visually-striking information that could potentially “go viral” and make an impression on a broader population beyond the “concerned.” Bud Ward, an editor of the Yale Forum on Climate Change and the Media, suggested that climate advocates broaden our definition of media to include “Broadway, online forums, museums, zoos, pulpits- the list goes on and on... media professionals have their own responsibilities and agendas, [and] are not in the business of proving science or giving a voice to social science or climate science. We need to build that for ourselves.”

Paul Edwards, a Professor from the School of Information at the University of Michigan, warned that “science is becoming more participatory. On the Web, you can get commoditized tools, such as spreadsheets, statistical software, and graphics packages, to produce your own science from publicly available data.” He noted that the individuals and institutions attempting to attack the science of climate change use such tools consistently, but that the climate community was not fully taking advantage of the powerful draw of citizen science. “It’s about communicating with young people and using social media,” said Dr. Edwards.

## Focus on risks versus rewards

An area of debate within the group discussions was the degree to which climate communicators should focus on a positive message of solutions to climate change as opposed to a message of urgency about climate risks. Jane Esper Vogel, of the Michigan Interfaith Power & Light, noted that people tend to engage more readily with a positive call-to-action than a “doom and gloom” warning and that there are many willing early adopters to climate change solutions with success stories that need to be told and amplified at a peer level to enable those solutions to get to scale. Peggy Shepard, Executive Director of West Harlem Environmental Action (WE ACT), has been instrumental in developing the Environmental Justice Leadership Forum on Climate Change. She feels that the Environmental Justice community has made great strides in organizing for political action around climate change, but that in order to go beyond traditional activist networks, it will be essential for her organization and others to present a compelling story of how energy efficiency, water conservation, and other green values are directly salient to her constituencies. They must be shown to save money and enhance people’s experience at an individual and household level. She and others suggested that concrete climate adaptation measures could increase people’s general awareness of the issue in a way that could feed back into political activism.

Some argued that climate change is a particularly tempting subject to tune out

because of the almost incomprehensible nature and magnitude of the problem and the changes required. In an interview, Irina Feygina introduced notions of “system justification theory” that points towards subjects’ profound investment in viewing our socio-economic systems as fair, legitimate, coherent, stable, and just. Since “environmental problems directly threaten our positive perceptions of the system” in terms of our consumption habits, industrial activity, political leadership, and widespread conceptions of progress and continual growth, our response is to deny the facts rather than change our ideologies, life patterns and worldviews. Susanne Moser introduced the Terror Management Theory (TMT)’s framework, which posits that reminders of death elicit strong unconscious reactions that “motivate us to defend cultural conceptions of reality and values; to



**Mary Pearl of the School for Visual Arts, New York (left); Susanne Moser of Susanne Moser Research & Consulting.**

those who deviate from our values and worldview; to reward cultural heroes; to denigrate the ‘other’ and promote our own.” TMT predicts that the threat of climate change, like the threat of war, has the capacity to entrench people more deeply in their cultural comfort zones and exacerbate political polarization. Dr. Moser believes that the most effective way to communicate about climate change is to create spaces of respectful dialogue where people can process information slowly and thoughtfully.

climate change in communications that focus on popular “solutions” such as energy efficiency. He and others raised crucial questions around the most efficient way to raise concerns about the “carbon bomb”; “how much is it feasible or fair to soften messages towards the persuadable middle in a world hurtling over the 2-degree threshold?” Furthermore, Gullede noted that while the attendees expressed a shared understanding of climate change threats, there was significant fragmentation around

## One participant plans to share “what climate change looks like, and who is going to be affected by it” to build a community-driven response to climate change.

Kurt Gottfried, Professor Emeritus at Cornell University, and Jay Gullede, Senior Scientist at the Center for Climate and Energy Solutions (formerly the Pew Center for Global Climate Change) offered cautionary counterpoints. Kurt Gottfried highlighted the danger of underplaying the seriousness of

climate change solutions. He asked the group, “Does that fragmentation offer opportunity (a bigger tent, different value sets, the opportunity for buy-in) or a continued barrier to solutions (dissonance that drives people away)?” This question was identified as a valuable direction for future research.



How should information best be presented? When workshop participants were asked who were the most compelling presenters of information on climate change, many recounted those who told personal stories with a narrative arc that listeners could relate to. “Storytelling resonates with people regardless of where they fall on the political spectrum,” said Susanne Moser. “Especially stories that depict a world that is orderly, just, right, and good.” Jacqueline Patterson, the Director of the Climate Justice Initiative at the National Association for the Advancement of Colored People, has learned from voter mobilization efforts that a quote-based, anecdotal approach is most compelling, and she plans to share “what climate change looks like, and who is going to be affected by it through video and

**Eric Pooley of the Environmental Defense Fund.**



and publications” in order to build a community-driven response to climate change.

Andrew Maynard, Director of Risk Sciences at the University of Michigan, referenced successful education campaigns around nanotechnology as evidence that “a sophisticated understanding of narrative storytelling” is essential to turn the public’s attention towards what would otherwise be an overly pedantic and polarizing dialogue.

Journalist McKenzie Funk pointed out that, in order to keep climate change “fresh” enough to report on, the movement must develop storylines with heroes, victims, and occasionally villains. He believes that climate migration could be a fertile area for storytelling, and that after reading an engaging story, “51% will sway with the human element.”

Mr. Funk also encouraged the group to reflect on the “Save Darfur” campaign and other examples of international advocacy to consider how stories so remote to the American public were able to inspire such passionate investment. This led some to see the social science behind Madison Avenue style advertising campaigns as critical to this effort. Kevin Leahy, the Managing Director of Environmental and Energy Policy for Duke Energy, noted that “businesses are already using social scientists to sell soap, cars and drinks. We don’t have to recreate this.” The private sector, political community, and education world could all hold valuable examples of a closer integration of social science research and practice.

#### **Interview with John DeCicco University of Michigan Energy Institute**

It is important to remain clear about our objective, which is policy to change behavior. Technology doesn't happen unless consumers and industrial actors make choices to change behavior. Those of us here—whether NGO, practitioners or academics—are not the ones making multi-billion dollar investments on infrastructure. We need to be careful when we say, “our goal is to stop carbon,” to be really clear on how we go about that, and to be careful of who we demonize. It’s fair to criticize industry for hostile policies or campaigns that they back and pursue, but that’s not the same as attacking them for their core business. It’s not the oil companies, coal companies, or power companies that are the problem *per se*, but rather, “It’s the carbon, stupid.”

---

#### **Interview with Thomas Doherty Lewis and Clark College**

If I had the funding, I would fund people to work in cross-disciplinary teams whereby we put a researcher into the business for every day for six months. It would change the researcher in terms of how they see their work and help the business people “really get it.” This is a great ecology analogy: it’s where there are environmental boundaries—at the ecotone—that we see the greatest life and bio-diversity. The tension of opposites is where innovation happens.

## Conclusion

**T**his workshop was designed to focus on the “silent jury” in the US climate change debate—those who have neither accepted the findings of climate science nor dismissed them as fallacious. While some participants argued that communication strategies are needed both to mobilize Americans who are alarmed about climate change and to effectively counter those who are dismissive, the general consensus was that an American response to climate change cannot be built without engaging the “persuadable middle.”

Another central theme at the workshop was the necessity of multiple messengers for multiple audiences. The multifaceted reality of global warming means that businesspeople, artists, politicians, religious leaders and farmers are as important as scientists in sharing their perspective on

climate change with certain audiences. Participants consistently emphasized the importance of illustrating the links between climate change and an audience’s core values. However, these value-laden messages are most effective when paired with proof of the scientific consensus among those scientists who actively study climate change. The two go hand in hand. Scientists are necessary messengers for building public confidence in climate science but they are insufficient to engage people who recognize that climate change is also a social, economic, political and moral issue. Seeing a familiar figure as a stakeholder in the conversation can enable diverse constituencies to appreciate that we are all stakeholders in the American response to climate change.

Another thread in the conversation focused on the best ways for social scientists to disseminate their findings and maximize the applicability of their research. Practitioners at the conference reported that they are often overwhelmed by the volume of disparate information about climate communication coming out of the social sciences, and that this field of research would be more digestible and richer in content if there were greater cross-pollination and collaboration among the different fields of the social sciences. A few participants suggested that a single synthetic, cross-disciplinary framework would be a valuable next step for the field, but also acknowledged the difficulty and potential losses inherent in reducing the many available frameworks to a few.



Steve Percy, formerly of BP America.

Andrew Hoffman pointed out that “each of these communities has their own journals and own communities. We don’t necessarily have the incentives to talk across disciplines, or for that matter, to talk to the public. Our tenure and promotion criteria channel us towards narrowly specialized journals and avoid engaging within the public debate.” Another suggestion was to blur or erase whatever line exists between “social scientists” and “practitioners,” so that

for such information;

- Convening of more forums for interdisciplinary collaboration among social scientists, and;
- Generation of more public-facing communications to help address social barriers to climate change.

Others stressed the importance of engaging diverse communities based on political affiliation, age, race, and geography.

## Another suggestion was to blur or erase whatever line exists between “social scientists” and “practitioners,” so that perspectives from the social sciences are present from the outset of a project.

perspectives from the social sciences are present from the outset of a project.

A final theme that pervaded the workshop was the necessity of considering climate communication a single project in the context of a much broader process. The simple act of persuading the silent jury of public opinion will not in itself stop the accumulation of carbon dioxide and other heat-trapping gases in the atmosphere, nor the health and infrastructure risks already evident in the US and other countries. One participant warned that we all stay mindful of the bottom line: lowering the emissions of carbon and other heat-trapping gases and preparing for now unavoidable impacts.

Participants were polled after the event on next steps to be undertaken to further communicate climate science to the American public. Specific steps to improve climate communication included: Development of a social science rapid response team;

- Creation of a best practices document to advise practitioners and help them speak to the media;
- Creation of a web-based clearinghouse

Participants were also asked specifically to consider which audiences, messengers, researchers, or disciplines should be included in ongoing discussions. They answered:

- Youth;
- The health care industry;
- K-12 educators;
- Working journalists;
- TV and radio producers;
- Bloggers;
- Philosophers and ethicists;
- Hollywood executives and actors;
- Progressive opinion-leaders and conservative voices;
- Hunters and anglers;
- Boaters; farmers and gardeners;
- Business leaders;
- Consumer market researchers;
- Agronomists;
- Urban planners;
- The military;
- The alternative and mainstream media;
- Political pollsters and campaigners;
- Churches and houses of worship;
- Madison Avenue marketing professionals; and
- Business leaders.

In fact, this last constituency was seen as critically important for the future public debate on climate change. Participants advocated working directly with heavy emitters to design policy and technical solutions; coordinating with international business organizations to address heavy pollution in China, Russia, Brazil, and other growing economies; educating and mobilizing the insurance industry, local governments, schools, hospitals, and other key stakeholders in adaptation; and looking to historical examples of successful movement-building.

In the end, the key point was that all efforts seemed to be relevant to the conversation. As Rev. Richard Cizik pointed out, “in Evangelism we often say, don’t be discouraged, it takes 1,000 messages.” And as Bud Ward summarized, “nothing will work, but everything might.”

### Interview with Bud Ward Yale Forum on Climate Change and the Media

I never thought I’d hear myself say this, but maybe we have to go around the media and directly to the audience. That would mean we would need a much broader definition of media to include any form of communication—Hollywood, online forums, museums, zoos, pulpits, the list goes on and on. Just like in other professions including the science community, media professionals have their own responsibilities and agendas. They are not in the business of proving science or giving a voice to social science or climate science. We need to build that for ourselves.

### Interview with Paul Stern National Research Council

The analogy to a *serious, progressive disease* is a simple and consistent way to highlight several important aspects of climate change:

1. The symptoms were not obvious at first, but scientists have been running diagnostic tests for decades.
2. It isn’t possible to know for sure if all symptoms are due to climate change, but the weight of the evidence lends strength to the diagnosis.
3. All treatments have costs, but the longer the patient waits to treat the causes of the disease, the worse it will get and the harder it will be to cure.
4. There is not going to be any one cure for the disease, but the combination of a range of treatments may have the desired effect.



Panelists at the town hall. From left to right, Steve Percy, Sally Bingham, Bob Inglis, Peter Frumhoff, and Andrew Hoffman.

## Endnotes

1. Hoffman, A. and P. Frumhoff, (2012) "On climate change, society trails science," *Philadelphia Inquirer*, February 27.
2. United States Global Research Program (2009). *Global Climate Change Impacts in the United States*. <http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts/full-report/executive-summary>
3. National Research Council 2010. *Advancing the Science of Climate Change*. Washington DC National Academies Press.
4. Matthews, H.D. and A.J. Weaver 2010. Committed climate warming. *Nature Geoscience* 3: 142-143.
5. Anderson, K and A. Bows 2010. Beyond 'dangerous' climate change: emissions scenarios for a new world. *Philosophical Transactions of the Royal Society A* 369: 20-44.
6. G8 + 5 Academies Joint Statement 2009. Climate change and the transformation of energy technologies for a low carbon future. <http://www.nationalacademies.org/includes/G8+5energy-climate09.pdf>.
7. Leiserowitz, A., Maibach, E., Roser-Renouf, C., and Smith, N. (2011) *Global Warming's Six Americas, May 2011*. Yale University and George Mason University. New Haven, CT: Yale Project on Climate Change Communication. <http://environment.yale.edu/climate/files/SixAmericasMay2011.pdf>;  
Leiserowitz, A., Maibach, E., Roser-Renouf, C., and Smith, N. (2010) *Global Warming's Six Americas, June 2010*. Yale University and George Mason University. New Haven, CT: Yale Project on Climate Change Communication. <http://environment.yale.edu/climate/files/SixAmericasJune2010.pdf>.
8. Borick, C. and B. Rabe (2012) "Belief in global warming on the rebound: National survey of American public opinion on climate change," Report No. 45, Brookings Institution: Issues in Governance Studies; Leiserowitz, A., Maibach, E., Roser-Renouf, C., & Hmielowski, J. D. (2012) "Extreme weather, climate & preparedness in the American mind." Yale University and George Mason University. New Haven, CT: Yale Project on Climate Change Communication.
9. For example: Kahan, D., H. Jenkins-Smith and D. Braman. (2010) "Cultural cognition of scientific consensus," *Journal of Risk Research*, 1-28; Poortinga, W., A. Spence, L. Whitmarsh, S. Capstick and N. Pidgeon (2011) "Uncertain climate: An investigation into public skepticism about anthropogenic climate change," *Global Environmental Change*, DOI: 10.1016/j.gloenvcha.2011.03.001
10. McCright, A. and R. Dunlap. (2011). "The politicization of climate change and polarization in the American public's views of global warming, 2001-2010," *The Sociological Quarterly*, 52: 155-194.
11. Oreskes, N. and E. Conway (2010) *Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues From Tobacco Smoke to Global Warming*, (New York: Bloomsbury Press).
12. Kahan, D. (2010). "Fixing the communications failure," *Nature*, 463 (21): 296-297.
13. Cameron, K. and G. Spreitzer (eds) (2011) *Handbook of Positive Organizational Scholarship* (Oxford, UK: Oxford University Press).

## Interview with Richard Cizik

*Question: As a messenger, how do you balance courage and credibility?*

Answer: You have to be very careful and try not to get too far ahead of your constituency. You cannot undermine people's self-esteem, but you can push the envelope. You have to actively maintain that balance.

*Question: How do you enact that today in your current work?*

Answer: As President of the New Evangelical Partnership, we are taking active policy positions on a variety of issues that are moving the constituency in a progressive direction. On each of the issues we publish an open letter or a statement. People who thought they were getting rid of me might be disheartened to know that I get more press today than I did before. They gave me a story. Otherwise, I would have simply worked another 10 years, retired, and disappeared. What they really did was empower me.

*Question: What have you heard at the workshops that you would like to incorporate into your work?*

Answer: All of the different messages about the need and the difficulty of communication. Both the need to communicate in new and more effective ways, but also the challenge of communicating in an environment with so many different currents and voices.

The conversation we have been having at the workshop is probably the most important conversation I have had in four or five years on this subject. The reason why it is so

important is that social scientists can help people like me understand not just that knowledge is power, but that self-knowledge is power. Knowledge of one's own emotions is probably one of the most important sources of power a man can possess. These experts are enabling me to figure out how I can help other people in my constituency to better understand their own emotions. I am thinking through my filter, which is a religious filter, one that is aided by the best social research about how we as human beings live and react.

You should watch "God and Global Warming" on PBS on the web. I invited a preacher to come and see the evidence about climate change. After spending a week with a number of scientists, he says, "I get it." Then as soon as he returned to his group in Washington, D.C., he retreated. He would not disagree with his friends. He would not challenge them. He has no courage.

*Question: Is it possible to transmit courage?*

Answer: People have to get out of the emotional climate that they are in order to differ from the crowd. There is this great book called *A Failure of Nerve*. Friedman (2007) outlines all the criteria required in order to have great courage, and finds that you have to step out of the emotional climate. You have to be able to risk the disapprobation of your friends.

## Interview with Katharine Hayhoe

*Question: You talked about moving beyond lines to reframe the conversation. Can you talk about some of the ways that you are trying to apply that in your own work?*

*Answer: We cannot change people's values, because they are set at a very early age. Rather than try to fight against ingrained values, we need to recognize how much we share in common that we can start working from. We should start with those*

*change disproportionately affects exactly those people.*

*As a climate scientist, I always try to end with the commonalities when I am talking about climate change. My last point usually is, even if you think that everything that I said is a hoax, even if we did something about climate change and it turned out to be false, what would be the repercussions? We*

**Rather than try to fight against ingrained values, we need to recognize how much we share in common that we can start working from.**

fundamental values that we share as human beings who live on this planet. We all know that we are polluting our air and our water. We all know that those actions have repercussions on our health and on our children's health. We want our children to have all the things that we had that were good.

When you consider the repercussions of climate change, or even just the repercussions of continued dependence on fossil fuels, it's very unpleasant. The places that we know and love are changing irrevocably. This speaks to our emotional attachment to people and places that we love. I think that that is where faith-based values come in. Most faiths call on us to care for the poor and the needy, and climate

would end up with cleaner air and cleaner water. We would invest in our local economy, we would have renewable energy that doesn't run out on us, we would be independent of foreign oil, and we would develop a lot of technology that would be useful for other purposes, too. We should be embracing solutions that have multiple benefits, those that almost anybody could agree with based on the values that we share, regardless of one's perspective on climate change.

*Question: How do you communicate with young people about this issue?*

*Answer: The best audience I have ever had was a grade 4 class. They were smart and they really got it! The questions that they asked were incredible. This reminded*

me that the message does not require a PhD to understand. It is a message that is grasped more easily by children who do not have all the preconceived notions, than by adults. It is interesting because that parallels something that Jesus said to his Disciples in the Gospel. He basically said, let the little children come to me, because they are the ones that really understand this. They understand the concept of heaven.

*Question: What guidance can the Gospel offer people when it comes to climate change?*

Answer: The great commandment is to love our God and love our neighbor. In climate change, we see a classic example of not loving our neighbor. It is not loving our neighbor to hoard resources, to infringe on people's property and health with pollution. It is not loving our neighbor to change the climate to a point where livelihoods can be affected.

*Question: How can social scientists empower people to embrace the scientific reality of climate change?*

Answer: It is not just about facts. Facts are not enough to change minds. It is how the

facts interact with our values that determine our response, and that is social science. I am a physical scientist so I need to learn how to communicate, because communication is not just putting facts up on the Power Point. Communication is about translating those facts into information that is relevant to people's lives and values. To that end, it has been very helpful for me to learn about social science research.

*Question: What have you taken from the conference so far?*

Answer: What I am enjoying the most is that there are people here representing so many diverse perspectives. Everybody has experience in a certain area and has something to offer that is completely different from what others have to say. In that way, the conference has really met my expectations, which was to learn from others' experiences.

## Interview with Bob Inglis

*Question: How did you come to your position on climate change – that it is real and human caused?*

Answer: I used to be an ardent denier, [until] our oldest child was voting for the first time [while I was running] for congress in 2004. He told me, "I'll vote for you, Dad, but you're going to clean up your act on the environment." So, I had this new, important constituency at home—my son, his four sisters, and my wife. When I returned to congress, I had an opportunity to be on the science committee. I went to Antarctica twice, and in those visits, I saw evidence that

persuaded me. As a result, I decided that I needed to act and I needed to be involved.

*Question: What is the message that you are delivering and who is your audience?*

Answer: I am trying to reach conservatives, especially college republicans, Federalist Society members, and other people who are forming their opinions. I am trying to persuade them that conservative principles offer an answer to this challenge. Conservative principles look to the marketplace to create growth and to create opportunities for enterprise. The two



specific positions that I hope to advance are:

- 1) Eliminating all subsidies for all fuels. Get the government out of the business of picking winners and losers.
- 2) Make all fuels accountable for their full cost. The idea is to show that a conservative solution to energy and climate would enable the free enterprise system deliver solutions.

with socializing costs. Making us all bear their costs by breathing their soot, for example, while they get the private profits is a bad deal. We want people to have private profits but we want them to be accountable for the costs. As long as we allow market distortion to continue, we will not get innovation. Conservatives are the ones who should be most concerned about that.

## Conservatives want the market to sort out problems. However, the market cannot do that so long as society allows some players to get away with socializing costs.

*Question: What is the price of you speaking out? What has it cost you?*

*Answer:* Saying that climate change was real and that we should do something about it was the largest reason that I lost the primary in June 2010. Democrats are good at emphasizing the egalitarian principle, that things have to be fair. Republicans are really good at emphasizing merit, that we need production, we need solid solutions that work. If we fail as conservatives to deliver those things, then we are failing the country, the future, and our kids. We have to be the people to deliver that free enterprise solution.

*Question: What kinds of questions have you been getting from other conservatives when you introduce these ideas?*

*Answer:* I had a great meeting last night with the college republicans at University of Michigan. I think the message that I am delivering is not one that they are used to hearing just yet. They are used to hearing rejection of any action on energy and climate. However, I think it went quite well and there was some new awareness achieved. Our story as conservatives is that we want the market to sort out problems. However, the market cannot do that so long as society allows some players to get away

*Question: What have you taken from this conference so far?*

*Answer:* One thing I have learned in this conference is to start with a point of agreement and then to move from there. For example, in trying to reach conservatives on the need to prepare a conservative solution on energy and climate, we should assume that they want to be a solution agent and that our shared philosophy can help to solve the challenge. And I think it can, since a key value for many different types of conservatives is accountability. If you just focus on that key value, everyone can contribute to the discussion.



**Aaron Huertas of the Union of Concerned Scientists (left); Deb Heed of the University of Michigan.**

## Appendix A. Workshop participants\*

- Jenna Agins, MS/MBA Student, University of Michigan
- Karen Akerlof, Doctoral Student, Environmental Science & Public Policy, George Mason University
- Matthew Anderson, Executive Director, National Religious Partnership for the Environment
- Axel Aubrun, Principal and Founder, Cultural Logic/Topos Partnership
- Arielle Balbus, Health Outreach Intern, Union of Concerned Scientists
- Jim Ball, Executive Vice President for Policy and Climate Change, Evangelical Environmental Network
- Ruth Greenspan Bell, Senior Fellow in the Climate & Energy Program, World Resources Institute
- Christopher Borick, Director, Institute for Public Opinion, Muhlenberg College
- David Bidwell, Program Manager, Great Lakes Integrated Sciences and Assessments, University of Michigan
- Sally Bingham, President and Founder, The Regeneration Project, Interfaith Power and Light
- Julie Lyons Bricker, Executive Director, Michigan Interfaith Power and Light
- Shari Brown, Director, Environment & Sustainability, Weyerhaeuser Corp.
- Richard Bunch, Managing Director, Erb Institute for Global Sustainable Enterprise, University of Michigan
- Ann Cairns, Director of Strategic Communications and Outreach, American Geophysical Union
- Thomas Catania, Vice President Global Government Relations (retired), Whirlpool Corporation
- Kate Cell, Outreach Coordinator, Climate and Energy, Union of Concerned Scientists
- Antonia Chan, University of Michigan
- Richard Cizik, President, New Evangelical Partnership for the Common Good
- Nancy Cole, Director of Outreach, Climate and Energy Program, Union of Concerned Scientists
- Kara Davidson, MS/MBA Student, University of Michigan
- John DeCicco, Research professor, Energy Institute, University of Michigan
- Thomas Dietz, Professor of Sociology and Environmental Science and Policy, Michigan State University
- Thomas Doherty, Instructor, Ecopsychology in Counseling Program, Lewis & Clark College
- Riley Dunlap, Regents Professor of Sociology, Oklahoma State University
- Paul Edwards, Professor, School of Information and Dept of History, University of Michigan
- John Erb, President, Erb Family Foundation
- Irina Feygina, Researcher and Adjunct Professor, Environment and Society Program, Polytechnic Institute, New York University

\* Institutional affiliations are given for identification purposes only.

- Steven Frenkel, Midwest Office Director, Union of Concerned Scientists
- McKenzie Funk, Journalist, University of Michigan
- David Gard, Energy Program Director, Michigan Environmental Council
- Michael Gordon, Arthur F. Thurnau Professor; Victor L. Bernard Professor of Business Information Technology, University of Michigan
- Lee Gorman, Principal, Barton Consulting Services, LLC
- Kurt Gottfried, Professor Emeritus Department of Physics, Cornell University
- Charles Griffith, Climate and Energy Program Director, Ecology Center
- Jay Gulledge, Senior Scientist and Director for Science and Impacts, Center for Climate and Energy Solutions.
- Andrew Gunther, Executive Director, Center for Ecosystem Management & Restoration
- Geoffrey Haines-Stiles, Documentary Producer, Passport to Knowledge
- Susan Hassol, Director, Climate Communication
- Thomas Hayden, Lecturer, Department of Communication, Stanford University
- Katharine Hayhoe, Director, Climate Science Center; Associate Professor, Dept. of Political Science; Texas Tech University
- Deb Heed, MS/MBA Student, University of Michigan
- Michael Henry, Legislative Specialist, Office of Government Affairs, University Corporation for Atmospheric Research
- Mikkel Hyman, Doctoral Student, University of Michigan
- Brent Hire, MS/MBA Student, University of Michigan
- Andrew Hoffman, Director, Erb Institute for Global Sustainable Enterprise, University of Michigan
- LuCinda Hohmann, Midwest Outreach Coordinator, Union of Concerned Scientists
- Aaron Huertas, Press Secretary, Union of Concerned Scientists
- Robert “Bob” Inglis, former US Congressman (R-SC), U.S. House of Representatives
- Suzanne Elizabeth Jacobs, Journalist, Michigan Daily
- Victoria Johnson, Associate Professor of Organizational Studies, University of Michigan
- Dan Kahan, Elizabeth K. Dollard Professor of Law, Yale Law School
- Karwat Darshan, Doctoral Student, University of Michigan
- Mark LaCroix, Executive Vice President, The CarbonNeutral Company
- Kevin Leahy, Managing Director, Environmental and Energy Policy, Duke Energy
- Anthony Leiserowitz, Director of the Yale Project on Climate Change Communication, Research Scientist, School of Forestry and Environmental Studies, Yale University
- Michelle Lin, MS/MBA Student, University of Michigan
- Arthur Lupia, Hal R. Varian Collegiate Professor of Political Science, University of Michigan
- Makely Lyon, University of Michigan
- Michael MacCracken, Chief Scientist for Climate Change, The Climate Institute
- Ed Maibach, Director, Center for Climate Change Communication (4C), George Mason University
- Robert Marans, Research Professor, the Institute for Social Research, University of Michigan
- Andrew Maynard, Professor of Environmental Health Sciences; Director, Risk Science Center, University of Michigan
- Tim Mealey, Co-founder and Senior Partner, Meridian Institute
- Shelie Miller, Assistant Professor, School of Natural Resources & Environment, University of Michigan
- Paul Mohai, Professor, University of Michigan
- Michael Moore, Associate Dean, University of Michigan School of Natural Resources & the Environment

- Susanne Moser, Director and Principal Researcher, Susanne Moser Research & Consulting
- John Nordgren, Senior Program Officer, Environment, Kresge Foundation
- Jason Owen-Smith, Professor of Organizational Studies; Director, Barger Leadership Institute, University of Michigan
- Ted Parson, Joseph L. Sax Collegiate Professor of Law, University of Michigan
- Jacqueline Patterson, Director, Climate Gap Initiative, National Association for the Advancement of Colored People
- Mary Pearl, Professor, Graduate faculty, Design for Social Innovation, School for Visual Arts, New York, and Co-chair, Expert Panel on Education for Sustainability.
- Steve Percy, Chairman of Wavefront Technology Solutions, Inc., and Director of Omnova Solutions, Inc. CEO BP America (retired)
- Cara Pike, Director, The Social Capital Project
- Eric Pooley, Senior Vice President, Strategy and Communications, Environmental Defense Fund
- Stanley “Skip” Pruss, Principal, 5 Lakes Energy
- Barry Rabe, Arthur F. Thurnau Professor of Environmental Policy, University of Michigan
- Mark Ritz, Vice President, Patronus Capital Group
- Richard Rood, Professor of Atmospheric, Oceanic and Space Science, University of Michigan
- Genevieve Savage, Producer, Detroit Public Television
- Ethan Schoolman, Doctoral Student, University of Michigan
- Suzanne Shaw, Communications Director, Union of Concerned Scientists
- Peggy Shepard, Executive Director, WE ACT for Environmental Justice
- Ariana Silverman, Rabbi, Temple Kol Ami
- Emilia Sibley, MS/MBA Student, University of Michigan
- Peter Sinclair, Producer of the YouTube series “Climate Denial Crock of the Week”
- Sara Soderstrom, Post-Doctoral Student, Erb Institute for Global Sustainable Enterprise, University of Michigan
- Paul Stern, senior scholar, Board on Environmental Change and Society and the National Research Council
- Sabrina Sullivan, Research Assistant, Erb Institute for Global Sustainable Enterprise, University of Michigan
- David Tuft, Program Officer, Climate, Energy Foundation
- David Uhlmann, Jeffrey F. Liss Professor from Practice and Director of the Environmental Law and Policy Program, University of Michigan
- Ana Unruh Cohen, Deputy Staff Director, Committee on Natural Resources, US House of Representatives
- Jane Esper Vogel, Principal, Partners for New Energy, LLC and Board member, Michigan Interfaith Power & Light
- Bud Ward, Editor, Yale Forum on Climate Change and the Media.
- Rebecca Williams, Journalist, Michigan Public Radio
- Kim Wolske, Doctoral Student, School of Natural Resources & Environment, University of Michigan
- Lisa Wozniak, Executive Director, MI League of Conservation Voters
- Michaela Zint, Associate Professor, School of Natural Resources & Environment, University of Michigan

## Appendix B. Workshop agenda

### Workshop Objectives and Agenda

#### Increasing Public Understanding of Climate Risks and Choices: What We Can Learn from Social Science Research and Practice

Thursday, January 19 to Saturday, January 21, 2012

Ross School of Business, University of Michigan, 701 Tappan Street, Ann Arbor, MI

#### Statement of Purpose:

Through moderated discussions, the goals of the workshop are to build a shared understanding of the key challenges constraining US public understanding of climate risks and choices. We will:

- Identify best practices and opportunities to strengthen the integration of social science research and practice in improving public understanding of climate risks and choices.
- Identify the current findings of social science research on public understanding of climate change and their practical applications; and
- Consider the applicable lessons from social science research and practice into reducing historically or current large gaps between scientific and public understanding on other issues (health risks of tobacco, autism risks of vaccines, etc).
- Draw upon our workshop deliberations to engage in a vigorous public dialogue about climate risks and choices.

#### Day One, January 19. Welcome

5:15-6:15 pm, Reception

6:15-6:30 pm, Welcome

Andrew Hoffman, Director, Erb Institute for Global Sustainable Enterprise,  
University of Michigan

Peter Frumhoff, Director of Science and Policy, Union of Concerned Scientists

Alison Davis-Blake, Edward J. Frey Dean, Stephen M. Ross School of Business

Michael Moore, Associate Dean, School of Natural Resources & Environment

6:30-7:30 pm, Dinner

7:30-9:00 pm, Evening Program

*Earth: The Operator's Manual*. Selected segments, short presentation from the filmmaker, Geoffrey Stiles-Haines, followed by discussion with attendees about the issues and challenges of communicating climate change to the public.

Segments: "It's Us" on the scientific basis for anthropogenic climate change and "The Pentagon and Climate Change" on how the military factors climate change into its future operations

**Day Two, January 20. Workshop**  
**How Practitioners and Social Scientists Inform the Public Understanding of Climate Change**

7:45-8:30 am, Registration, Coffee, Light Breakfast

8:30-8:45 am, Welcome and Charge to Participants

Peter Frumhoff, Director of Science and Policy, Union of Concerned Scientists

Andrew Hoffman, Director, Erb Institute for Global Sustainable Enterprise,  
University of Michigan

Tim Mealey, Co-Founder and Senior Partner, Meridian Institute

8:45-10:30 am, **Session 1: The Landscape.**

A discussion of the present landscape of the social debate over climate change. What do public opinion polls, political polls, and social science research tell us about the present state of affairs? What is the state of the debate? What is the state of the academic research to study that debate? How has it manifested itself in terms of the politically charged environment today? What are the prospects for changes in that debate in the short and long term?

Opening statement

Anthony Leiserowitz, Director of the Yale Project on Climate Change  
Communication, Research Scientist, School of Forestry and Environmental  
Studies, Yale University

Presenters

Riley Dunlap, Regents Professor of Sociology, Oklahoma State University

Paul Stern, Principal Staff Officer, the National Research Council of the National  
Academies of Science, Director, Standing Committee on the Human Dimensions  
of Global Change

Cara Pike, Director, The Social Capital Project

Katharine Hayhoe, Director, Climate Science Center, Texas Tech University; and  
CEO, Atmos Research & Consulting

10:30-10:45 am, Coffee Break

10:45-12:15 pm, **Session 2: View from the Field.**

What are the explanations for the state of the landscape and the experiences of practitioners seeking to create common discourse on the issue? What are the experiences of key spokesman on climate change? How are they reaching key constituencies? What has worked, what has not? What are the challenges, what are the opportunities?

Presenters

Robert "Bob" Inglis, former US Congressman, (R-SC)

Rev. Richard Cizik, President, New Evangelical Partnership for the Common Good

Peggy Shepard, Executive Director, We Act for Environmental Justice

Kevin Leahy, Managing Director, Environmental and Energy Policy, Duke Energy

12:15-1:15 pm, Lunch

**1:15-2:45 pm, *Session 3: Social Science and Climate Communications Research.***

What do the fields of sociology, psychology, anthropology, political science, etc. tell us about how to engage the social debate, why people accept or reject scientific conclusions and how they can be better communicated.

**Presenters**

Dan Kahan, Elizabeth K. Dollard Professor of Law, Yale Law School  
 Axel Auburn, Principal and Founder, Cultural Logic/Topos Partnership  
 Susanne Moser, Director and Principal Researcher, Susanne Moser Research & Consulting

2:45-3:00 pm, Coffee Break

**3:00-4:30 pm, *Session 4: Pulling it All Together.***

Where are the intersections between social science research and practical communications issues? What do the previous three sessions tell us about how to move forward in communicating climate science to the public? What lessons can we draw from public understanding on other scientific issues (health risks of tobacco, risks of autism from vaccines, etc.)?

4:30-5:00 pm, Break

5:00-6:00 pm, Dinner

**Evening, January 20. Town Hall****Cures for Climate Confusion: Breaking Through in Our Neighborhoods and Our Nation**

*Blau Auditorium, Ross School of Business, 701 Tappan Street*

6:30-8:00 pm

This part of the program is open to the public, interactive and live-streamed. The goal is to present summary material developed during the day's meetings.

**Presenters**

Andrew Hoffman, Director, Erb Institute for Global Sustainable Enterprise, University of Michigan  
 Peter Frumhoff, Director of Science and Policy, Union of Concerned Scientists  
 Robert "Bob" Inglis, former US Congressman, (R-SC)  
 Steven W. Percy, CEO BP America (retired 1999), Chairman of Wavefront Technology Solutions, Inc., and Director of Omnova Solutions, Inc.  
 Rev. Canon Sally Bingham, President and Founder, Interfaith Power and Light  
 Moderator: Tim Mealey, Co-Founder and Senior Partner, Meridian Institute

**Day Three, January 21. Working Session****The Future of Social Science Research and Public Understanding of Climate Change**

8:00-9:00 am, Breakfast

9:00-12:00 pm, ***Reflection and Next Steps***

*Issue 1: Implications for research.*

*Issue 2: Implications for public engagement.*

*Issue 3: Next steps for development of outputs based on workshop discussions.*

12:00-1:00 pm, Lunch

1:00 pm, Departures

## Appendix C. The “Six Americas” and their views on climate change\*

**The Alarmed** (2009: 18%, 2011: 12%) are most convinced that climate change is happening, see it is a threat to them personally and are very worried about it. This group tends to be moderate to liberal Democrats who are active in their communities. They are more likely to be women, older middle-aged (55-64 years old), college educated and upper income, and hold relatively strong egalitarian values, favoring government intervention to assure the basic needs of all people. They believe that it is more important to protect the environment than privilege economic growth and are least likely to be evangelical Christians among the six segments.

**The Concerned** (2009: 33%, 2011: 27%) are also convinced that climate change is happening, although they are less certain and see it less as a personal threat than the alarmed. This group is very representative of the full diversity of America in terms of gender, age, income, education and ethnicity – and tends to be moderate Democrats who have an average rate of involvement in civic activities.

**The Cautious** (2009: 19%, 2011: 25%) are somewhat convinced that climate change is happening, but the belief is relatively weak, and many say that they could change their minds. This group is evenly divided between moderate Democrats and Republicans, with relative low levels of civic engagement and traditional religious beliefs.

**The Disengaged** (2009: 12%, 2011: 10%) are not at all sure that climate change is happening and are the group most likely to say they could easily change their minds. They have hardly thought about climate change at all and do not consider it personally important. This group tends to be moderate Democrat but is politically inactive. They prefer economic growth over environmental protection and are more likely to be minority women with less education and lower incomes.

**The Doubtful** (2009: 11%, 2011: 15%) say that they don’t know whether climate change is happening or not and do not see it as a personal threat. This group is more likely to be male, older, better educated, high income, white and Republican with an average rate of involvement in civic activities. They hold strongly individualistic values and are more likely to say that they are “born again.”

**The Dismissive** (2009: 7%, 2011: 10%) are sure that climate change is not happening and are they are not worried about the issue at all because they think it doesn’t exist. This group is more likely to be high-income, well-educated, white men. They are also more likely to be very conservative Republicans who are civically active, hold strong religious beliefs and are the segment most likely to be evangelical Christian. They strongly endorse individualistic values and oppose most forms of government intervention.

\* See endnote #7.



## Appendix D. Selected media citations

### News stories

Hoffman, Andrew J. and Peter C. Frumhoff. "On Climate Change, Society Trails Science." *Philadelphia Inquirer*, February 27, 2012. Online at [http://articles.philly.com/2012-02-27/news/31104786\\_1\\_climate-change-climate-scientists-climate-science](http://articles.philly.com/2012-02-27/news/31104786_1_climate-change-climate-scientists-climate-science).

Kodrosky, Terry. Climate change town hall meeting to bring together academics, practitioners." *The University Record Online*, week of January 16, 2012. Online at [http://ur.umich.edu/1112/Jan16\\_12/3041-climate-change-town](http://ur.umich.edu/1112/Jan16_12/3041-climate-change-town).

"Panel of experts meet to clarify 'climate confusion'", *The Washtenaw Voice*, January 23, 2012. Online at <http://www.washtenawvoice.com/2012/01/panel-of-experts-meet-to-clarify-climate-confusion/>.

Ward, Bud. "Goal of U. of Michigan Erb Institute/UCS Workshop: Better Understanding and Improving Climate Communications." *The Yale Forum on Climate and the Media*, January 25, 2012. Online at <http://www.yaleclimatemediaforum.org/2012/01/better-understanding-improving-climate-communications/>.

Williams, Rebecca. "Breaking Through to Climate Change Skeptics," *Michigan Public Radio*. Podcast and transcript available online at <http://michiganradio.org/post/breaking-through-climate-change-skeptics>.

### Participant interviews

Sinclair, Peter. "Interview with Katharine Hayhoe: Much of This is Intended to Intimidate," *Climate Denial Crock of the Week*, January 24, 2012. Online at <http://climatecrocks.com/2012/01/24/katherine-hayhoe-the-interview-much-of-this-is-intended-to-intimidate/>.

Sinclair, Peter. "Richard Cizik: For New Evangelicals, Climate is a Faith Issue," *Climate Denial Crock of the Week*, February 14, 2012. Online at <http://climatecrocks.com/2012/02/14/richard-cizik-for-new-evangelicalsclimate-is-a-faith-issue/>.

Sinclair, Peter. "Laffer Throws a New Curve: Bob Inglis Explains," *Climate Denial Crock of the Week*, February 27, 2012. Online at <http://climatecrocks.com/2012/02/27/laffer-throws-a-new-curve-bob-inglis-explains/>.

Sinclair, Peter. "Global Warming: What We Knew in '82," *Climate Denial Crock of the Week*, March 26, 2012. Online at <http://climatecrocks.com/2012/03/26/global-warming-what-we-knew-in-82/>.

## Appendix E. Better understanding and improving climate communications

**Bud Ward** is editor of The Yale Forum on Climate Change and the Media. This report originally appeared online at <http://www.yaleclimatemediaforum.org/2012/01/better-understanding-improving-climate-communications/> on January 25, 2012 and is reprinted with the kind permission of the author.

ANN ARBOR, MI.—Here’s the formula:

Convene nearly 100 of the nation’s foremost climate change social scientists and communicators (you can call them “practitioners” here) ...

Throw in two group dinners in a storied, albeit wintry, academic environment ...

Open with a top-name documentary film producer highlighting footage from one of the nation’s most respected climate scientists ... who also happens to be one of the field’s leading science communicators. (Hint, hint: Richard Alley and *Earth: The Operator’s Manual*.)

Include a Friday evening public y’all-come “Town Hall” meeting.

And, and this is important...

Flat-out prohibit the use of Powerpoints once the opening plenary talk is finished, and limit subsequent formal presentations to only five or seven minutes each, keeping the ball rolling and the invited participants actively engaged.

There you have it. And what exactly you do have is the January 19-21 University of Michigan Erb Institute/Union of Concerned

Scientists seminar on “Increasing Public Understanding of Climate Risks and Choices: What We Can Learn from Social Science Research and Practice.”

### **Social Sciences: MIA (Missing in Action) from Climate Dialogue**

For climate science/social science/communications wonks from across the country, it was a smorgasbord of provocative presentations and group interactions, topped off by commitments to build on the lessons learned and shared. Organized by Erb Institute Director Andrew Hoffman of the University of Michigan and UCS Climate Campaign Chief Scientist Peter C. Frumhoff, the meeting was built around the shared concern that ...

The public dialog concerning human-induced global warming or climate change has been dominated by the physical sciences in defining the problem and by economics in determining suitable policy responses. Missing from the equation are important contributions to be made by the social and psychological sciences, in part because the latter have been inadequately ‘incentivized’ to join the discourse. The full day Friday session opened

with a presentation seeking to explain, at least in part, reasons for declines in public concern over climate change in the face of mounting scientific evidence. Among key factors identified: the sagging economy coupled with high unemployment; drop-offs in media coverage; unusual cold weather spells (“snowpocalypse” and “snow-mageddon”) leading to public confusion; efforts by an effective “denial industry”; and public perceptions of controversies surrounding the hacked e-mail and mistaken melting Himalayan glaciers experiences.

### A Host of Key Insights on Communications

Among key messages shared by expert presenters throughout the session, and seemingly accepted in large part by many of those in attendance:

- Climate change “engagement” strategies and messages need to be specifically targeted to different audiences, including those across a spectrum of acceptance or denial of established climate science evidence;
- As important as the message to be delivered is the specific messenger delivering that message: An ideal message or speaker for one audience may fall flat before other audiences, notwithstanding possible similarities in the message being delivered;
- Providing climate science “knowledge” to specific audiences is necessary, but ultimately insufficient if that audience’s emotions, values, ideology, and overall belief systems are not accounted for and addressed. In addressing an audience, speak directly to their aspirations and values, one participant advised, and avoid confounding facts and values. “You’ll otherwise lose the battle for attention .... The ‘should’ claims provide an excuse for the audience to run away.” Basing your views primarily on the much-ballyhooed “knowledge deficit,” “science illiteracy,” “knowledge gap” assumptions leads only to a fool’s errand.
- Three critical steps in devising a climate

communications strategy: A clear sense of “present realities”; a clear sense of where we want to go; and a roadmap to get there.

- Avoid an attitude of “We’re right. They’re wrong. How can we change them?”
- Try to avoid the audience’s conflating a policy response, for instance “cap-and-trade,” with the foundational scientific evidence. They can understand and support the latter while objecting to the former. “Embed sustainability into the DNA of civilization itself,” one expert suggested, so citizens “would almost have to make a conscious decision NOT to be sustainable.” Adopt an attitude of “amnesty,” another suggested, for those who, for instance, have put people at high risks by building in flood plains and vulnerable areas.
- People conform to information processing consistent with their cultures, one expert social scientist said. “Your processing is motivated to affirm the dominant view of your group; you search for affirming information, and you best remember affirming information.” Another: “Open communications by reaffirming the listener’s worth... come as a friend, a friendly communicator. Find connections, and tap into cultural values that speak to that audience ... People will defend their sense of self before they will change their behavior.” In a hero-oriented society, make it heroic “to act to protect the environment,” and give people “a reason to become heroes



Julie Lyons Bricker of Michigan Interfaith Power and Light.

in a climate protection culture.” Another suggestion: “Start with where they [the audience] are, not with where you are.”

- Consider focusing on climate change risks to motivate particular audiences to take concrete actions. The insurance example — home owners annually buy fire insurance not because we think our home will burn down, but rather because we don’t know that it won’t — is one example of effective risk story-telling.
- In the case of those who might be considered to be “conspiracy theorists” (for instance, suspicious of an agenda they see as seeking to deprive rights and freedoms) providing more information may well be counterproductive: the more information provided a conspiracy theorist ... the bigger the conspiracy they perceive.
- The public at large cannot be expected to “study” and absorb or substantially understand climate science. Instead, they will “take their cues” from the political leaders and activists or spokespersons they most admire, whether it be an Al Gore or Bill McKibben or a Rush Limbaugh.
- Public understanding and acceptance that there is a strong consensus on climate science across the scientific community is crucial, but for now too large a segment of the public is unaware that such a consensus indeed exists.
- Constructive policy action on an issue

like climate change can be driven by a majority of public opinion, and consensus does not mean “unanimity.” The “let me persuade you” model is flawed in addressing the general public. Better to think of the model of a jury trial: “We don’t have to convince the opposing lawyer, but rather the jury,” one speaker emphasized.

- The public is unrealistic in thinking the scientific community can substantially reduce or eliminate legitimate uncertainty, but uncertainty (which cuts both ways) is not an excuse for inaction in the face of overwhelming evidence.
- Repetition of key points by respected messengers is crucial. For instance: Climate change is real; it’s the result of human activities this time; the scientific community agrees; and there are things that can be done to mitigate its worst impacts.
- In addressing faith communities, several speakers said that notwithstanding strong scientific evidence, an effective message can be that “You should care because God cares.” “God cares for those suffering from desertification,” a speaker emphasized. “Think about it theologically .... God will hold us accountable.” Another speaker: “Love God and love your neighbors as yourself,” and if we love our neighbors — defined to include future generations — we do not pollute or foul their space.
- A positive attitude, and the very word “solutions” can be invaluable. “Industry loves focusing on ‘solutions,’” an industry representative advised. Another approach discussed as being helpful in capturing corporate interests: engage them on notions of emerging technologies and long-term business and employment opportunities.
- A question raised: Should there be a climate social sciences “extension service” analogous to the agricultural extension service?
- Consider the notion not of “global warming” but rather of “local warming.” How would your community look in a four-degrees warmer climate? What impacts on water supply, on local farming? What would be involved in adapting to it? How would it



Genevieve Savage of Detroit Public Television.

be financed? What winners, what losers? Etc.

- Just as climate scientists are not “monolithic,” neither are social scientists. Each field has its own prestigious journals, its own institutional pressures (e.g., tenure pressures), its own culture.

### **A Conservative’s ‘Conservative Solution’ on Climate, Energy**

Along with one-and-a-half days of intense information-sharing among the invitees, the Erb Institute/UCS program included a Friday evening “town hall” open to the public. University security officials, cognizant of the fracas sometimes accompanying discussions of climate change, insisted on having uniformed campus security personnel in the crowded business school theater for the event. That proved unnecessary.

Among the workshop participants addressing that town hall session, former South Carolina Republican Congressman Bob Inglis, who describes himself as staunchly politically conservative, explained how two visits to Antarctica had prompted him to abandon his climate science skepticism and accept the consensus science.

“Who here is a conservative, raise your hand,” Inglis teased in his opening remarks. “Anyone know a conservative? Anyone seen one in a zoo?”

Inglis, defeated in 2010 in the Republican primary, pointed to connections between science and religion and said he advocates a “conservative solution” to energy and climate issues.

“End all subsidies for all fuels,” Inglis said. “Attach all costs to all fuels. Make them accountable for all of their costs. Fix the market distortion, internalize the negative externalities. Make it so the market place can properly judge petroleum vis-à-vis other competing transportation fuels; coal-fired electricity vs. other ways of making electricity.”

Inglis, in Q&A with an audience member, acknowledged that zeroing-out all subsidies would initially hurt solar and some other energy supplies, but he said that by reflecting “all” costs of fossil fuels, that distortion would in time be eliminated. The suggestion prompted some concerns about how “all costs” would be defined — would it include military costs involved, for instance, with keeping the Straits of Hormuz open to oil shipments?

Program sponsors pledged toward the end of the Saturday, January 21, session to develop ways to continue the dialogue and foster collaborations among and beyond those invited to participate in the workshop.

UCS’s Frumhoff acknowledged that the climate change challenges amount to “a marathon and not a sprint” and said that in the end, “none of us knows exactly how it’s all going to work” in terms of best informing the public and encouraging sustainability in the long run.

A broadcast report by Rebecca Williams of Michigan Public Radio’s “The Environment Report” highlights some aspects of the meeting.



**Tim Mealey of the Meridian Institute.**

## Acknowledgements

The workshop was conceived by **Andrew Hoffman**, of the Erb Institute for Global Sustainable Enterprise, and **Peter Frumhoff** and **Kate Cell** of the Union of Concerned Scientists. This report was written by **Arielle Balbus** of the Union of Concerned Scientists and designed by **Kate Cell**.

Collaborators at the Erb Institute included **Dominique Abed; Rick Bunch; Dawn Evans; Frank Fanzone; Sabrina Sullivan, and Shelly Whitmer**. Collaborators at UCS included **Arielle Balbus; Nancy Cole; Aaron Huertas; and Suzanne Shaw**.

**Tim Mealey** of the Meridian Institute provided expert assistance with planning, served as facilitator for the workshop, and moderated the town hall discussion.

Generous financial and logistical support

was provided by:

- Department of Atmospheric, Oceanic and Space Sciences, College of Engineering, University of Michigan
- Graham Environmental Sustainability Institute, University of Michigan
- Great Lakes Integrated Sciences and Assessment Center, University of Michigan
- Michigan Memorial Phoenix Energy Institute, University of Michigan
- School of Natural Resources & Environment, University of Michigan

The following University of Michigan students volunteered logistical, note-taking, and outreach support: **Jenna Agins, Antonia Chan, Kara Davidson, Deb Heed, Brent Hire, Mikell Hyman, Sabrina Sullivan, Darshan Karwat, Michelle Lin, Makely Lyon, Ethan Schoolman** and **Emilia Sibley**.



From left to right: Kevin Leahy of Duke Energy; Thomas Doherty of Lewis and Clark College; Ed Maibach of George Mason University.

# Notes

