

**TESTIMONY OF PETER C. FRUMHOFF, PH. D**  
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**AND**  
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**UNION OF CONCERNED SCIENTISTS**  
**BEFORE THE**  
**COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,**  
**UNITED STATES SENATE**

**NOVEMBER 14, 2007**

**Legislative hearing on "A Time for Change: Improved Federal Climate Research  
and Information Program"**

Mr. Chairman and distinguished Members of the Committee, thank you for this opportunity to speak with you today on improving the federal climate change research program and the communication of climate information to decision makers.

I am Peter Frumhoff, Director of Science and Policy and Chief Scientist of the Climate Campaign at the Union of Concerned Scientists (UCS). I am an ecologist and global change scientist, and a lead author of the current assessment report of the Intergovernmental Panel on Climate Change (IPCC). Over the past decade, I have also guided a series of scientific collaborations to assess and communicate to policymakers and the public the projected impacts of climate change on several regions of the United States, including California<sup>1</sup>, the Great Lakes region<sup>2</sup> and, most recently, across the Northeast states<sup>3</sup>.

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<sup>1</sup> Hayhoe, K., D. Cayan, C. B. Field, P. C. Frumhoff, E. P. Maurerf, N.L. Miller, S.C. Moser, S.H. Schneider, K.N. Cahill, E.E. Cleland, L. Dale, R. Drapek, R.M. Hanemann, L. S. Kalkstein, J. Lenihan, C.K. Lunch, R.P. Neilson, S.C. Sheridan, and J.H. Verville (2004). Emissions pathways, climate change, and impacts on California, The Proceedings of the National Academy of Sciences 101: 12422–12427.

<sup>2</sup> Kling, G.W., K. Hayhoe, L.B. Johnson, J.J. Magnuson, S. Polasky, S.K. Robinson, B.J. Shuter, M.M. Wander, D.J. Wuebbles, D.R. Zak, R.L. Lindroth, S.C. Moser, and M.L. Wilson. (2003). *Confronting Climate Change in the Great Lakes Region: Impacts on our Communities and Ecosystems*. Union of Concerned Scientists, Cambridge, M.A., and Ecological Society of America, Washington, D.C.

<sup>3</sup> Frumhoff, P.C., J.J. McCarthy, J.M. Melillo, S.C. Moser, and D.J. Wuebbles. (2007). *Confronting Climate Change in the U.S. Northeast: Science, Impacts, and Solutions*. Synthesis report of the Northeast Climate Impacts Assessment (NECIA). Cambridge, MA: Union of Concerned Scientists.

I am here today to provide UCS's support for the Global Change Research Improvement Act of 2007 (GCRIA). We believe that federal government has an essential leadership role to play in ensuring that the public and policymakers in the United States have the best available science upon which to inform and motivate sound decisions about mitigating and adapting to global climate change.

We strongly support the bill's intent to serve all the regions of the country, and to provide information on climate change vulnerabilities and impacts across sectors and under a range of plausible scenarios of further climate change. We appreciate the explicit intent to couple high-quality policy-relevant climate assessments with ongoing outreach to public and private sector decision-makers and ensure that findings can inform and strengthen their capacity to adapt – to manage those impacts which are now unavoidable. We also appreciate that the work carried out under this bill will provide much needed information on those most severe impacts and costs of adaptation that can still be avoided through timely, effective actions to reduce further emissions.

I wish to make several specific points:

*1. Climate change poses substantial risks to the United States.* Research summarized by the IPCC<sup>4</sup>, UCS-led regional impacts assessments, and other recent studies makes clear, for example, that our coastlines are highly vulnerable to sea-level rise, that projected increases in the frequency and intensity of extreme summer heat threatens the public

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<sup>4</sup> Field, C.B., L.D. Mortsch,, M. Brklacich, D.L. Forbes, P. Kovacs, J.A. Patz, S.W. Running and M.J. Scott, 2007: *North America. ClimateChange 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge University Press, Cambridge, UK, 617-652.

health in many U.S. cities, and declining winter snowpack is reducing already scarce water resources in the intermountain west.

Managing these risks effectively requires that decision-makers across the nation at all scales – from local to national – and across all climate sensitive sectors – from public health to coastal resources to agriculture – have access to the best available information upon which to make informed choices about both adaptation and mitigation.

Due to inertia in the Earth’s climate, we are poised to experience substantial global warming over the next several decades – to these changes we must adapt. But the further extent and severity of climate change impacts by mid-century and beyond depends upon the choices that the US and other nations make today about our emissions of heat-trapping gases.

*2. The scientific capacity to assess climate change impacts at a regional scale has considerably improved since the US National Assessment<sup>5</sup> was published in 2001.*

Continued dedicated efforts to improve that capacity are essential, but the science exists today to provide decision-makers with high-quality information on climate change risks and vulnerabilities. Assessments must be produced at regular multi-year intervals, both to capture improvements over time and to respond to evolving information needs of decision-makers.

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<sup>5</sup> National Assessment Synthesis Team (2001). *Climate Change Impacts on the United States: The Potential Consequences of Climate Variability and Change*, Report for the US Global Change Research Program, Cambridge University Press, Cambridge UK, 620 pp.

*3. There is an enormous gap between the need and demand for policy-relevant climate change information and the information provided by the current U.S. Climate Change Science Program.*

With climate change, the conditions we face in the decades ahead will be very different from those we face today. Yet, since the publication of the U.S. National Assessment in 2001, the federal government has not been systematically providing accessible, updated information on climate change risks and impacts across climate-sensitive sectors and regions of the United States.

The UCS-led regional impacts assessments I noted above have been designed to help fill this gap. In every region in which we have worked, the public and policymaker demand for high quality information on impacts and response options is enormous.

In July 2007, for example, we released the Northeast Climate Impacts Assessment (NECIA), a three-year collaboration between UCS and more than 50 independent scientists and economists. Our report details, for example, that sea-level rise is projected to dramatically increase coastal flooding in the cities of Boston, MA and Atlantic City, NJ – for each, the current 100 year coastal flood is conservatively projected to occur every 3-4 years by mid-century.

We have distributed thousands of copies of the report and held briefings for municipal leaders, business leaders, senior officials of state agencies, and several governors and members of Congress from across the Northeast. New Jersey Governor John Corzine's staff has cited the NECIA as extremely valuable to their work and has asked UCS to work with them to incorporate NECIA findings into a variety of climate initiatives under way in the state. New York State's new climate office has asked for several different NECIA briefings to delve more deeply into the climate implications for their relevant state

agencies and to support climate initiatives under consideration by the Spitzer Administration. New York City's Office of Long-Term Planning and Sustainability is convening a citywide agency task force to prepare for the climate impacts that are no longer avoidable and has asked NECIA experts for assistance in developing the action plan. In New Hampshire, the New Hampshire Department of Environmental Services placed strong emphasis on the NECIA findings in the rationale for the draft legislation that would implement the Regional Greenhouse Gas Initiative in that state.

Three years ago, in September 2004, I had the privilege of appearing before this Committee to share with you the findings of a major new study on the projected impacts of climate change on California, published in the *Proceedings of the National Academy of Sciences*<sup>6</sup>. Joining me that day for the presentation was one of my co-authors, Dr Daniel R. Cayan, Director of the Climate Research Division at the Scripps Institute of Oceanography, University of California, San Diego. I am very pleased to tell you that we have learned from senior policymakers in California that our report has been an enormously important resource to the state as it develops aggressive plans to reduce emissions and to cope with the substantial impacts of climate change (including steep declines in the Sierra snowpack that provides water to millions across the state) that are now unavoidable.

I am also sorry to tell you that Dr. Cayan lost his home in the recent Southern California wildfires. Let me be clear: There is no evidence that climate change had a significant role in these recent fires. But the research of Dr. Cayan and his colleagues

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<sup>6</sup> Hayhoe, K., D. Cayan, C. B. Field, P. C. Frumhoff, E. P. Maurerf, N.L. Miller, S.C. Moser, S.H. Schneider, K.N. Cahill, E.E. Cleland, L. Dale, R. Drapek, R.M. Hanemann, L. S. Kalkstein, J. Lenihan, C.K. Lunch, R.P. Neilson, S.C. Sheridan, and J.H. Verville (2004). Emissions pathways, climate change, and impacts on California, *The Proceedings of the National Academy of Sciences* 101: 12422–12427.

indicates that global warming may be increasing the risk and severity of high elevation forest wildfires across much of the western United States. Such research is at its early stages. The GCRIA should help ensure that citizens and decision-makers across the west have access to state-of-the art research on such risks and vulnerabilities – research that is designed to help communities, resource managers, and policymakers constrain and manage the impacts on property, air quality and natural ecosystems.

Senators, I am proud of the work that we have done. Every month, I receive requests for similar information in regions of the U.S. where no recent integrated climate impacts assessments have been done. But the Union of Concerned Scientists should not be in the business of providing the nation with robust, accessible, policy-relevant information on climate change impacts. We are simply not positioned to provide such information at a scale commensurate with the need. This is the responsibility of the federal government.

*4. It is critical to ensure that the assessment products be produced in accordance with highest standards of scientific integrity and the assessment process is not subject to political interference.* Towards that end, UCS strongly endorse the GCRIA's provisions to protect the integrity of the scientific research and the unfettered dissemination of research results by participating scientists.

We appreciate that the White House Office of Science and Technology Policy (OSTP) has an important role to play in interagency coordination on scientific and technology matters. However, we remain concerned that the proposed establishment of the Integrated Program Office within (OSTP) may subject the assessment process to undue political interference. To address this concern, we request that the Committee consider

further strengthening the bill to ensure that both the climate assessment and outreach activities carried out under the GCRIA be subject the transparent public review by a credible, independent body that is charged with recommending any necessary corrective action. For example, the President could appoint an independent, bipartisan commission that includes stakeholders, scientists, and social scientists to provide ongoing oversight and review of the program. The commission could issue a public report to the President and Congress at regular intervals (e.g. every 3 years) with the requirement that a timely response to recommendations be provided (e.g. within 6 months of report production).

Finally, I wish to thank Senators Kerry and Snowe for their recognition that Congress needs more expert advice to address the broad range of critical science and technology policy issues facing our nation. UCS looks forward to working with Congress to further assess and refine this proposal for a National Science and Technology Assessment Service and ensure that it receives the needed resources to fulfill this crucial mission.

I look forward to working with the Committee and my colleagues in the scientific community to assist in the transition to a new era of accurate, readily accessible, and policy-relevant information on climate change risks, adaptation strategies, and mitigation options for the United States. I thank you for your time.