



## Under Secretary for Science

Washington, DC 20585

August 14, 2006

Dr. Michelle S. Broido  
Associate Vice Chancellor for Basic Biomedical Research,  
and Director, Office of Research, Health Sciences  
University of Pittsburgh  
Scaife Hall, Suite 401  
3550 Terrace Street  
Pittsburgh, P A 15261

Dear Dr. Broido:

By this letter, I am charging the Biological and Environmental Research Advisory Committee (BERAC) to convene a panel to review the Biological and Environmental Research (BER) Integrated Assessment Research Program (IARP), which is one of the Department of Energy (DOE) Climate Change Research Programs. Although the level of funding for the program has been relatively modest (\$3 million per year), the IARP is unique in the portfolio of Federal programs that are part of the interagency U.S. Climate Change Science Program (CCSP). It is the only program that develops fully integrative models for use in assessing both the contributing causes and consequences of human-induced climate change. This includes economic activities that drive emissions of greenhouse gases (GHG), the emissions that result from both anthropogenic and natural sources and their fate and effect on the Earth's climate, and the impacts of resulting climate change on managed and unmanaged sectors. It also provides tools for assessing the implications of potential policy options for mitigating greenhouse gas emissions information at a national and international scale.

About half of the overall IARP funding is currently allocated to support the continuing development and improvement of three integrated assessment models, the Massachusetts Institute of Technology Integrated Global Systems Model and the Pacific Northwest National Laboratory Mini Climate Assessment Model (MiniCAM) and Second Generation Model (SGM). These three models are being used to address "what-if" questions about potential economic costs, benefits, and tradeoffs of alternative technology or policy options for reducing greenhouse gas emissions at a national or global scale.

The other half of the IARP funding is oriented towards individual research projects, with an emphasis on information to improve assessments of mitigation costs and benefits. Individual research projects on the development and improvement of models for assessing environmental costs and benefits of climate change itself, including the extent to which such environmental costs could be altered by different possible technology and policy options for reducing such change, has been a lower priority for the other half of the IARP.

I am specifically charging the BERAC to address the following in its review of the program:

- Assess the relevance of the goals and objectives of the IARP to the Climate Change Research Division's Long-Term Performance Goal of delivering improved data and models for policy makers to determine safe levels of greenhouse gases for the Earth's system. Is there a need for any changes in the scope, goals, and objectives of the program to increase its relevance to this long-term performance goal?
- In what ways is the IARP advancing the state-of-the-science of integrated analysis methods and models for use in assessing the environmental costs and benefits of climate change? Are the methods and models developed in the IARP scientifically sound, and what additional research, if any, is most needed to enhance the scientific underpinning of integrated assessment methods and models?
- Is the scope of the IARP sufficiently well defined with goals and near- and long-term objectives that are specific and achievable, given the current funding level for the program?
- Does the program have specific near-term and longer-term performance metrics or targets for measuring progress toward both the IARP goals and objectives and the long-term goal of the BER CCSP? If not, provide a set of recommendations concerning the scope, goals, and objectives of the program and its near- and long-term performance targets toward the long-term of the CCSP.
- Is there a need for more research to develop methods and models for assessing environmental costs and benefits of climate change at local to regional scales which could then be integrated up to a national level if needed? If so, provide a set of recommendations as to the kinds of research needed and how the IARP might be configured to address the needed research.
- Is the IARP effectively utilizing data, information, and models developed in other Climate Change Research Programs funded by BER, such as the climate modeling, carbon cycle, and ecosystem functioning and response research programs, to advance integrated assessment modeling? If not, what changes in the IARP does BERAC recommend to more effectively utilize such data, information, and models?
- Is the IARP paying sufficient attention to evaluating both the performance and utility of IA methods and models for decision support, and determining where reductions in uncertainties and improvements are most needed to enhance their reliability and utility? If not, provide a set of recommendations concerning the kinds of research the IARP should consider supporting to evaluate the performance of models and methods being developed by the program.
- Since the IARP is part of the interagency U.S. CCSP, is it appropriately focused on developing decision support tools and information relevant to the needs of the CCSP?
- Is the balance between funding the two large integrated assessment models and the smaller investigations appropriate?

I suggest you meet with Jerry Elwood and John Houghton to develop a format for the review. They can provide names of experts in integrated assessment research whom you may want to consider asking to serve on the BERAC subcommittee that conducts the review. I would like to have a report of the review from BERAC at its spring 2007 meeting.

Sincerely,

A handwritten signature in cursive script that reads "Raymond L. Orbach". The signature is written in black ink and is positioned above the printed name.

Raymond L. Orbach

Cc: Elwood, Jerry  
Thomassen, David