

**Statement of Dr. John H. Marburger, III**  
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**to the**  
**Committee on Commerce, Science and Transportation**  
**United States Senate**  
**“A Time for Change: Improving the Federal Climate Change**  
**Research and Information Program”**  
**November 14, 2007**

Chairman Inouye, Vice Chairman Stevens and Members of the Committee, I appreciate the opportunity to appear before you today at this hearing on climate change. My remarks will focus on how climate change science has been conducted in the Federal government in the past, and on drawing lessons from our experiences that might inform future coordination and management of the Federal climate science enterprise.

**Summary of USGCRA**

The U.S. Global Change Research Act of 1990 (USGCRA) was not the first legislation to deal with climate change science, but it was a landmark piece of legislation that established, for the first time, a structured Federal process for addressing the scientific questions associated with global change in an organized way across agencies.

The USGCRA did not focus only on climate change. Although it included climate change and variability as one of the agents of global change, it also expressed concerns about a growing human population and the effects of industrial and agricultural practices on Earth habitat, including the effects of chlorofluorocarbon emissions on the ozone layer. Only later did the Federal agencies focus settle on climate change. All these issues of global change, however, overlap to some extent with climate change – not so much with the physical mechanisms of the climate as with the impacts of a changing climate on human, plant, and animal populations.

USGCRA accomplished several important things. First, it created the U.S. Global Change Research Program (USGCRP or Program), the first interagency program aimed at climate change and other global change processes and agents. At that time, several Federal agencies had begun to investigate global change processes, and the enactment of the USGCRA brought those research efforts together.

Second, USGCRA established a governance structure for the interagency Program. It created a committee under the Federal Coordinating Council on Science, Engineering, and Technology (which has since evolved into the National Science and Technology Council (NSTC)) and specified that it would be populated by high-ranking officials from a minimum of fourteen Departments, agencies, and White House Offices. Under this structure, the Director of the Office of Science and Technology Policy (OSTP), as Director of NSTC, provided oversight for the interagency process.

Third, USGCRA required that the Program develop a plan. It specifically required that the plan define roles and responsibilities, identify key research activities, and foster domestic and international partnerships. A set of specific research elements was also included.

Fourth, USGCRA recognized the value of external guidance, provided for broad public participation in the development of the Plan, and required periodic review of the Plan by the National Research Council.

Fifth, the legislation called for budget coordination among the Program participants. Budget coordination among agencies can be a tricky process, but the USGRCA called for guidance to be issued by the interagency Committee to the participating agencies. It also required each agency to identify its global change research activities and to report those elements to the Committee and as part of its budget request. In turn, the President was instructed to provide the Committee with an opportunity to review and comment on the budget requests of the participating agencies.

Sixth, the USGCRA required two periodic reports: a scientific assessment of global change and an additional report.

Seventh, the law recognizes the value of communicating the results of research investigations and calls for the establishment of a global change research information office.

Eighth, the USGCRA highlighted the importance of U.S. participation in international cooperative efforts to advance research and to work with international partners in mitigating and adapting to the effects of global change.

How well did this structure and management approach work? During the nineties, the U.S. supported long-term studies, research into basic climate change processes, the development of models, and cooperative international field campaigns and assessments. But it was not until 2000, 10 years after the USGCRA was passed, that a National Assessment was published. Further, all the prescribed statutory elements of the scientific assessment provision were not completed until July 2003.

During that time, however, U.S. scientists played a central role in the investigation of many critical climate change processes, and U.S. scientists from Federal agencies and from numerous research institutions supported by federal funds produced a significant portion of the scientific work underlying the Intergovernmental Panel on Climate Change (IPCC) assessment reports, as well as other international scientific efforts.

### **Summary of the President's plan**

In a report commissioned by the current Administration, *Climate Change Science: An Analysis of Some Key Questions*, the National Research Council reviewed and evaluated the climate change assessment produced by the Intergovernmental Panel on Climate Change (IPCC, 2001) and made a number of recommendations about climate change research needs. In response to that report and a growing concern about climate change, the President launched the Climate Change Research Initiative in 2001 to provide a distinct focus to the 13-year old Global Change

Research Program, and to accelerate progress in resolving uncertainties about the global climate system that had been identified by policymakers or described in the National Research Council report.

At that time, it also became clear that energy consumption and energy technologies would play central roles in understanding and forecasting climate change and mitigating emissions of greenhouse gases. As a result, the Climate Change Technology Program (CCTP) was created to pursue the research and development of technologies to complement the science research efforts. The Program subsequently was authorized in the Energy Policy Act of 2005.

In order to improve the research support for decision making and to increase accountability, the Administration developed a new management structure for these research programs. The President announced this change on February 14, 2002, when he established a new high-level structure for coordinating Federal climate change science and technology development.

At the highest level, the new structure acknowledges the responsibility of the White House policy offices to examine high level climate science and technology policy and make recommendations to the President.

To establish clear line authority for execution of the program, the President designated the Secretaries of Commerce and Energy to assume responsibility for integrating and managing the program offices. A Committee on Climate Change Science and Technology Integration was established to oversee the Federal climate change science and technology programs. The Committee consists of the Secretaries and Administrators of Departments and Agencies that have substantial research activities in climate change science or technology and is co-chaired by the Secretaries of Commerce and Energy. The Executive Director of the Committee is the Director of the OSTP. The Committee, in coordination with the Office of Management and Budget (OMB), provides recommendations concerning climate science and technology to the President and may, if needed, recommend the movement of funding and programs across agency boundaries.

In addition to the Cabinet-level Committee, an interagency working group was established at the Deputy Secretary or Undersecretary level to ensure implementation of priority research activities within the Departments. The Interagency Working Group on Climate Change Science and Technology reports to the Committee on Climate Change Science and Technology Integration and meets regularly to address pressing issues within the Climate Change Science Program and the Climate Change Technology Program. The Chair and Vice Chair rotate annually between the Department of Energy and the Department of Commerce. The Executive Secretary of the Working Group is the OSTP Associate Director for Science. The Working Group reviews all programs that contribute to climate change science and technology and makes recommendations to the Committee about funding and program allocations in order to implement a climate change science and technology program that will contribute to the enhanced understanding needed to better support policy development.

The Climate Change Science Program (CCSP) was developed to balance the near-term (2- to 4-year) focus of the Climate Change Research Initiative with the breadth of the USGCRP, pursuing

accelerated development of answers to the scientific aspects of key climate policy issues while continuing to seek advances in the knowledge of the physical, biological and chemical processes that influence the Earth system. CCSP has joint membership with the NSTC's Subcommittee on Global Change Research (SGCR), the interagency body that coordinates the USGCRP under the NSTC Committee on Environment and Natural Resources. CCSP includes representatives from all agencies that have mission activities and/or funding in climate science research. The CCSP is responsible for defining integrated program goals and priorities and for reviewing all programs that contribute to climate change science. Participating agencies are responsible for ensuring their plans and programs implement the goals, priorities, and plans defined by the CCSP in the course of fulfilling their respective agency missions. For this reason, participating agencies' personnel play an active role in the formulation of CCSP strategy.

The CCTP provides for the coordination and development, across all Federal research and development (R&D) agencies, of a comprehensive, multi-year, integrated climate change technology R&D program for the United States. An interagency working group carries out much of the technical coordination. The CCTP Office provides technical and staff support, and performs certain integrative, analytical, modeling, communication, and administrative functions. As with the CCSP, participating CCTP agencies are responsible for ensuring their plans and programs implement the goals, priorities, and plans defined by the CCTP in the course of fulfilling their respective agency missions, and here too participating agencies' personnel play an active role in the formulation of CCTP strategy.

Within this management structure the Director of OSTP serves as Executive Director of the Cabinet-level Committee, the OSTP Associate Director for Science serves as Executive Secretary of the Deputy-level Interagency Working Group, and an OSTP representative serves on the CCSP Principals' Group. OSTP maintains an oversight role in the current management structure of CCSP and CCTP, but the day-to-day management is the responsibility of the Directors of CCSP and CCTP. While this committee structure appears to be complex, there is considerable overlap among the membership of each component, and frequent communication among OSTP, the Council on Environment Quality and relevant Department and Agency officials.

### **Optimizing Structure and Management for Climate Change Science Research**

Based on an examination of the interagency coordination process that drove the U.S. Global Change Research Program, and comparing it with the activities and management of the shorter-term CCSP, I consider the following characteristics to be essential for successful management of an interagency Federal science program.

First, the statute that prescribes the research program should not be overly prescriptive. Today, the 2007 program is diligently working to produce assessments on topics that were prescribed in 1990. Fortunately, the program is also working to produce results on other important climate change topics that were not envisioned in 1990 – such as the likelihood of abrupt climate change and understanding the mechanism of melting in ice sheets. An appropriate reauthorization, therefore, should not attempt to direct the research program's specifics for years to come, but

rather provide flexibility for the program managers to determine the topics to be addressed through their interaction with the National Research Council and other stakeholders.

Second, the program must have a governance and management structure in which the scientists, the agency managers, and the program coordinators for whom they work. Strong interagency coordination is essential, but scientists work for funding institutions and will respond to direction from line management. Having line managers involved in the management of the interagency process at several levels is a strength of the CCSP model.

Third, it is a reality that central budgeting for an interagency effort like CCSP or CCTP is incompatible with the Federal budget structures and processes. Each agency must submit its own budget for its work. Centralizing funding of interagency efforts is not a desirable goal.

Fourth, reports and other products must be useful and the number and timing of products must be reasonable. A scientist who produces several synthesis products in addition to his or her primary scientific publications will lose valuable research time to the effort. Demands for assessment products must include careful budgeting for the human and financial resources necessary to produce those secondary or tertiary publications.

Fifth, communication of research results and assessment products is necessary and very valuable. Development of decision support tools requires specialists in that field. Communications professionals that are capable of translating highly technical research results into publications for decision makers are essential.

Sixth, a well-run program coordination office has great value in the implementation of an interagency program. The establishment of a coordination office should be part of any interagency program.

Seventh, input from stakeholders during the planning process is an essential ingredient of successful programs. The current interaction with the National Research Council is vital to program strength and credibility, and the current role of the states and governors is particularly important. The increasing emphasis on regional and local impacts of climate change will require the advice and cooperation of state and local governments. An advisory panel for the climate change research program would be entirely appropriate.

One intangible factor – strong leadership in science and management - has an enormous impact on the success of an interagency effort. Leadership is required at every level of the program – in the central coordinating office and in each of the participating agencies and groups of research scientists. The interdisciplinary nature of climate science and technology and the very high degree of interest in climate issues among a wide diversity of stakeholders renders the leadership function an extremely challenging one in this case. We have been fortunate to have talented individuals willing to devote themselves to the success of this important Federal program, and I wish to take this opportunity to express my gratitude to them on behalf of the Administration.

Thank you for the opportunity to speak with you today. I am prepared to answer any questions you have.

