IMPLEMENTING CLIMATE AND GLOBAL CHANGE RESEARCH

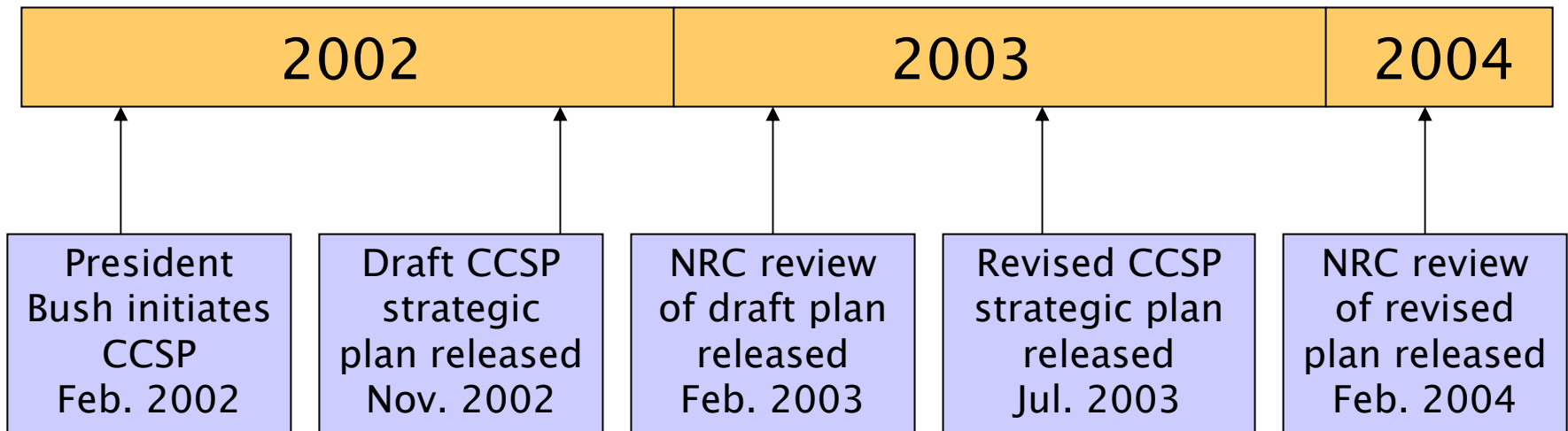## A REVIEW OF THE FINAL U.S. CLIMATE CHANGE SCIENCE PROGRAM STRATEGIC PLAN

February 18, 2004

THE NATIONAL ACADEMIES
Advisers to the Nation on Science, Engineering, and Medicine

CLIMATE CHANGE SCIENCE PROGRAM (CCSP)

- Incorporates the existing Global Change Research Program (GCRP) and adds the Climate Change Research Initiative (CCRI)

- A parallel Climate Change Technology Program (CCTP) also established

2002	2003	2004

| President Bush initiates CCSP Feb. 2002 | Draft CCSP strategic plan released Nov. 2002 | NRC review of draft plan released Feb. 2003 | Revised CCSP strategic plan released Jul. 2003 | NRC review of revised plan released Feb. 2004 |

COMMITTEE TO REVIEW THE U.S. CCSP STRATEGIC PLAN

Thomas E. Graedel (chair), Yale University
Linda Capuano, San Jose, CA
Elizabeth Chornesky, University of California, Santa Cruz
Mary A. Gade, Sonnenschein, Nath, and Rosenthal
Katharine L. Jacobs, University of Arizona
Anthony C. Janetos, Heinz Center for Science, Economics, and the Environment
Charles Kolstad, University of California, Santa Barbara
Diana Liverman, Oxford University
Jerry D. Mahlman, National Center for Atmospheric Research
Diane McKnight, University of Colorado
Michael J. Prather, University of California, Irvine
Eugene Rosa, Washington State University
William Schlesinger, Duke University
David Skole, Michigan State University
Andrew Solow, Woods Hole Oceanographic Institution
Robert Weller, Woods Hole Oceanographic Institution
T. Stephen Wittrig, BP

OVERALL ASSESSMENT OF REVISED PLAN

- Much improved over its draft and responds well to National Academies and other input

- Articulates a guiding vision, is ambitious, and is broad in scope

- Encompasses activities in areas of long-standing importance and new or enhanced cross-disciplinary efforts

- Emphasizes decision support and links to stakeholders

- Calls for integration with the Climate Change Technology Program

- Includes strategic management framework that enables it to effectively guide climate and global change research

The CCSP should implement the activities described in the strategic plan with urgency.

IMPLEMENTATION HURDLES

➢ Ensuring a balanced and societally relevant program

➢ Observations and modeling

➢ Effectively managing the program

➢ Maintaining the scientific credibility of the program

➢ Addressing capacity needs

ENSURING A BALANCED AND SOCIETALLY RELEVANT PROGRAM

- CCSP Goal 4 calls for understanding the sensitivity and adaptability of ecosystems and human systems to climate and related global changes

- Meeting this goal will require significant new efforts in areas not presently well supported by CCSP, including

  - Ecosystems   – Economics   – Adaptation
  - Water cycle   – Impacts   – Mitigation
  - Human dimensions

- Science plans and institutional support for these areas should be rapidly strengthened

Accelerate efforts in previously underemphasized program elements.

ENSURING A BALANCED AND SOCIETALLY RELEVANT PROGRAM

- CCSP Goal 5 calls for exploring the uses and identifying the limits of evolving knowledge to manage risks and opportunities related to climate variability and change.

- Treatment of decision support much improved in revised plan, but needs further development in implementation
  – Identifying stakeholders and the decisions they need to make
  – Supporting national and international policy decisions, as well as state, local, and regional adaptive management decisions
  – Supporting economics analysis of impacts and possible response options

Further develop CCSP decision support activities.

OBSERVATIONS AND MODELING

- Plan calls for major upgrades in global observing and climate modeling capabilities

- More comprehensive strategy needed for
  - Implementing, sustaining, and evolving the necessary observing system
  - Delivering model products, including climate projections, seasonal–to–interannual predictions, regional climate models, and projections of impacts

- Pursue opportunities for international collaborations

Improve strategies for implementing and sustaining a global Earth observing system and for meeting climate modeling goals.

EFFECTIVELY MANAGING THE PROGRAM

- CCSP management structure engages high-level officials who could ensure that the program has the necessary resources and could monitor progress toward program goals

- Attention should be paid to:
  - Clarifying and applying priorities and criteria in program selection and budgeting processes at participating agencies
  - Defining and applying metrics that indicate success in achieving goals

Establish and institutionalize effective management processes that create accountability for meeting program goals.

EFFECTIVELY MANAGING THE PROGRAM

- CCSP leadership should adopt an adaptive management approach for the program as a whole by:
  - carefully monitoring progress toward program goals
  - learning from experience,
  - adjusting plan, its timelines, and deliverables as needed

- Future strategic planning efforts should build upon the successes of this first one in terms of transparency and opportunities for stakeholder input

Generate an updated strategic plan every three to five years.

MAINTAINING SCIENTIFIC CREDIBILITY

- Involving high-level political leaders in CCSP management can create a real or perceived possibility that the program's priorities or scientific results could be influenced by political considerations

- Establishing a standing advisory body charged with independent oversight of the entire program will be more effective than using a number of ad hoc external mechanisms

Establish a mechanism for independent oversight of the program as a whole.

ADDRESSING CAPACITY NEEDS

- CCSP likely faces shortages in human and institutional capacity, especially in new or expanded areas
  - Human dimensions, economics, ecosystems, etc.
  - Decision support
  - 21 synthesis and assessment reports

> *Carefully assess needs in capacity implied by the plan and address any gaps.*

- Given the expanded attention to decision support, communication with stakeholders, and interagency coordination, the CCSP Office will likely have more responsibilities

> *Appropriately resource the CCSP Office to reflect its expanded roles.*

SYNTHESIS AND ASSESSMENT PRODUCTS

- The CCSP strategic plan calls for 21 synthesis and assessment products to be produced in the next four years
- The list of products appears somewhat ad hoc rather than a coherent portfolio of priority synthesis and assessment products

The committee recommends:

- The products be chosen to explicitly address the range of needs for decision makers and program management, as well as the broad scope specified in the Global Change Research Act
- The CCSP ensure the credibility of the products by producing them with independent oversight and review
- The CCSP ensure that the products are produced without unduly affecting the ability to conduct research and in coordination with the IPCC assessments

THE CCSP BUDGET

- The strategic plan identifies a much broader scope of activities than has been supported in the past under GCRP

- To succeed, such an expansion in scope will require a concomitant expansion in funding

- The present CCSP budget does not appear capable of supporting all the activities in the strategic plan

The CCSP and its parent committees should:

- Develop a clear budgetary process linking tasks to agency and program budgets

- Secure the financial resources, for the present and the future, that will ensure the overall success of the plan

- Consider new approaches to funding that will enable new initiatives and the shifting of resources to respond to the nation's evolving needs

CONCLUDING REMARKS

➢ The CCSP represents a transition from the science-based GCRP to a program that employs *science in the service of societal objectives*

➢ The CCSP strategic plan is a *wholly adequate framework* to guide climate and global change research for the next decade

➢ The CCSP needs to *secure the financial resources* that will ensure the overall success of the plan

➢ The major challenge ahead is for *vigorous implementation*