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Subseries:

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Folder Title:
Science & Technology [2]

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G	17	20	1	1

Document No._____ CA

OFFICE OF CABINET AFFAIRS STAFFING MEMORANDUM

Date: 3-22-90 **Due by:** ----

Subject: Working Group on Science and Technology

From: Steve Danzansky

	ACTION	CONCUR	FYI		ACTION	CONCUR	FYI
BATES	☐	☐	☑	JACKSON	☐	☐	☑
DANZANSKY	☐	☐	☐	MCBEE	☐	☐	☐
ADAIR	☐	☐	☐	SCHALL	☐	☐	☐
BUCHHOLZ	☐	☐	☐	WETHINGTON	☐	☐	☑
D'ANDREA	☐	☐	☐	WILLIAMSON	☐	☐	☑
DEWITT	☐	☐	☐	YALE	☐	☐	☑
DUGGAN	☐	☐	☐	_____	☐	☐	☐
EVANS	☐	☐	☐	_____	☐	☐	☐
FARRAR	☐	☐	☐	_____	☐	☐	☐
HEIMBACH	☐	☐	☐	_____	☐	☐	☐

Comments:

This has been forwarded to Allan Bromley. Thanks.

THE WHITE HOUSE

WASHINGTON

March 22, 1990

MEMORANDUM FOR ALLAN BROMLEY

FROM: STEPHEN I. DANZANSKY
Deputy Assistant to the President
and Director of Cabinet Affairs

SUBJECT: Announcement of Chairmanship

There is one additional point which we caught, but in our haste to get you a document, neglected to include. On page two of the release in the first paragraph is a reference to issues to be taken up by the Working Group and sent to the EPC and DPC. Listed among those is "barriers to the transfer of ideas generated in the laboratory to products in the marketplace."

Since this is the very issue assigned by the President to the Competitiveness Council by the President in his recent speech, I would think it wise to delete it from the mandate of the Working Group. Although it is in the original charter of the EPC Working Group, it is no longer operative.

We will in the next few days address the question of beefing up the charter of your Working Group to include the additional items listed in the draft joint charter we sent you last week. I see no problem to doing that and getting Nick Brady to sign off early next week. We will pursue that forthwith.

THE WHITE HOUSE

WASHINGTON

March 21, 1990

MEMORANDUM FOR D. ALLAN BROMLEY

FROM: STEPHEN I. DANZANSKY
Deputy Assistant to the President
and Director of Cabinet Affairs

SUBJECT: Working Group on Science and Technology

Per our discussion and one hour late, I am enclosing herewith our suggested changes to the draft announcement of your chairmanship of the S&T working group. The changes reflect the thinking of both the DPC and EPC (and their corresponding chairmen pro tempore: Treasury and Justice). I believe this will fly with all concerned at the cabinet council level.

Just a word of caution. Although this has our approval as amended, I don't believe it can be sent out as a White House Press Release without clearance through the process (Cicconi et al.). As an announcement, to your P-CAST group, however, I see no problem.

We'd be happy to discuss with you any of the changes we've made. For your convenience I've supplied a newly typed first page as well as your marked-up version for comparison.

Draft Text of Press Release

On S&T Working Group and FCCSET Reorganization

WHITE HOUSE POLICY APPARATUS FOR SCIENCE AND TECHNOLOGY

For Immediate Release March 21, 1990

The White House today announced the appointment of D. Allan Bromley, Assistant to the President for Science and Technology and Director of the Office of Science and Technology Policy, as chairman of the White House Working Group on Science and Technology. The Working Group currently reports to the Economic Policy Council and assists in the formulation, coordination, and implementation of Administration policies involving science and technology. The Working Group will also develop all science and technology issues related to domestic and social policy for the Domestic Policy Council. Members will include White House officials and senior representatives from all Federal agencies and departments with substantial involvement in scientific and technological issues.

DRAFT TEXT OF PRESS RELEASE

ON S&T WORKING GROUP AND FCCSET REORGANIZATION:

~~PRESIDENT STRENGTHENS~~ WHITE HOUSE POLICY APPARATUS FOR SCIENCE AND TECHNOLOGY

For Immediate Release March 21, 1990

The ~~President~~ White House today announced ~~the formation of a~~ the appointment of Working Group on Science and Technology ~~that will report jointly to the Economic Policy Council and the Domestic Policy Council to~~ assist in the formulation, coordination, and implementation of Administration policies involving science and technology. The Working Group will ~~be chaired by~~ D. Allan Bromley, Assistant to the President for Science and Technology and Director of the Office of Science and Technology Policy. Members will include ~~Secretaries and Directors or their~~ senior representatives from all Federal agencies and departments with substantial involvement in scientific and technological issues.

The working Group currently reports to the Economic Policy Council and

also develop all science and technology issues related to domestic and social policy for the Domestic Policy Council

as chairman of the White House

The Working Group will analyze the scientific and technological components of economic and domestic policy issues ~~and present its findings to the Economic Policy Council and Domestic Policy Council. Among these issues are~~ including: Federal encouragement of investment in research and development by the private sector; barriers to the transfer of ideas generated in the laboratory to products in the marketplace; cooperation among government laboratories, university laboratories, and business; and access by American firms to international research and technology.

In addition, the Working Group will act as a conduit through which the deliberations and actions of the Federal Coordinating Council for Science, Engineering, and Technology (FCCSET) that relate to policy issues broader than science and technology can be considered by the Economic Policy Council or the Domestic Policy Council.

In a related action, Dr. Bromley ~~the President~~ announced a substantial restructuring of the Federal Coordinating Council for Science, Engineering, and Technology, which is charged with reviewing and coordinating Federal activities in science and technology that cut across the missions of more than one Federal agency. Dr. Bromley is the chairman of FCCSET, and a list of the new FCCSET membership is attached. Other agencies may be requested to participate in meetings of the FCCSET concerned with matters of interest to those agencies.

FCCSET is in the process of forming seven umbrella committees, each chaired by a high-level official of a Federal agency or department, to oversee broad areas of science

and technology. Subcommittees and working groups will work within each of these umbrella committees to examine, coordinate, and integrate federal activities in selected areas of science and technology. A list of the umbrella committees, their chairmen and vice-chairmen, and liaison representatives from the Office of Science and Technology is attached.

The Federal Coordinating Council for Science, Engineering, and Technology (FCCSET) was originally established in 1976 by Public Law 94-282, the National Science and Technology Policy Organization and Priorities Act, which also established the Office of Science and Technology Policy. FCCSET is charged with:

- Providing for more effective planning, coordination, and administration of Federal scientific and technological programs.
- Identifying research and development needs, including areas requiring additional emphasis.
- Achieving more effective use of the scientific and technological resources of Federal agencies.
- Developing and reviewing, in close cooperation with the Office of Management and Budget, annual and long-range Federal budget plans in selected cross-cutting areas of science and technology.
- Furthering international cooperation in science and technology.

FCCSET is also charged with identifing scientific and technological issues of importance to the nation and with developing authoritative scientific and technological expertise and advice for the Executive Branch.

FCCSET also expects to receive information and advice on issues of science and technology from the President's Council of Advisers on Science and Technology, which the President established on February 2. PCAST consists of 12 distinguished scientists and engineers from academia and industry and is chaired by Dr. Bromley. PCAST members will chair panels on specific areas of science and technology that in some cases will parallel the the committee structure of FCCSET, allowing private sector input into high-level government policy making.

FEDERAL COORDINATING COUNCIL FOR SCIENCE, ENGINEERING & TECHNOLOGY COMMITTEES MARCH 1990

Earth and Environmental Sciences

Chairman: Dallas Peck, Director, US Geological Survey, Department of the Interior
Vice Chairman: Eric Bretthauer, Assistant Administrator for Research, Environmental Protection Agency
Leonard Fisk, Associate Administrator for Space Science and Applications, National Aeronautics and Space Administration
OSTP Liaison: James B. Wyngaarden, Associate Director for Life Sciences

Education and Human Resources

Chairman: Adm. James Watkins (Ret.), Secretary, Department of Energy
Vice Chairmen: Ted Sanders, Deputy Secretary, Department of Education
Luther Williams, Senior Science Advisor, National Science Foundation
OSTP Liaison: J. Thomas Ratchford, Associate Director for Policy and International Affairs

Food, Agriculture and Forest Research

Chairman: Charles Hess, Assistant Secretary for Science and Education, Department of Agriculture
Vice Chairman: David O'Neil, Assistant Secretary for Land and Minerals, Department of Labor
James Benson, Acting Commissioner, Food and Drug Administration, Department of Health and Human Services
OSTP Liaison: James B. Wyngaarden, Associate Director for Life Sciences

International Science and Engineering

Chairman: Reginald Bartholomew, Under Secretary, Department of Health and Human Services
Vice Chairmen: Fred Bernthal, Deputy Director, National Science Foundation
Philip Schambra, Director, Fogarty International Center, National Institutes of Health, Department of Health and Human Services
OSTP Liaison: J. Thomas Ratchford, Associate Director for Policy and International Affairs

Life Sciences and Health

Chairman: James O. Mason, Assistant Secretary, Department of Health and Human Services
Vice Chairman: David Galas, Associate Director for Health and Environmental Research, Office of Energy Research, Department of Energy
OSTP Liaison: James B. Wyngaarden, Associate Director for Life Sciences

Physical, Mathematical and Engineering Sciences

Chairman: Erich Bloch, Director, National Science Foundation
Vice Chairman: Charles Herzfeld, Director Defense Research and Engineering, Department of Defense
OSTP Liaison: Eugene Wong, Associate Director (designate) for Physical Sciences and Engineering

Technology and Industry

Chairman: Thomas Murrin, Deputy Secretary, Department of Commerce
Vice Chairman: J.R. Thompson, Deputy Director, National Aeronautics and Space Administration
OSTP Liaison: William D. Phillips, Associate Director (designate) for Industrial Technology

FOR SCIENCE, ENGINEERING & TECHNOLOGY
MEMBERSHIP
March 1990

Chairman: D. Allan Bromley
Assistant to the President for Science and Technology
Director, Office of Science and Technology Policy

Members: Manuel Lujan
Secretary of the Interior

Clayton Yeutter
Secretary of Agriculture

Louis Sullivan
Secretary of Health and Human Services

James D. Watkins
Department of Energy

Lauro F. Cavazos
Secretary of Education

William K. Reilly
Administrator
Environmental Protection Agency

Donald J. Atwood, Jr.
Deputy Secretary of Defense

Thomas J. Murrin
Deputy Secretary
Department of Commerce

Alfred A. DelliBovi
Under Secretary
Department of Housing and Urban Development

Elaine Chao
Deputy Secretary
Department of Transportation

Anthony J. Principi
Deputy Secretary
Department of Veterans Affairs

Richard McCormack
Under Secretary for Economic Affairs
Department of State

Richard H. Truly
Administrator
National Aeronautics and Space Administration

Erich Bloch
Director
National Science Foundation

Document No. _____ CA

OFFICE OF CABINET AFFAIRS STAFFING MEMORANDUM

Date: 3-15-90 **Due by:** ----

Subject: FCCSET -- UPDATE OF MATERIALS

From: Ken Yale

	ACTION	CONCUR	FYI		ACTION	CONCUR	FYI
BATES	☐	☐	☒	JACKSON	☐	☐	☐
DANZANSKY	☐	☐	☑	MCBEE	☐	☐	☐
ADAIR	☐	☐	☐	SCHALL	☐	☐	☑
BUCHHOLZ	☐	☐	☐	WETHINGTON	☐	☐	☑
D'ANDREA	☐	☐	☐	WILLIAMSON	☐	☐	☑
DEWITT	☐	☐	☐	YALE	☐	☐	☐
DUGGAN	☐	☐	☐	_____	☐	☐	☐
EVANS	☐	☐	☐	_____	☐	☐	☐
FARRAR	☐	☐	☐	_____	☐	☐	☐
HEIMBACH	☐	☐	☑	_____	☐	☐	☐

Comments:

March 14, 1990

DRAFT CHARTER

Federal Coordinating Council for Science, Engineering, and Technology

The Federal Coordinating Council for Science, Engineering, and Technology (FCCSET) is established pursuant to Public Law 94-282, Title V of the "National Science and Technology Policy Organization and Priorities Act of 1976" to consider cross-cutting science, engineering and technology issues. Specifically,

> The Council shall consider problems and developments in the fields of science, engineering, and technology and related activities affecting more than one Federal agency, and shall recommend policies and other measures designed to:
>
> (1) provide more effective planning and administration of Federal scientific, engineering, and technological programs,
>
> (2) identify research needs including areas requiring additional emphasis,
>
> (3) achieve more effective utilization of the scientific, engineering, and technological resources and facilities of Federal agencies, including the elimination of unwarranted duplication, and
>
> (4) further international cooperation in science, engineering, and technology.

OBJECTIVES

In fulfilling this mandate, the FCCSET's two major objectives are:

- to develop authoritative scientific, engineering and technological expertise and advice for the Executive Branch.
- to coordinate science, engineering and technology activities affecting more than one Federal agency and surface and resolve science, engineering and technology policy issues with respect to those activities.

FUNCTIONS

To accomplish these two objectives the FCCSET will:

- serve as a forum for coordinating science, engineering and technology programs affecting more than one Federal agency, sharing information, reviewing and implementing national and international policy objectives and developing consensuses with respect to science, engineering and technology activities;
- identify research and development needs;
- issue reports, studies and assessments of current scientific, engineering and technological capabilities in fields of research and development of concern to the Executive Branch;
- inform other policy making bodies of reviews, studies and analyses underway;
- identify science, engineering and technology issues and concerns of importance to the nation and give expertise and advice to policy bodies;
- with the close cooperation of the Office of Management and Budget, develop and review annual and long-range Federal budget plans in selected cross-cutting areas of science, engineering and technology;
- improve planning, coordination and communication among Federal agencies engaged in science, engineering and technology.

ADMINISTRATIVE PROVISIONS

To accomplish these functions the FCCSET is authorized to:

- detail employees to the Council to perform such functions, consistent with the purposes of the FCCSET, as the Chairman may assign to them;
- establish committees for the purposes of conducting studies, making reports, coordinating Federal science, technology and engineering activities that involve more than one Federal agency, and making recommendations to the FCCSET;
- develop, and review on an annual basis, charters for committees, and assign high priority agenda items as necessary;

- Council meetings shall be called by the Chairman as deemed appropriate and each agency member shall attend at a senior policy level;

- Council proceedings, studies, and reports, either preliminary or final, shall be printed and distributed only with the Chairman's authorization.

MEMBERSHIP

The Council shall be chaired by of the Director of the Office of Science and Technology Policy and shall be composed of one senior policy level representative of each of the following Federal Agencies:

Department of Agriculture
Department of Commerce
Department of Defense
Department of Education
Department of Energy
Department of Health and Human Services
Department of Housing and Urban Development
Department of the Interior
Department of State
Department of Transportation
Department of Veteran's Administration
National Aeronautics and Space Administration
National Science Foundation
Environmental Protection Agency

Other agencies may be requested to participate in meetings of the Council concerned with matters of substantial interest to such agency.

DETERMINATION

I hereby approve and adopt this Charter which is determined to be consistent with PL 94-282 which establishes the FCCSET.

Approved:

_____ _____

D. Allan Bromley — Date
Chairman, Federal Coordinating
Council for Science, Engineering
and Technology

underline = new text
[ ] = deleted text

3/13/90

DRAFT CHARTER

Federal Coordinating Council for Science, Engineering, and Technology

[LEGISLATIVE MANDATE]

The Federal Coordinating Council for Science, Engineering, and Technology (FCCSET) is [was] established [in 1976] pursuant to Public Law 94-282, Title V of the "National Science and Technology Policy Organization and Priorities Act of 1976" to consider cross-cutting science, engineering and technology issues. Specifically, [the law states that:]

> ["]The Council shall consider problems and developments in the fields of science, engineering, and technology and related activities affecting more than one Federal agency, and shall recommend policies and other measures designed to:
>
> (1) provide more effective planning and administration of Federal scientific, engineering, and technological programs,
>
> (2) identify research needs including areas requiring additional emphasis,
>
> (3) achieve more effective utilization of the scientific, engineering, and technological resources and facilities of Federal agencies, including the elimination of unwarranted duplication, and
>
> (4) further international cooperation in science, engineering, and technology.["]

OBJECTIVES

In fulfilling this mandate, the FCCSET's two major objectives are:

- to develop [provide] authoritative scientific, engineering and technological expertise and advice for the Executive Branch [to policy discussions and decisions to other cabinet-level councils including the National Security Council, the Economic Policy Council, the Domestic Policy Council, the Space Council and the Competitiveness Council].

- o to coordinate science, engineering and technology activities [efforts] affecting more than one Federal agency and surface and resolve [S&T] science, engineering and technology policy issues with respect to those activities.

FUNCTIONS

To accomplish these two objectives the FCCSET will:

- o serve as a [central coordinating] forum for coordinating science, engineering and technology programs [addressing problems and issues] affecting more than one Federal agency, sharing information, reviewing and implementing national and international policy objectives and developing consensuses with respect to science, engineering and technology activities;

- o identify [priority] research and development needs;

- [o facilitate continuing cooperation in planning coordination and communication among Federal agencies on science and technology issues;]

- o issue reports, studies and assessments of current [S&T] scientific, engineering and technological capabilities in fields of research and development of concern to the Executive Branch [Administration];

- [o provide reviews, analyses, advice and recommendations on science and technology matters to other policy coordinating bodies within the White House including the National Security Council, the Economic Policy Council, the Domestic Policy Council, the Space Council, and the Competitiveness Council;]

- o [seek to] inform other policy making bodies of reviews, studies and analyses underway [, and coordinate activities so as not to duplicate functions with these bodies];

- o identify science, engineering and technology issues and concerns of importance to the nation and [bring policy] give [policy recommendations] expertise and advice to [the attention of the President through appropriate] policy bodies;

- o with the close cooperation of the Office of Management and Budget, develop and review annual and long-range Federal budget plans in selected cross-cutting areas of science, engineering and technology;

- improve planning, coordination and communication among Federal agencies engaged in science, engineering and technology.

ADMINISTRATIVE PROVISIONS

To accomplish these functions the FCCSET is authorized to:

- detail employees to the Council to perform such functions, consistent with the purposes of the FCCSET, as the Chairman may assign to them;
- establish committees for the purposes of conducting studies, making reports, coordinating Federal science, technology and engineering activities that involve more than one Federal agency, and making recommendations to the FCCSET;
- develop, and review on an annual basis, charters for committees, and assign high priority agenda items as necessary;
- Council meetings shall be called by the Chairman as deemed appropriate and each agency member shall attend at a senior policy level;
- Council proceedings, studies, and reports, either preliminary or final, shall be printed and distributed only with the Chairman's authorization.

MEMBERSHIP

The Council shall be chaired by of the Director of the Office of Science and Technology Policy and shall be composed of one senior policy level representative of each of the following Federal Agencies:

Department of Agriculture
Department of Commerce
Department of Defense
Department of Education
Department of Energy
Department of Health and Human Services
Department of Housing and Urban Development
Department of the Interior
Department of State
Department of Transportation
Department of Veteran's Administration
National Aeronautics and Space Administration
National Science Foundation
Environmental Protection Agency

Other agencies may be requested to participate in meetings of the Council concerned with matters of substantial interest to such agency.

DETERMINATION

I hereby approve and adopt this Charter which is determined to be consistent with PL 94-282 which establishes the FCCSET.

Approved:

_____ _____

D. Allan Bromley Date
Chairman, Federal Coordinating
Council for Science, Engineering
and Technology

February 6, 1990

DRAFT CHARTER

Federal Coordinating Council For Science, Engineering and Technology

LEGISLATIVE MANDATE

The Federal Coordinating Council for Science Engineering and Technology (FCCSET) was established in 1976 pursuant to Public Law 94-282, Title V of the "National Science and Technology Policy Organization and Priorities Act of 1976" to consider cross-cutting science, engineering and technology issues. the law states that:

> "The Council shall consider problems and developments in the fields of science, engineering, and technology and related activities affecting more than one Federal agency, and shall recommend policies and other measures designed to:
>
> (1) provide more effective planning and administration of Federal scientific, engineering, and technological programs,
>
> (2) identify research needs including areas requiring additional emphasis,
>
> (3) achieve more effective utilization of the scientific, engineering, and technological resources and facilities of Federal agencies, including the elimination of unwarranted duplication, and
>
> (4) further international cooperation in science, engineering, and technology."

OBJECTIVES

In fulfilling this mandate, the FCCSET's two major objectives are:

- to provide authoritative scientific and technological expertise and advice to policy discussions and decisions to other cabinet-level councils including the National Security Council, the Economic Policy Council, the Domestic Policy Council, the Space Council and the Competitiveness Council.

- to coordinate science and technology efforts affecting more than one Federal agency and surface and resolve S&T policy issues.

FUNCTIONS

To accomplish these two objectives the FCCSET will:

- serve as a central coordinating forum for addressing problems and issues affecting more than one Federal agency, sharing information, reviewing national and international policy objectives and developing consensus;

- identify priority research and development needs;

- facilitate continuing cooperation in planning coordination and communication among Federal agencies on science and technology issues;

- issue reports, studies and assessments of current S&T capabilities in fields of research and development of concern to the Administration;

- provide reviews, analyses, advice and recommendations on science and technology matters to other policy coordinating bodies within the White House including the National Security Council, the Economic Policy Council, the Domestic Policy Council, the Space Council, and the Competitiveness Council;

- seek to inform other policy making bodies of reviews, studies and analyses underway, and coordinate activities so as not to duplicate functions with these bodies;

- identify science and technology issues and concerns of importance to the nation and bring policy recommendations to the attention of the President through appropriate policy bodies;

- with the close cooperation of the Office of Management and Budget, develop, and review annual and long-range Federal budget plans in selected cross-cutting areas of science and technology;

- improve planning, coordination and communication among Federal agencies engaged in science and technology.

ADMINISTRATIVE PROVISIONS

To accomplish these functions the FCCSET is authorized to:

- o detail employees to the Council to perform such functions, consistent with the purposes of the FCCSET, as the Chairman may assign to them;
- o establish committees for the purposes of conducting studies, making reports, coordinating Federal science and technology activities that involve more than one Federal agency, and making recommendations to the FCCSET;
- o develop, and review on an annual basis, charters for committees, and assign high priority agenda items as necessary;
- o Council meetings shall be called by the Chairman as deemed appropriate and each agency member shall attend at a senior policy level;
- o Council proceedings, studies, and reports, either preliminary or final, shall be printed and distributed only with the Chairman's authorization.

MEMBERSHIP

The Council shall be chaired by of the Director of the Office of Science and Technology Policy and shall be composed of one policy level representative of each of the following Federal Agencies:

Department of Agriculture
Department of Commerce
Department of Defense
Department of Energy
Department of Health and Human Services
Department of Housing and Urban Development
Department of the Interior
Department of State
Department of Transportation
Department of Veteran's Administration
National Aeronautics and Space Administration
National Science Foundation
Environmental Protection Agency

Other Agencies may be requested to participate in meetings of the Council concerned with matters of substantial interest to such agency.

DETERMINATION

I hereby approve and adopt this Charter which is determined to be consistent with PL 94-282 which establishes the FCCSET.

Approved:

_____ _____

D. Allan Bromley Date
Chairman, Federal Coordinating
Council for Science, Engineering
and Technology

MEETING OF THE
FEDERAL COORDINATING COUNCIL
FOR SCIENCE, ENGINEERING AND TECHNOLOGY

WEDNESDAY, MARCH 14, 1990
3:30 - 4:45 P.M.

ROOM 476, OLD EXECUTIVE OFFICE BUILDING

AGENDA

I. Summary of Minutes of January 24 Meeting

II. Discussion of Draft FCCSET Charter

III. Review and Approval of Committee Structure: Discussion of Priority Areas for FCCSET Committee Consideration and Coordination

IV. Discussion of Draft Sample Committee Charter

V. Administrative

- FCCSET Membership
- Update on Executive Secretariat

March 14, 1990
(Revised)

FEDERAL COORDINATING COUNCIL FOR SCIENCE, ENGINEERING AND TECHNOLOGY

SUGGESTED COMMITTEE STRUCTURE WITH CROSS-CUTTING/SUBSIDIARY ISSUES

Committees:

Health and Life Sciences

Physical, Mathematical and Engineering Sciences

Earth and Environmental Sciences

Food Agriculture and Forestry Research*

Education and Human Resources

Technology and Industry

International Science, Engineering and Technology

Sample Cross-cutting/Subsidiary Issues:

Bioethics
Biotechnology
Global Change
High Performance Computing
Genome Research
Intellectual Property Rights
Manufacturing
Materials
Math and Science Education
Restoring and Maintaining R&D Infrastructure
S&T Initatives in Eastern Europe
S&T Information Collection, Utilization and Dissemination
Social and Behavioral Sciences
Stability of U.S. International S&T Commitments
Technology Transfer

*Established by PL 94-282; legislative relief required if abolished or merged

Original

FEDERAL COORDINATING COUNCIL FOR SCIENCE, ENGINEERING AND TECHNOLOGY

SUGGESTED COMMITTEE STRUCTURE WITH CROSS-CUTTING/SUBSIDIARY ISSUES

Committees:

Health and Life Sciences

Physical, Mathematical and Engineering Sciences

Earth and Environmental Sciences

Food Agriculture and Forestry Research*

Education and Human Resources

Technology and Industry

International Science, Engineering and Technology

Sample Cross-cutting/Subsidiary Issues:

Bioethics
Biotechnology
Global Change
High Performance Computing
Human Genome Research
Intellectual Property Rights
Manufacturing
Materials
Math and Science Education
S&T Initatives in Eastern Europe
S&T Information Collection, Utilization and Dissemination
Social and Behavioral Sciences
Technology Transfer

***Established by PL 94-282; legislative relief required if abolished or merged**

THOMAS J. WELCH

Dr. Thomas J. Welch formerly served as the Executive Director of the Defense Science Board, to which he was appointed in April 1989. The Defense Science Board is the senior technical advisory body to the Secretary of Defense.

Dr. Welch was Deputy Assistant to the Secretary of Defense for Chemical Matters from 1984 to 1989 and was responsible for DOD's chemical warfare, chemical-biological defense and demilitarization programs.

In 1987, he was appointed to a one-year Senior Fellowship at the National Defense University.

From 1979 to 1983, he was the Associate Technical Director for Technology, U.S. Army Chemical Research and Development Center. From 1983 to 1984, he served as Assistant Director of the Center's Detection and Physical Protection Directorates.

From 1963 to 1965, Dr. Welch served at the U.S. Army Artillery Board as an Army lieutenant at Fort Sill, Oklahoma. His responsibilities included service testing of target acquisition and laser range finder materiel.

After military service, Dr. Welch joined the U.S. Army Land Warfare Laboratory, Aberdeen Proving Ground, Maryland, as a physical scientist. While at LWL, he led a group of engineers in the development of land navigation and tunnel detection devices which were successfully used by the U.S. Army in Vietnam.

Dr. Welch is a 1978 graduate of the U.S. Army War College.

Dr. Welch has testified numerous times before the Congress and has delivered many talks on defense issues. His most recent publication is "Technology Change and Security", appearing in the Spring 1990 edition of The Washington Quarterly.

Dr. Welch was born in Utica, New York on March 9, 1939. He graduated from St. Bonaventure University in 1960, John Carroll University in 1963 (MS, Physics), and was awarded the PhD degree in Physics by Auburn University in 1974. He is married to the former Noreen Rose Conomy of Cleveland, Ohio. The Welch's have four children.

Office of the Press Secretary
(Miami, Florida)

For Immediate Release January 19, 1990

EXECUTIVE ORDER

- - - - - - -

PRESIDENT'S COUNCIL OF ADVISORS ON SCIENCE AND TECHNOLOGY

By the authority vested in me as President by the Constitution and laws of the United States of America, and in order to establish, in accordance with the provisions of the Federal Advisory Committee Act, as amended (5 U.S.C. App. 2), an advisory committee on science and technology, it is hereby ordered as follows:

Section 1. Establishment. There is established the President's Council of Advisors on Science and Technology ("Council"). The Council shall be composed of not more than 15 members, one of whom shall be the Director of the Office of Science and Technology Policy, and 14 of whom shall be distinguished individuals from the private sector to be appointed by the President. The Director of the Office of Science and Technology Policy shall serve as Chairman of the Council. The Vice Chairman shall be appointed by the President from among the 14 private sector members. The Chairman shall report directly to the President.

Sec. 2. Functions. (a) The Council shall advise the President on matters involving all areas of science and technology.

(b) In the performance of its advisory duties the Council shall conduct a continuing review and assessment of developments in science and technology, and shall, through the Chairman, report thereon to the President whenever requested.

(c) The Chairman may, from time to time, invite experts to investigate and report to the Council on specific issues of national consequence.

Sec. 3. Administration. (a) The heads of Executive agencies shall, to the extent permitted by law, provide the Council and its panels such information with respect to scientific and technological matters as required for the purpose of carrying out its functions.

(b) Members of the Council shall serve without any compensation for their work on the Council. However, members appointed from among private citizens of the United States may be allowed travel expenses, including per diem in lieu of subsistence, as authorized by law for persons serving intermittently in the Government service (5 U.S.C. 5701-5707).

(c) Any expenses of the Council shall be paid from the funds available for the expenses of the Office of Science and Technology Policy.

(d) The Office of Administration shall, on a reimbursable basis, provide such administrative services as may be required.

Sec. 4. General. (a) Notwithstanding any other Executive order, the functions of the President under the Federal Advisory Committee Act, as amended, except that of reporting to the Congress, which are applicable to the Council, shall be performed by the Office of Administration in accord with the guidelines and procedures established by the Administrator of General Services.

(b) The Council shall terminate on June 30, 1991, unless sooner extended.

GEORGE BUSH

THE WHITE HOUSE,

January 19, 1990.

# # #

THE PRESIDENT'S COUNCIL OF ADVISERS ON SCIENCE AND TECHNOLOGY
(PCAST)

(Pending Announcement by the President)

NORMAN BORLAUG, Distinguished Professor, Department of Soils and Crop Sciences, Texas A&M University

ALLAN BROMLEY, Assistant to the President for Science and Technology, Executive Office of the President (Chairman)

SOLOMON BUCHSBAUM, Senior Vice President, Technology Systems, AT&T Bell Laboratories

CHARLES DRAKE, Albert Bradley Professor of Earth Sciences and Professor of Geology, Dartmouth College

RALPH GOMORY, President, The Alfred P. Sloan Foundation

BERNADINE HEALY, Chairman of the Research Institute, The Cleveland Clinic Foundation (Vice-Chairman)

PETER LIKINS, President, Lehigh University

THOMAS LOVEJOY, Assistant Secretary for External Affairs, Smithsonian Institution

WALTER MASSEY, Vice President for Research and for Argonne National Laboratory, University of Chicago

JOHN McTAGUE, Vice President-Research, Ford Motor Company

DANIEL NATHANS, Professor of Molecular Biology and Genetics, Johns Hopkins University School of Medicine

DAVID PACKARD, Chairman of the Board, Hewlett-Packard Company

HAROLD SHAPIRO, President, Princeton University

NORMAN E. BORLAUG

Norman E. Borlaug was Director of the Wheat Research and Production Program of the International Maize and Wheat Improvement Center, Mexico, from 1964 until his retirement in 1979.

Dr. Borlaug's career began in 1935 with his service in the U.S. Forest Service, and he subsequently worked as an instructor in plant pathology at the University of Minnesota in 1941, and as a microbiologist with the E. I. DuPont de Nemours & Co., 1942-44. He also served as research scientist in charge of wheat improvement with the Cooperative Mexican Agricultural Program, Mexican Ministry of Agriculture and the Rockefeller Foundation, 1944-60, and later, as Associate Director of the Foundation assigned to the Inter-American Food Crop Program, 1960-63.

He currently is leader of the Sasakawa-Global-2000 agricultural program in sub-Saharan Africa, Distinguished Professor of International Agriculture at Texas A&M University, and a Senior Consultant to CIMMYT and many other public and private agricultural research and development organizations.

Dr. Borlaug is recognized as the Father of the Green Revolution, and received the Nobel Prize for Peace in 1970.

Dr. Borlaug received his B.S. and M.S. degrees from the University of Minnesota in 1937 and 1941, respectively, and his Ph.D. in plant pathology there in 1942.

Dr. Borlaug's research interests include agricultural development, wheat breeding, agronomy, fertilizers, fungicides, weed killers, plant pathology and forestry.

SOLOMON J. BUCHSBAUM

Solomon J. Buchsbaum has been Senior Vice President, Technology Systems, at AT&T Bell Laboratories since 1979.

Dr. Buchsbaum's early career included work at the MIT Research Laboratory of Electronics. He joined Bell Laboratories in 1958 as a member of the technical staff and later became department head and director of the Electronics Research Laboratory. In 1968, Dr. Buchsbaum was named Vice President for Research at the Sandia Laboratories and served there in a number of capacities. He returned to Bell Laboratories in 1971 as an Executive Director. In 1976 he became Vice President, Network Planning and Customer Systems.

Dr. Buchsbaum has provided advice to both the private and governmental sectors, including service as a member of the President's Science Advisory Council from 1970-73; as a consultant to the Office of Science and Technology Policy, 1976-82; and as a member and Chairman, The White House Science Council, 1982-89. He is a member of the National Academy of Sciences and of the National Academy of Engineering. He was the recipient of the President's National Medal of Science in 1986.

Dr. Buchsbaum received his B.S. and M.Sc. degrees from McGill University, Canada, in 1952 and 1953, respectively, and his Ph.D. in physics from MIT in 1957.

His professional interests include plasma physics, gaseous electronics, plasmas in solids, controlled thermonuclear fusion, optical communications, and communications systems and technologies.

CHARLES L. DRAKE

Charles L. Drake has been the Albert Bradley Professor of Earth Sciences at Dartmouth since 1984 and Professor of Geology since 1969.

Dr. Drake's professional career began at Columbia University in 1953. He joined the staff at Dartmouth College in 1958 where he has continued his career, including service as Professor and Chairman of the Department, 1967-69; as Dean of Graduate Studies and as Associate Dean of the Science Department, 1978-81.

He has participated in the work of a number of national and international committees, including serving as President of the Geological Society of America, 1975-76; and of the American Geophysical Union from 1984-86.

Dr. Drake is recognized as one of the Nation's most highly respected earth scientists.

He is a recipient of the G. P. Woollard Award, Geophysical Division of the Geological Society of America.

Dr. Drake received his B.S.E. from Princeton University in 1948 and his Ph.D. in geology from Columbia University in 1958.

His research interests include marine geology and geophysics, tectonics, structural geology, and seismology.

RALPH E. GOMORY

Ralph E. Gomory, until his recent retirement, was Senior Vice President for Science and Technology, IBM Corporation. He now holds the position of President, The Sloan Foundation.

Dr. Gomory's experience includes teaching and research at Princeton University, 1957-59. He joined the Research Division of IBM in 1959 and became Director of the Mathematical Sciences Department in 1965. He was made IBM Director of Research in 1970 and held that position until 1985, becoming IBM Vice President in 1973, Senior Vice President in 1985, and IBM Senior Vice President for Science and Technology in 1986. He has served in many capacities in academic, industrial and governmental organizations, and he is a member of the National Academy of Sciences and the National Academy of Engineering. He has been awarded a number of honorary degrees and prizes including the John von Neumann Theory Prize in 1984 and the President's National Medal of Science in 1988. He is a member of the National Commission on Superconductivity.

Dr. Gomory received his B.A. degree from Williams College in 1950, studied at Cambridge University and received his Ph.D. in mathematics from Princeton University in 1954.

Dr. Gomory's scientific research interests have included linear and integer programming, network flow theory, nonlinear differential equations and computers. In recent years he has written on the nature of technology and product development, on research in industry and on industrial competitiveness.

BERNADINE HEALY

Bernadine Healy is Chairman of the Research Institute of The Cleveland Clinic Foundation, a position she assumed in 1985, and is a staff member of the Clinic's Department of Cardiology. Prior to that time, she was Deputy Director of the Office of Science and Technology Policy at the White House, and until that appointment had been a Professor at The Johns Hopkins University School of Medicine and Hospital.

A graduate of Vassar College in 1965, Dr. Healy received her medical degree from Harvard Medical School in 1970. Her medical career continued at Johns Hopkins from 1976 to 1984, where she was Professor of Cardiology and Medicine, Director of the Coronary Care Unit, and Assistant Dean for Postdoctoral Programs and Faculty Development.

Dr. Healy has served in many capacities on both private and governmental boards and commissions. She was Executive Secretary of the White House Panel on the Health of Universities and chaired the White House Cabinet Working Group on Biotechnology. Subsequently she became a member of the White House Science Council and also served as Chairman of the Advisory Panel for New Developments in Biotechnology of the Office of Technology Assessment of the U.S. Congress. Dr. Healy serves on several councils and committees within the National Institutes of Health, including the Advisory Committee to the Director of the NIH, and is a member of the Institute of Medicine of the National Academy of Sciences. She was recently appointed to the Special Medical Advisory Committee of the Department of Veterans Affairs.

Dr. Healy is a member of the Board of Overseers of Harvard College and a member of several of Harvard's Visiting Committees. She chairs the Ohio Council on Research and Economic Development of the Ohio Board of Regents and is a Trustee of the Edison Biotechnology Center. She is the immediate Past President of the American Heart Association and a former President of the American Federation for Clinical Research. She also serves on the Board of Directors of Medtronic, Inc., and the National City Corporation.

PETER W. LIKINS

Peter W. Likins is President of Lehigh University. His professional career began as a development engineer with the Jet Propulsion Laboratory, California Institute of Technology in 1958. In 1964 he joined the faculty at the University of California, Los Angeles, where in time he became Professor of Engineering and later, Associate Dean. He moved to Columbia University in 1976 as Professor and Dean, serving until 1980, when he became Provost of the University. In 1982 he was named President of Lehigh.

Dr. Likins received his B.S. in civil engineering from Stanford University in 1957, his S.M. in civil engineering from MIT in 1958, and his Ph.D. in engineering mechanics from Stanford in 1965.

Dr. Likins' research interests include problems of space vehicle dynamics, stability and control.

Dr. Likins has served as a consultant to various industrial and governmental research agencies, and as a member of the Packard-Bromley White House Science Council Panel on the Health of U.S. Colleges and Universities.

THOMAS E. LOVEJOY

Thomas E. Lovejoy is the Assistant Secretary for External Affairs, The Smithsonian Institution.

His previous experience includes service as a research assistant at the University of Pennsylvania, 1971-74; as Executive Assistant to the Science Director and as Assistant to the Vice President for Resources and Planning of the Academy of Natural Sciences, 1972-73; as the Vice President for Science of the World Wildlife Fund-U.S., 1973-87; and as Executive Vice President, 1985-89.

He is Chairman of the U.S. Man and Biosphere Program and serves on the Executive Committee of SCOPE (Scientific Committee on Problems of the Environment) of the International Council of Scientific Unions. He is President of the Society for Conservation Biology.

Dr. Lovejoy, on the international level, has focused his attention on continuing efforts to retain substantial sections of the Brazilian tropical rain forests.

Dr. Lovejoy received his B.S. degree from Yale College in 1964 and his Ph.D. in biology from Yale University in 1971.

Dr. Lovejoy's research interests include tropical ecology, ornithology, problems of ecology theory relating to conservation, and natural resource management.

WALTER E. MASSEY

Walter E. Massey is Vice President of the University of Chicago for Research and for Argonne National Laboratory. He has held this position since 1984. He has also been a Professor of Physics at the University since 1979.

Dr. Massey previously served as a physics instructor at Morehouse College, 1958-59; as a staff physicist with the Argonne National Laboratory, 1966-68; as Assistant Professor of Physics, University of Illinois, Urbana, 1968-70; Associate Professor of Physics and Dean of the College, Brown University, 1975-79.

Dr. Massey has served in a number of leadership positions in academic, industrial and governmental institutions, including six years as a member of the National Science Board. He is Vice President of the American Physical Society and is the Past President and Chairman of the American Association for the Advancement of Science.

Dr. Massey received his B.S. degree from Morehouse College in 1958 and his M.A. and Ph.D. degrees in physics from Washington University in 1966.

His research interests include many-body theories of quantum liquids and solids, theory of classical liquids, and solid state theory; the teaching of science and mathematics, and the role of science and technology in a democratic society.

DANIEL NATHANS

Daniel Nathans is Professor of Molecular Biology and Genetics at The Johns Hopkins University Medical School and Senior Investigator of the Howard Hughes Medical Institute.

Dr. Nathans received his B.S. degree from the University of Delaware in 1950 and his M.D. from Washington University in 1954.

He served as Medical Resident at the Columbia-Presbyterian Medical Center in New York, 1955, 1957-59; as Clinical Associate at the National Cancer Institute, 1955-57, and Guest Investigator in biochemistry at the Rockefeller University, 1959-62.

Since 1962 he has been on the faculty of The Johns Hopkins University Medical School.

Dr. Nathans received the Nobel Prize in Physiology or Medicine in 1978 for his research with enzymes that cut DNA into specific pieces, one of the basic tools of genetic engineering. He is a member of the National Academy of Sciences.

His major research interest is the molecular biology of cell growth and cancer.

JOHN P. MCTAGUE

John P. McTague is Vice President - Research, Ford Motor Company, and has served in that position since 1986.

In 1983 Dr. McTague was appointed Deputy Director of the Office of Science and Technology Policy, becoming Acting Science Advisor to the President and Acting Director of OSTP in 1986. Prior to that, he was Chairman of the National Synchrotron Light Source Department, Brookhaven National Laboratory, 1982-83. He was Professor of Chemistry and a member of the Institute of Geophysics and Planetary Physics, University of California, Los Angeles, 1970-82. He began his professional career as a member of the Technical Staff, North American Aviation Science Center, 1964-70.

Dr. McTague is a physical chemist with a B.S. degree from Georgetown University, 1960, and a Ph.D. from Brown University, 1965. He is U.S. Chairman of the U.S. Japan Joint High Level Advisory Panel on Cooperation in Research and Development in Science and Technology, and serves on the Naval Research Advisory Committee and the Board of Visitors of the National Institute of Standards and Technology. His board memberships include Ford Aerospace Corporation, Argonne National Laboratory, and the Metropolitan Center for High Technology.

DAVID PACKARD

David Packard has been Chairman of the Board of the Hewlett-Packard Co. since 1972.

His experience includes service as an engineer with the Vacuum Tube Engineering Department, GE Co., 1936-38; co-founder and partner, the Hewlett-Packard Co., 1939-47; President, 1947-64; and Chairman and Chief Executive Officer, 1964-69. Prior to his present position, Mr. Packard served as U.S. Deputy Secretary of Defense from 1969-71.

Mr. Packard has been a member, as well as chairman, of a number of boards and commissions, including the U.S.-Japan Advisory Commission, 1983-85; the U.S.-U.S.S.R. Trade and Economic Council's Committee on Science and Technology, 1975-82; the President's Blue Ribbon Commission on Defense Management, 1985-86; and the White House Science Council, 1982-89. He has been a member of the Business Council since 1963, and a founding member of the Business Roundtable.

Mr. Packard, who is a member of the National Academy of Engineering, received the Vannevar Bush Award of the National Science Board in 1987, the President's National Medal of Technology and the Presidential Medal of Freedom in 1988.

Mr. Packard received his B.A. and B.S.E.E. degrees from Stanford University in 1934 and 1939, respectively.

His research interests include electronics, communication and data processing technologies, and ocean science.

HAROLD T. SHAPIRO

Harold T. Shapiro has been President of Princeton University since 1988.

Dr. Shapiro's previous academic experience has been with the University of Michigan, first as an Assistant Professor of Economics in 1964. His career progressed from Associate Professor, 1967-70; Professor, 1970-76; Chairman of the Department of Economics, 1974-77; Professor of Economics and Public Policy, 1977; Vice President for Academic Affairs, 1977-79; and he was named President in 1980, the position he held until 1987.

Dr. Shapiro has served as a member of several industrial, governmental and academic boards and commissions, and has participated actively in many science- and technology-related studies.

Dr. Shapiro received his B.Comm. degree from McGill University, Canada, in 1956 and his Ph.D. in economics from Princeton University in 1964.

Dr. Shapiro, who is an economist, has research interests that encompass the relationship of science to innovation, and economic forecasting and policy analysis.

7/27/90

THE WHITE HOUSE
WASHINGTON

FCCSET - Industry & Technology Group

T.
-Harold Shapiro - Pres. Princeton

A. Competitiveness
1. Not mean no globalization or no movement of US industry offshore
2. not mean best at everything
3. need critical assets + flexibility to assert leadership
4. free trade, but controlled participation

B. Role of Government
1. Ultimate test is = Investment in human + physical capital
2. productivity
- shouldn't focus just on Mfty (~20% GNP)

C. PCAST
- will think of itself as firm + ask, what's in our way?

THE WHITE HOUSE
WASHINGTON

Dallas Peck - Dir., U.S. Geological Survey
Chair, Comm. on Earth Sciences

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Washington, D.C. 20410

The Honorable Elaine Chao
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Washington, D.C. 20590

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BUS

DIGEST

DOW JONES DOWN 28.46

STORY ON PAGE 2

DOLLAR
VS. JAPANESE YEN (N.Y.)
137.80 YEN
UNCHANGED

GOLD
COMEX SPOT
$354.00 PER OUNCE
– $2.10

BONDS
30-YEAR TREASURIES
8.24% YIELD
+ 0.04

CRUDE OIL
NYMEX CURRENT CONTRACT
$21.15 PER BARREL
+ $0.21

General Electric said it will cut as many as 1,000 jobs, or 6 percent of the work force at its Evendale, Ohio, plant because it was part of a team that lost a competition to build engines for the next generation of Air Force fighter planes.

Philip Morris shareholders overwhelmingly rejected proposals to study the impact of cigarette and beer advertising on children, to place warnings on cigarettes sold worldwide and to boycott Salvadoran coffee beans.

A group of investors including CBS Chairman Laurence A. Tisch cut its holdings in British advertising giant Saatchi &

White House Lists 22 Key Technologies

No New Plan to Back Development Offered

By Evelyn Richards
Washington Post Staff Writer

The White House yesterday released a list of 22 technologies that a special panel says are essential to preserving U.S. economic and military strength, but officials did not provide details on how the government might change or expand its methods of supporting their development.

The report, the first to be compiled by a specially appointed panel, listed such key technologies as software; new lightweight materials for use in planes, cars and consumer goods; pollution treatment equipment; high-definition television display panels; genetic engineering; computer systems for simulating scientific problems and manufacturing processes; and aeronautics.

William D. Phillips, the White House Office of Science and Technology official who oversaw the report's preparation by representatives of industry, government and universities, yesterday stressed the need for increased cooperation between government and corporations. He testified before the subcommittee on technology and competitiveness of the House Committee on Science, Space and Technology.

"It's time to expand the federal mission to include fundamental technological research," said Charles Schank, a member of the panel that drew up the report and director of Lawrence

See TECHNOLOGIES, F10, Col. 1

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The bureau's definition of recession is more complicated than the often-used formula of two consecutive quarterly declines in the gross national product. Its definition is "a recurring period of decline in total output, income, employment and trade, usually lasting from six months to a year and marked by widespread contractions in many sectors of the economy."

The dating committee said yesterday that the various indicators used to determine the business cycle, while generally flat throughout the summer, peaked during different months. "Nonfarm payroll employment reached a peak in June," said. "Real personal income peaked in July. Real manufacturing and trade sales peaked in August. The index of industrial production peaked in September."

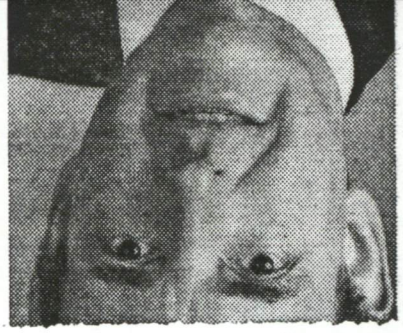
The committee ruling means the second-longest U.S. economic expansion came to an end last July after 92 months. Only the expansion of the 1960s was longer at 106 months from 1961 to 1969, which included the Vietnam War.

Walter cited concerns over Germany's inflation rate, which has gone from 2.5 percent to 3.5 percent, as well as uncertainty about the outcome of wage negotiations with the country's metalworkers.

But U.S. officials are still pushing for lower rates. In a briefing yesterday, David C. Mulford, the Treasury undersecretary for international affairs, said real interest rates in Europe were at record high levels. "That seems too high to me," Mulford said.

Mulford said the world economy had changed significantly since last October, when a sharp increase in oil prices had raised the danger of an inflationary spiral. "Obviously we think

See RATES, F4, Col. 1



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By John D. McClain
Associated Press

It's official—the United States is in a recession.

That was the ruling yesterday from the National Bureau of Economic Research, the Cambridge, Mass.-based private group recognized as the official arbiter of when U.S. recessions begin and end.

"The Business Cycle Dating Committee said yes-

The bureau's detination of reces-
sion is more complicated than the
often-used formula of two consecu-
tive quarterly declines in the gross
national product. Its definition is "a
recurring period of decline in total
output, income, employment and
trade, usually lasting from six
months to a year and marked by
widespread contractions in many
sectors of the economy."

White House Lists 22 Key Technologies

TECHNOLOGIES, From F1

Berkeley Laboratory, which is partly funded by the Department of Energy.

Committee Chairman George Brown (D-Calif.) said the report seemed to suggest a "substantial turnaround" in the Bush administration's reluctance to support a role for government beyond backing basic research. He indicated the administration now seemed ready to foster industry's efforts to convert laboratory ideas into commercial products.

Brown added, however, "I do not want to make it seem like it was too much of a revolution."

The report supports the view espoused by many Democrats that military strength will increasingly depend on the health of the nation's commercial industries.

The 126-page document is the latest in a flurry of such reports drafted by industry and government in the hope of focusing the nation's efforts on developing key technologies and turning them into products.

"Failure to maintain world-class manufacturing capabilities would compromise the nation's ability to compete in domestic and international markets, and would threaten our ability . . . to obtain access to the full range of components and equipment required for a strong national defense," the report says.

A "critical technologies institute" within the Office of Science and Technology Policy has been established to work with industry and to see that government research efforts are directed toward the technologies listed in the report. Phillips said Office of Science and Technology Policy officials were "not entirely sure" how they would do this.

The Bush administration plans to spend $76 billion in fiscal 1992 on all research and development, with $43 billion of that going to defense.

D. Allan Bromley, President Bush's science adviser, has carefully defined the government's role as being limited to technologies that are "generic" and "precompetitive," meaning they are common to competing companies.

The White House has also insisted that federal involvement with the private sector be limited to efforts that are led by industry.

Even so, the government has become increasingly involved in supporting commercial technologies within industry.

The Commerce Department, for example, recently awarded $10 million in grants to companies pursuing advanced technologies. The Energy Department plans to work with the Big Three automakers in developing a battery to power electric cars. And new efforts have been put into transferring technologies out of national laboratories into private companies.

The Office of Science and Technology Policy this week cosponsored a conference in North Carolina intended to draft a road map of how research into making extremely small advanced semiconductors could be coordinated nationwide.

Ian Ross, president of American Telephone & Telegraph Co.'s Bell Laboratories and an organizer of the conference, said a plan will be produced within weeks. Asked about support from the White House, Ross said it was "not in any way committed to adopting the output of the workshop."

Homes Sales Up in Second Month of Gains

ECONOMY, From F1

and services, would follow a 1.6 percent drop in the fourth quarter of 1990.

The real estate trade group said March's seasonally adjusted, annual sales rate of existing homes was 3.18 million units, up from the February pace of 3.16 million units.

The March increase followed a 9 percent rise from January to February—the first time home sales have risen for two straight months since August and September 1989.

The association said the latest increase reflects growing consumer confidence in the economy.

"Buyers in all income ranges are going ahead with their purchases. They are snapping up low rates," said Harley Rouda, NAR president.

But the March resale rate was still down 7.6 percent from the year-ago rate of 3.44 million units.

"Home sales and housing starts have bottomed," said David Rolley, analyst with McGraw-Hill Inc. "A gradual recovery will unfold all year," he told yesterday's conference of the National Association of Homebuilders.

Homes in the lower price range saw the biggest volume of resales, with more first-time buyers coming into the market.

The national median price for single-family homes rose to $96,500, the highest since March 1990. The price was up $2,500 from February and $400 above March 1990.

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Every Thursday in
THE YELLOW PAGE
DIRECTORY

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MARCH 1990

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Chairman:	Peter Likins	Charles Dickens
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MARCH 1990

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OSTP Liaison Member: William D. Phillips, Associate Director for Industrial Technology

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Chairman: Reginald Bartholomew, Under Secretary for Security Assistance, Science and Technology, Department of State
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Philip Schambra, Director, Fogarty International Center, National Institutes of Health, Department of Health and Human Services
OSTP Liaison Member: J. Thomas Ratchford, Associate Director for Policy and International Affairs

MICHAEL SCHRAGE

Research Universities, Corporate Sponsors Need a Different Relationship

When America's top research universities glance down at their well-heeled corporate sponsors from their ivory towers, alluring visions of dollar bills just aching to be seduced keep dancing in their heads.

But what do America's top research companies see when they peer into the groves of academe?

Their view is equally unflattering. They see "many university officials [who] tend to have an inflated view of the importance of university research efforts in innovation," according to the just-published "Industrial Perspectives on Innovation and Interactions With Universities."

What's more, asserts this government-university-industry research round-table survey, "many university officials erroneously believe that the discovery of new ideas represents the most significant step in the process of innovation, and that universities are the key source."

Not so, the report concludes. "Industry is the primary source for innovation. Universities play only a limited role in this realm."

So much for getting that endowment for the new chair in molecular biology.

Actually, the report—which summarizes the opinions of 17 top research officials from companies ranging from Procter & Gamble Co. to General Motors Corp. to Bechtel Group Inc. to Martin Marietta Corp.—offers more than the casual snipes at academic pretension. This is what you read if you want quick insight into the conventional research and development wisdoms. It's a terrific snapshot of attitudes. Sure, most of the comments seem obvious—incremental innovation in industry is more common than breakthrough innovation; the primary role of the university is as educator and provider of talent, etc.—but then, if they weren't obvious, they wouldn't be conventional wisdoms.

The overarching message is that these senior officials are less than thrilled with their relationships with and investments in America's research universities. They're not getting the bang for the buck that they want. They complain that, while research universities may be loaded with talent and data, they just are not in sync with either the needs or the aspirations of American business. Essentially, universities neither understand nor effectively contribute to the technology transfer process.

This may or may not be true—but that's what they say, and it should be taken seriously. What also has to be taken seriously, however, is the dangerously narrow perspective that most industries have of the innovation process. To wit, the report notes that "most industry officials interviewed believed that, whereas universities are at the forefront of scientific discovery, product- and process-oriented technical change occurs within industrial firms for most fields."

This is one of those statements that sounds perfectly reasonable but is actually meaningless. As any sophisticated industrial researcher will tell you, the lines between "scientific discovery" and technical innovation have blurred into shades of gray. Where do you draw the line between the science of molecular biology and the technology of genetic engineering when the same researchers are doing both?

The science of computational chemistry is transforming the technology of new materials design. Mathematical research in digital signal processing is quickly translated into custom-designed computer chips. In virtually every major industry—automotive, aerospace, agriculture, medicine—science and technology are converging.

So here are industry and academe struggling to draw clean research distinctions between themselves at the very time that's becoming virtually impossible. The reality is that universities can no longer be seen as traditional "suppliers" of students and "subcontractors" generating new knowledge. A different relationship is necessary, one that's far more intimate and collaborative than giving a university a million bucks and expensive equipment in exchange for the exclusive rights to some anticipated "breakthrough."

Proof of this can be found in the single most interesting finding in the survey. These corporate giants are now turned off by research consortia and expensive alliances. Instead, they've discovered that the most fruitful industrial-academic collaborations emerge from the "bottom up"—small groups of researchers from industry and academe who share common interests and build on them.

These are the people honing the cutting edge of research and innovation—not their bosses. In fact, it is precisely because the research bosses are constantly trying to draw a corporate dotted line between basic science and applied technology that they can't quite see the convergences their researchers are creating.

Ironically, while the research executives complain about their relationships with American universities, Japanese companies have platoons of their top young scientists and engineers studying at the top universities. They prefer to send people, not money. The Americans do just the opposite.

Indeed, the most damning aspect of this survey is that none of the research executives talks about how many people they have on campus or, for that matter, how many top-notch professors and grad students come into their facilities to consult. I'm sure it's going on—but why wasn't it discussed?

Institutions don't collaborate; people do. That's not a profound statement. However, until both industry and academe recognize that the key to effective university-industry productivity is to enable individuals to collaborate instead of having institutions sign intellectual property deals, the relationships will continue to disappoint. More important, American companies will not be effectively drawing upon a vital resource that can dramatically boost their ability to innovate and compete in world markets.

Michael Schrage is a columnist for the Los Angeles Times.

Danaher Profit Down 63 Percent in Quarter

Engine Company UNC Inc. of Annapolis Posts a 24 Percent Rise in Earnings

Danaher Corp., the Georgetown-based manufacturing conglomerate, said the recession and the Persian Gulf War cut heavily into first-quarter profit, particularly in the company's transportation equipment subsidiary.

Danaher, whose products range from hand tools to vinyl siding to truck brakes, said it earned $3.9 million (14 cents a share) in the quarter, down 63 percent from $10.6 million (46 cents) a year ago.

Revenue, however, increased 13 percent, to $203.7 million from $180.5 million in the first quarter of 1990, although much of the increase was attributable to the results of Easco Hand Tools Inc., which Danaher acquired last June.

■ **UNC Inc.**, an Annapolis-based company that overhauls engines and aircraft parts, reported that its first-quarter profit rose 24 percent to $244 million (8 cents per share) from $1.16 million (7 cents) in the same quarter last year.

UNC, which has heavy debt that it has been paying down following a five-year restructuring, said its operating profit was also up, rising 16 percent to $7.8 million from $6.7 million a year earlier. It credited higher profit margins in manufacturing, remanufacturing and accessory overhaul for the improvement in operating results.

Revenue in the quarter rose 7 percent to $85.5 million from $80 million.

■ **Radiation Systems Inc.**, a Sterling company that makes antenna systems, reported that profit rose 50 percent in the quarter ended March 31.

Net income for the quarter, the third of the company's fiscal year, was $2.1 million (38 cents per share), compared with $1.4 million (25 cents) in the same quarter a year earlier. Revenue rose 17 percent, to $26.7 million from $22.9 million.

Chairman Richard E. Thomas said the improvement "reflects the continued strength of the company's markets." Radiation Systems has recently won several large contracts, including one to build a radio telescope in West Virginia.

For the first nine months, profit rose 69 percent to $5.9 million ($1.07) from $3.5 million (65 cents). Revenue rose 47 percent, to $79.6 million from $54.3 million.

■ **Biospherics Inc.**, a biotechnology and information company based in Beltsville, lost $173,054 in the first quarter, compared with $150,122 a year earlier. Revenue fell to $3.5 million, down from $3.8 million.

Biospherics said that its environmental and laboratory division was hurt by the recession, but it expects sales to recover. It said it expects several new contracts totaling more than $1 million later this year.

■ **Orbital Sciences Corp.** of Fairfax posted a profit of $341,000 (4 cents) in the first quarter, its second profitable quarter ever.

That compares with a loss of $741,000 in the first quarter of last year. The only other quarter in which the nine-year-old company has been profitable was the third quarter of last year.

Orbital, a space launch company that has developed a low-cost way to launch satellites, received a raft of orders for its main product, the Pegasus space launch system, in the quarter. It has successfully launched the new system—a rocket carried aloft by a B-52 bomber and then launched—twice so far this year.

Revenue in the quarter rose 20 percent, to $26.8 million from $22.4 million.

■ **Ameribanc Investors Group**, parent of Ameribanc Savings Bank, said it lost $1.9 million in the first quarter of 1991, down from $3.1 million in the same quarter last year.

Ameribanc Chairman John J. Houseman blamed the continued losses on the depressed local real estate market. Included in the quarterly loss was a $1.6 million provision for future loan losses. Additionally, Ameribanc recorded $1.5 million in write-downs on foreclosed properties. The thrift also recognized a $900,000 gain from sales of adjustable-rate mortgage loans.

Ameribanc's troubled loans increased 11 percent in the quarter to $125.8 million from $113.3 million at year's end. The company said it is no longer in compliance with federal standards for capital, the cash and assets that thrift owners must provide to protect the federal deposit insurance fund from losses. Accordingly, Ameribanc has filed a plan with regulators outlining how it will raise capital. The plan is under review.

During the quarter, the thrift's board instituted several initiatives to help counteract the impact of the local recession. Senior managers' wages were cut, and wages and hiring were frozen for all staff. The thrift increased its fee income and reduced the amount of interest paid on accounts. It also plans to consolidate three branches.

■ **MBNA Corp.**, the parent of the credit card bank company that was spun off from MNC Financial Inc. last year, said it earned $30.9 million (62 cents) in the first quarter, compared with a profit of $26.8 million (54 cents) in the first quarter of 1990.

The Delaware company, which is the parent of MBNA America Bank, the nation's third-largest credit card lender, said total loans that it manages jumped by $1.5 billion to $7.3 billion. During the quarter, the company said it added nearly 400,000 new customers. Delinquency rates at the end of the quarter were 4.49 percent, down from the year-end level of 4.52 percent. Although that level is above historic levels for MBNA, the company said it is consistent with expectations.

MNC Financial, MBNA's former parent, still runs Maryland National Bank and American Security Bank.

■ **First Citizens Financial Corp.**, the parent of Citizens Savings Bank of Silver Spring, said its income for the first quarter was $27,000 (1 cent), compared with a profit of $270,000 (13 cents) in the same period in 1991. First Citizens operates 14 branches in Montgomery and Frederick counties in Maryland.

THE WHITE HOUSE

WASHINGTON

April 17, 1991

MEMORANDUM FOR THE EPC SCIENCE AND TECHNOLOGY WORKING GROUP

FROM: D. ALLAN BROMLEY

SUBJECT: April 18, 1991 Meeting

A meeting of the Science and Technology Working Group will be held at 5:00 PM on Thursday April 18 in Room 208 of the Old Executive Office Building.

The topic to be discussed is the President's High Performance Computing and Communications initiative and current Congressional activity. The meeting is intended for principals, plus one. Please contact Amy Mincey at 456-6272 to inform us of your attendance.

Thank you.

cc: Meeting Invitees

FACSIMILE COVER SHEET

TECHNOLOGY ANALYSIS GROUP
OFFICE of the UNDER SECRETARY for TECHNOLOGY

U.S. DEPARTMENT OF COMMERCE
HERBERT C. HOOVER BUILDING, ROOM 4841
Washington, DC 20230

202-377-4844
FAX # - 202-377-4362

TO:

NAME Todd Buchholz

ORGANIZATION OEOB

TELEPHONE NUMBER 456-7969

FROM:

NAME Cary Gravatt

ORGANIZATION TA / Exec. Secretary FCCSET/CIT

TELEPHONE NUMBER 377-4844

NUMBER OF PAGES 3 **(INCLUDING COVER SHEET)**

Please inform Sharon O'Neal of name of person attending

Thank you.

APR-09-1991 10:47 FROM NIST DOC OFFICE TO 9456773 9- P.01

UNITED STATES DEPARTMENT OF COMMERCE
The Under Secretary for Technology
Washington, D.C. 20230

April 9, 1991

MEMORANDUM FOR FCCSET Committee on Industry and Technology (CIT) Distribution

From: Robert M. White, Chairman

Subject: CIT Meeting on April 16, 1991

The FCCSET Committee on Industry and Technology (CIT) will meet on Tuesday, April 16, 1991 from 11:00 a.m. to 2:00 p.m. in Room 5843 at the Department of Commerce, 14th and Constitution Ave. N.W. As we have done in the past, a buffet lunch will be available during the meeting.

The CIT will be heavily involved in the Advanced Materials and Processing Program (AMPP) cross-cut over the next nine months, and I have asked our Materials Steering Group Chairman, Dr. John White of NSF, to give us a briefing on the plans, procedures and schedule of this process. There will be several points where CIT analysis and approval will be required, probably with very short response times, and I request that you and your agency staff make plans for these events.

Dr. Jack Williams resigned his position as Executive Secretary of the CIT several weeks ago, because of the pressure of other duties. I have asked Dr. Cary Gravatt, a member of my immediate staff from NIST working on analysis of the National Critical Technologies, to take over as CIT Executive Secretary. I want to thank Jack Williams for his devotion and hard work in getting the CIT to where it is today.

An agenda for the meeting is attached. If you have any changes or wish to add agenda items, please contact Cary Gravatt, at 202-377-4844.

Attachment

APR-09-1991 10:47 FROM NIST DOC OFFICE TO 9456772 P.02

Meeting of the FCCSET Committee on
Industry and Technology (CIT)
April 16, 1991
11:00 a.m. - 2:00 p.m.
U.S. Department of Commerce
Secretary's Dining Room 5843

Agenda

o	Welcome and Introductions	Bob White J.R. Thompson	10 min.
o	Full FCCSET Report	Bob White	10 min.
o	Advanced Materials and Processing Cross-cut: plans, procedures, schedule	John White	30 min.
o	Technology Inventories Status Reports		
	Advanced Manufacturing	J.R. Thompson	10 min.
	Biotechnology	Bill Raub	10 min.
	Advanced Software	Ray Siewert	10 min.
	Information and Communication Hardware	John Lyons	10 min.
o	High Performance Computing and Communication	David Nelson	20 min.
o	CIT Charter	Maryanne Bach	15 min.
o	Update on Machine Translation	Joe Clark	10 min.
o	Update on Federal Technology Management Policy	Deborah L. Wince-Smith	15 min.
o	Closing Comments/Date for Next Meeting	Bob White J.R. Thompson	10 min.

APR-09-1991 10:48 FROM NIST DOC OFFICE TO 9456773 9- P.03

OFFICE OF CABINET AFFAIRS STAFFING MEMORANDUM

Date: 3-19-91 **Due by:** 1:00 Thursday, March 21

Subject: OMB Clearance: OSTP Q & As on Science & Tech. Issues

From: Holly Williamson

	ACTION	CONCUR	FYI
HOLIDAY	☐	☐	☐
DANZANSKY	☐	☐	☑
ADAIR	☐	☐	☐
BUCHHOLZ	☑	☐	☐
CASSE	☑	☐	☐
EVANS	☐	☐	☐
FARRAR	☐	☐	☐
GUNN	☑	☐	☐
HEIMBACH	☐	☐	☐
JACKSON	☐	☐	☐

	ACTION	CONCUR	FYI
FITZHENRY	☐	☐	☑
MCMUNN	☐	☐	☐
PORTER	☑	☐	☐
SCHALL	☑	☐	☐
SECHLER	☐	☐	☑
WETHINGTON	☑	☐	☐
WILLIAMSON	☐	☐	☐
_____	☐	☐	☐
_____	☐	☐	☐
_____	☐	☐	☐

Comments:

Please review and provide comments to me by 1:00 on Thursday, March 21. Thanks.

22 pages total

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
Washington, D.C. 20503

MAR 18 1991

LEGISLATIVE REFERRAL MEMORANDUM

LRM #M-122

TO: Legislative Liaison Officer:

COMMERCE - Michael A. Levitt - 377-3151 - 324
DEFENSE - Samuel T. Brick, Jr. - 697-1305 - 325
EDUCATION - John Kristy - 401-2670 - 207
ENERGY - Bob Rabben - 586-6718 - 209
HHS - Frances White - 245-7760 - 328
JUSTICE - Paul McNulty - 514-2061 - 217
STATE - Will Davis - 647-4463 - 225
TRANSPORTATION - Tom Herlihy - 366-4687 - 226
TREASURY - Richard S. Carro - 566-8523 - 228
CEA - Francine Obermiller - 395-5036 - 242
EPA - Thomas C. Roberts - 382-5414 - 326
NASA - Martin P. Kress - 453-1948 - 219
NSF - Charles H. Herz - 357-9435 - 248
SPACE COUNCIL - Liz Prestridge - 395-6175 - 309
USTR - David Weiss - 395-3475 - 223
AGRICULTURE - Marvin Shapiro - 382-1272 - 312

SUBJECT: OSTP Q&As on Science & Technology Issues -- from posture hearing

DEADLINE: 2:00 p.m., Thursday MAR 21 1991

The Office of Management and Budget requests the views of your agency on the above subject before advising on its relationship to the program of the President, in accordance with OMB Circular A-19.

Questions should be referred to Constance **BOWERS (395-3457)**, the legislative analyst for this item, or to **Norine NOONAN (395-3534)**.

James J. Jukes

JAMES J. JUKES (for)
Assistant Director for
Legislative Reference

CC:
Greg Henry
Tom Dorsey
Nancy Milton
Susan Offut
Dan Corbett
Bob Fairweather
Holly Williamson
Barry White
Cora Beebe
Barry Clendenin
Janet Forsgren
Ron Peterson

DRAFT

Responses to Brown Committee Questions following 2/20/91 Posture Hearing

1. What has been OSTP's involvement in assessing the results of the Report on the Advisory Committee on the Future of the U.S. Space Program? Do you plan on making any recommendations of your own as a member of the National Space Council?

A. As you know, NASA has undertaken a conceptual redesign of the Space Station in response to a recommendation from the Augustine Committee and Congressional mandate. My staff and I have participated actively in the Space Council's consideration of the conceptual redesign with particular focus on the scientific and technological aspects of the planned utilization of the Space Station.

2. The Augustine Committee identified once again the need for a broad and stable consensus on what we should be doing in space and how much we should spend on these activities. Such a consensus must involve the Administration, Congress and, most importantly, a well-informed public. What role will you play in developing a durable consensus on a long-term budget for NASA?

A. I think that the Space Council should have the lead role in developing such a consensus, but I shall continue to play an active role within the Space Council

3. The Augustine Committee noted the value of international cooperation for space activities, but recommended being more careful about entering into cooperative ventures. The committee also recommended that such cooperative ventures not include "in-line critical program elements." What guidelines would you recommend for evaluating potential cooperative space activities?

A. I am in fundamental agreement with the Augustine Committee in this regard. There is indeed value in international cooperation on space activities, but the value is not primarily financial.

Response to Question 4 for the Record Submitted by Chairman George E. Brown, Jr.

4. One of President Bush's stated goals is to "make America number one in math and science." Please elaborate on how we can make that happen, and how that achievement can be measured.

Answer: The goal cited in the Question is one of six developed as an outcome of the Education Summit held by the President and the Nation's Governors in September 1989 at Charlottesville, Virginia. One of the major Federal responses to the goals related to mathematics and science achievement is the President's FY 1992 Budget Initiative for mathematics and science education.

The Federal Coordinating Council for Science, Engineering, and Technology (FCCSET) assisted the President in the development of this initiative. The FCCSET effort was conducted under my direction through the Committee on Education and Human Resources (CEHR). The Committee is chaired by Admiral James D. Watkins, Secretary of Energy, and has as co-Vice Chairman, Ted Sanders, the Acting Secretary of Education, and Luther Williams, the Assistant Director for Education and Human Resources of the National Science Foundation. Under their leadership, the CEHR assisted in the development of the President's FY 1992 Budget Initiative on Mathematics and Science Education. A copy of their report, By the Year 2000: First in the World, is attached. This report presents the first complete inventory of Federal programs for mathematics and science education and sets forth goals and priorities designed to ensure that every U.S. student will be competent in mathematics and science.

The CEHR program developed under FCCSET recognizes the need to involve parents and teachers, as well as the scientific and engineering community in activities to improve education. The National Science Foundation and the Department of Education have major programs that provide support for teacher preparation and continuing education, curriculum development and dissemination, school reform, and student incentives to pursue science and engineering majors. Many of the mission agencies, such as the Department of Energy, NASA, and the Department of Health and Human Services, sponsor informal mathematics and science education activities that help sustain student interest in these fields and that contribute to general science literacy for parents and other adult members of the community. OSTP's involvement is to guide the development of programs in the departments and agencies that will encourage a continuing interest on the part of parents. The central role that parents can play is the educational achievement of their children has been widely addressed by me in public addresses across the nation.

The measurement of achievement in mathematics and science is obviously integral to the National Education Goals. This endeavor calls for broad public involvement, and is not solely a Federal role. The National Governors Association, for example, has a panel on measurement. The Mathematical Sciences Education Board, a body sponsored by the National Academy of Sciences, is addressing these issues for mathematics. Another Academy group, the Board for International Comparative Studies in Education, is working on the challenging problems of comparisons of educational achievement between the United States and other countries. Both the National Science Foundation and the Department of Education are involved in sponsoring projects on international comparisons of educational achievement. A number of States are conducting studies on measurement of educational achievement. Out of all these activities should come the knowledge base, practices, tools, and agreed-on standards that will provide the ability to measure progress toward the goals.

These goals are very challenging. If we are to achieve them, we will need a concerted effort involving the Federal Government, the States, localities, teachers, parents, and the students. Americans are frequently stirred by challenges to make great exertions and achieve difficult goals. If there is that kind of response to the challenge to improve mathematics and science achievement, we should attain the National Education Goals.

5. We hear conflicting reports from the media as to the health of the scientific community; in your opinion, what criteria should be used to assess the health of science in the U.S.?

A: Numerous metrics are often used to describe the health of the U.S. science community including funding levels, number of grants, the social benefits or rate of return to investments in research, publications and citations, patents, and Nobel and other major research prizes. Each of these captures only one

small aspect of the functioning of the science enterprise. A more general measure is the extent to which our science enterprise contributes to advancing the frontiers of knowledge, meeting national needs in areas ranging from economic competitiveness to national security, educating our youth, and improving our quality of life. I remain convinced that overall we still have the strongest science and technology enterprise in history. It is, however, true that other nations, by focusing their efforts, have moved up to equal us - or in a few cases surpass us. This is neither surprising nor necessarily bad. But it is essential that in those areas, where we may not define the current frontiers, that we remain close enough to them so that we can exploit new discourses or developments, wherever they are made, rapidly and effectively.

6. Despite increasing budgets for federally-funded research, the demand for grants continues to increase. How do you think that the science community can more realistically prioritize its funding requests?

A: Peer review remains, far and away, the best method of evaluating priorities among projects in fundamental science research. Peer review is the traditional means of deciding whether or not to fund individual research grants as well as the large facility construction projects that are required for forefront research in many areas.

It more than anything else is responsible for the present strength of our enterprise; while there <u>are</u> problems with peer review they are relatively minor and can be fixed.

7. The High Performance Computing initiative includes creation of a National Research and Education Network (NREN). How will the views and concerns of the non-federal user community for the NREN be included in the planning process for the network, since FCCSET membership is limited to federal agencies?

A. Concerns of the non-federal users of NREN will be considered both formally and informally. In fact, a private sector advisory committee is being formed for this purpose by the Federal Networking Council, an inter-agency group concerned with management of NREN.

We also have a panel within PCAST that provides an overview of our HPCC programs.

8. Do you think that a full multi-year program funding approach adopted last year by the Congress for CRAF/Cassini and the House for Superconducting Super Collider can be available for other large projects such as the GEOS weather satellites, National Weather Service modernization, and Space Station Freedom?

A: Last year the Congress gave multi-year <u>authorization</u> for CRAF/Cassini and the House of Representatives for the SSC after rebuffing similar requests for the Space Station in the previous two years. Any attempts that Congress makes to promote longer term stability in funding for R&D are, of course, appreciated. The effectiveness of these efforts will be enhanced if multi-year authorizations can be translated into multi-year appropriations. The Administration is most interested in exploring how better to provide the stable funding required for long-term projects such as the ones mentioned above.

9. What is the status of United States participation in ITER, the international program to build a large-scale fusion reactor?

A: A team led by DOE currently is negotiating terms for U.S. participation with our prospective foreign partners in the Engineering Design Activities phase of the ITER project. It is hoped that the negotiations will be completed, and agreement reached, within the next few months.

We view ITER thus far as a very effective and successful international cooperation involving Japan, the USSR, the EC and the U.S.

Draft Answers
in response to
George Brown's Query

March 15, 1991

10. **While the intramural research programs of the National Institute of Standards and Technology have been given a long overdue increase, the extramural programs designed to help industry strengthen its technological base are either frozen or eliminated. What do you see the role of NIST in fostering industrial competitiveness?**

The Administration has proposed a 15 percent increase, to a total of $248 million, to expand the National Institute of Standards and Technology's (NIST's) ability to perform generic applied research and technology development to address a rapidly growing number of important standards and measurement issues. The increase will allow NIST to conduct research and provide laboratory support for manufacturing technologies, information technologies, and other emerging technologies that are extremely important to the U.S. economy. In addition, the budget includes $36 million for the Advanced Technology Program (ATP) to help fund industry-led high-risk R&D on precompetitive technologies. I have been very impressed by the first round of awards under the ATP program and believe this augurs well for its future.

11. **The Advanced Technology Program is due for an increase from $10 million to $37.9 [$35.9] million this year. What are the priorities for how that increase will be allocated?**

Approximately $11M of the FY91 funds will be used to fund the second year of projects initiated with FY90 funding. NIST will announce a second open competition and use the remainder of funds for new project starts resulting from the second competition. As was done in the first competition, the Request for Proposal (RFP) will cite the criteria below:

- Technical and scientific merit (20%);
- Broad-based commercial benefits (20%);
- Technology transfer benefits (20%);
- Experience and qualifications of the proposing organization(s) (20%); and
- Level of commitment and organization structure (20%).

The second RFP will not solicit specific technologies, but will refer to appropriate lists of technologies and may also give some examples; e.g., advanced materials.

12. **What is the relationship between the priorities in the Critical Technologies list which your office will submit to the Congress and the priorities in the Advanced Technology Program?**

We regard the Critical Technologies list as an excellent summary of the current opportunities for the U.S. and expect this list to be very helpful in implementing the Advanced Technology Program selection criteria. However, distribution of funds for actual awards should be merit based and decisions

13. Would you recommend that the Advanced Technology Program money be earmarked by Congress for particular technologies?

No, we believe that industry should establish priorities through the types of proposals submitted.

14. Legislation passed last year authorized a Critical Technologies Institute organized as a federally-funded, contractor-operated organization attached to OSTP. What is the current status of this Institute? How do you see the Institute being used by OSTP? Will it help OSTP, which has been chronically understaffed in the past, more effectively carry out its many responsibilities?

The National Critical Technologies Institute was established by the 1991 Defense Authorization Act. The law requires the Institute to:

- Survey the views of industry; academia; and Federal, State, and local government on the critical technologies identified by the National Critical Technologies Panel and other technologies they consider critical.
- Identify near-, mid-, and long-term objectives for research, development, and production capability for each technology.
- Prepare possible strategies to achieve the objectives.
- Publish reports describing the national objectives and strategies and progress in meeting them.
- Perform additional duties as assigned by OSTP and the Federal Coordinating Council on Science, Engineering, and Technology Policy.

Other activities that might be assigned to the Institute could include:

- Issues in management of technology
- Issues in technology transfer
- Technology development case studies
- Comparative surveys of technology trends for the U.S. and its trading partners
- Promotion of private/public sector involvement in the selection, generation, and exploitation of critical (generic) technologies

It is our intent that the National Critical Technologies Institute will be operational by June 1991. Administrative support for the Institute is being sought through contractual arrangements with an existing not-for-profit organization that is capable, additionally, of providing technical support. Now that the report of the National Critical technologies Panel has been completed and submitted to the President, it is expected that the pace of implementation of the Institute will increase. The Institute will expand the capabilities of OSTP in carrying out its responsibilities.

We anticipate that the Institute Director, who will play a key roll in its establishment

15. What do you believe should be our priorities for funding research in the areas of energy alternatives to fossil fuels and more efficient energy technologies? Do you believe the President's budget request is adequate to meet our current energy R&D needs?

A: Nuclear fission merits vigorous research and development as the only currently available technology capable of producing large blocks of electrical energy without direct emissions of carbon dioxide, sulfur oxide, and nitrogen oxide. Battery development has the potential to enable competitive electric vehicles to displace imported oil. Solar, wind, and other renewable energy will serve important niches. The efficiency of energy technologies can be significantly increased through materials science research and development in areas such as superconductors, high temperature ceramics, improved insulating materials, CFC replacements, etc. The President's budget requests adequate funding to meet our needs and proposes to leverage that investment through cooperative, cost-shared efforts with industry.

In particular I believe that the new High Temperature Gas Cooled Reactors (HTGR's) hold high promise for the future.

16. This Committee expects to address the issue of uranium enrichment this year. What is the Administration's policy on the importation of Soviet SWUs? Will there be unlimited importation or will some type of restraint agreement be worked out using the Department of Energy as the broker?

A: There are no restrictions on the importation of SWUs from other countries. The Department of Energy is currently reviewing the impacts on domestic producers of this policy.

17. Despite the EPA Science Advisory Boards 1988 recommendation that the EPA R&D budget be doubled over the next 5 years, the FY92 budget is the first request for a significant increase (14%) in funding. Is the Administration committed to requesting similar or greater increases over the next few years so that we might approach the SAB's recommended levels?

A: The budget places a major emphasis on efforts to protect and enhance America's natural resources and the environment within the context of policies to promote economic growth. Major increases are proposed in the FY 92 budget for a number of important areas, including R&D. Although it is difficult to predict future budget recommendations, if the past trend continues and Congressional action is not inconsistent with these recommendations, we may see future requests for increases.

18.Q. In the Superfund Amendments and Reauthorization Act of 1986, the Congress established at the National Institute of Environmental Health Sciences (NIEHS) a university-based multidisciplinary research program to develop better methods for assessing the risks to human health and for reducing those risks. With an FY 1991 appropriation of $21.9 million, the NIEHS is funding 11 grants involving 99 separate projects at 21 institutions. Although the President's Request includes a substantial increase for the Superfund budget, the NIEHS Superfund Research Program was cut by 46% to $11.9 million while the 1990 reauthorization provided $35 million for FY 1992-1994. What is the reason for the drastic cut in this excellent program?

A. The NIEHS Superfund Basic Research Program is an innovative approach to answering the questions most often heard from people whose environment has been affected by uncontrolled hazardous substances: "What are the risks to me and my family and what can science and technology do to help us?" The NIEHS Program provides multiproject, multidisciplinary grants to universities to fund integrated studies in biomedicine, engineering, hydrogeology, ecology and statistical modelling. It is the only one of its kind funded by the federal government. The knowledge gained will provide a sound foundation for decisions about managing hazardous substances in ways that protect human health and the environment.

The eleven grants funded thus far provide support for 98 projects in 23 institutions. Accomplishments include:

- White rot fungus degrades a wide variety of waste site chemicals including industrial dyes, solvents, nitro compounds and halogenated hydrocarbons. Genetic engineering is being used to enhance the speed of degradation.

- A number of bacterial strains isolated from carbon filtration units have been used to treat benzene, ethylbenzene, toluene, and xylene in contaminated groundwater.

- Sperm numbers, morphology, and motility show differences in normal vs. certain chemically exposed persons. Studies show men exposed to perchloroethylene have dose-dependent changes in sperm motion and morphology.

- New equipment to monitor incinerator processes, e.g., photographic and spectroscopic, has been developed and is being tested.

- A new method of cleaning up solvents from hazardous wastes sites such that they can be reclaimed from soil and recycled has been developed.

- Analytical chemists have devised ways to identify and measure a wide range of chemicals bound to proteins in human blood. Genetic toxicologists have developed ways to see if the specific genetic signatures of these chemicals are written on the genes of cells in the same blood samples. Civil engineers have mapped the movement of water in the chemically polluted Aberjona River and its tributaries. Soon this Superfund team will be processing human samples and getting the answers as to whether chemicals are moving from dumps to ground water and into people in ways that cause detectable and possibly significant genetic damage.

The NIEHS Superfund Basic Research Program receives its funding from the Superfund Trust Fund through the Environmental Protection Agency. The FY 1992 total EPA Superfund budget was limited to an increase of $135 million over its FY 1991 appropriation of $1629 million. The urgency of cleaning up sites of great concern to the public dictate that funding for research be a lower priority than that for cleanup and enforcement.

#19

Question: In its review of the FY 1991 U.S. Global Climate Research Program, the National Academy of Sciences commented on the need to achieve an appropriate balance between spaced-based observational capabilities and ground-based process studies and modeling research as the program evolves. How does the FY 1992 budget respond to this recommendation?

Overall constraints on Federal funding have led the Committee on Earth and Environmental Sciences to pursue a U.S. Global Change Research Program (USGCRP) more focused on the highest priority scientific and policy issues over the next few years. In particular, the highest priority scientific and policy issue for the USGCRP in FY 1992 is whether, and to what extent, human activities are changing or will change the global climate system.

Despite the constraints on funding and need to focus the USGCRP on the highest priority global change issues, the FY 1992 budget proposed by the President for the Program is consistent with the Academy's recommendation. The budget reflects a continued commitment to establish an integrated, comprehensive (space- and ground-based) atmosphere, ocean,and terrestrial observing system which will acquire the long-term databases necessary for the development and testing of predictive models and for monitoring to document global environmental changes. The budget also reflects a strong, continued commitment to both conduct focused studies necessary to improve our understanding of key processes that control the global Earth system, including its climate. Further, a strong commitment is reflected in the budget to augment research on climate modeling and prediction, one of the highest scientific priorities identified by the Intergovernmental Panel on Climate Change.

The proposed funding level for spaced-based research programs in the USGCRP in FY 1992 is $596.2 million; an increase of 23.2 percent over the FY 1991 level. A comparable increase is requested for ground-based research. The funding level requested for these activities is essential if we are to put in place space- and ground-based systems necessary for observing key environmental processes at the global scale, a scientific capability that we presently lack. We agree with the Academy's recommendation of maintaining an appropriate balance between space- and ground-based research and observation programs. Such a balance is essential for a successful USGCRP given the spatial and temporal variability of the systems being studied and the need to scale processes occurring at the local level to the regional and global scales.

The remainder ($589 million) of the proposed budget of $1186 million for the USGCRP in FY 1992 is for a combination of ground-based studies, modeling, and data management. The level of funding for these activities is, in the view of the CEES agencies, consistent with the scientific needs and priorities, the state of the science, and the development of the USGCRP.

20. **LAST YEAR YOU EXPRESSED CONSIDERABLE PRIDE IN THE MODEL THAT THE COMMITTEE ON EARTH AND ENVIRONMENTAL SCIENCES AND THE USGCRP PROVIDED FOR INTERAGENCY PROGRAM DEVELOPMENT AND INTEGRATION, AND YOUR INTENTIONS TO APPLY THAT MODEL TO OTHER SCIENCE AND TECHNOLOGY ARENAS. COULD YOU GIVE US AN UPDATE ON YOUR EFFORTS.**

ANSWER: Upon confirmation, one of my early goals was to reinvigorate interagency collaboration in key fields of science and technology relevant to the missions of several agencies. As you are aware, the Federal Coordinating Council is an interagency forum within the Executive Branch for reviewing and coordinating research and development activities that cut across the missions of several federal agencies. Working with the strong support throughout the Administration, the Council is now comprised of Cabinet secretaries, deputy secretaries, and heads of independent agencies that have statutory authority for R&D programs in the federal government. These departments/agencies integrate and help to implement federal science and technology policy. The Council has seven umbrella subject matter committees whose members are at the Assistant Secretary level representing the views and subject matter interests of their respective agencies or departments. Unlike the committees in the Legislative Branch, each of which has discrete authority for oversight, interagency fora are mechanism for discussion, analysis, collaboration, and consensus building. The member agencies, i.e., the heads of the R&D departments and agencies, have the responsibility for implementing the agreed upon program as proposed by the President's budget and as legislated by the Congress, proceeding with the necessary contracting, budgeting and so on, developed through the interagency process. This year, I am pleased by the progress made by FCCSET in inventorying federal efforts in mathematics and science education and identifying opportunities to maximize federal activities in support of the President and Governors. Furthermore, the FCCSET interagency mechanism has helped to bring forward two additional presidential initiatives in the R&D budget for FY 92, the U.S. Global Change Research Program and the High Performance Computing and Communications Program.

Recognizing a potential gap in the FCCSET activities because, by law, all members of FCCSET and of FCCSET committees are government employees and therefore private sector calibration and validation of FCCSET activities is of great importance, I am pleased that the President has created the President's Council of Advisors on Science and Technology (PCAST) reporting directly to him to provide this essential private sector input.

21. The Budget proposes a 71 percent increase ($52 million) for Agricultural Research, most of which is for the competitive grants program. In the longer term, how do you see the balance in the Agricultural Research program between the competitive grants program and the older, decentralized formula program under which block funding is provided to the agricultural land grant colleges in each state?

A: The Administration fully supports the goals of formula block grant programs for maintaining States' basic agricultural research programs. The competitive grants program in the National Research Initiative is designed to foster cutting-edge research to complement that done with formula block grant funds. Provided that the 14 percent cap on indirect cost recovery is not an inhibitor of interest and that the program is as successful in stimulating cutting-edge research as we think it will be, we will seriously consider requesting additional funding for the NRI.

22. **The President's budget calls for making permanent the research and development tax credit as a means of spurring long-term R&D. Please elaborate on what you see as the potential benefits of such a tax policy. What are the potential tax expenditures?**

The Administration is extremely concerned that the rate of growth in industrial R&D has leveled off since the mid-1980s. For 1990 and 1991, both the National Science Foundation and the Battelle Memorial Institute estimate that industrial R&D will, at best, keep pace with inflation. The tax incentive can help boost private R&D investment. The fact that the credit has not been a permanent one has kept it from having a maximum impact on long-range corporate planning. Making the credit permanent will permit businesses to establish and expand R&D operations and facilities without fearing that the tax laws will suddenly change. The revenue cost of a permanent research and experimentation tax credit is estimated to be $6.2 billion from fiscal years 1991 through 1996.

23. Does the Administration plan to submit a proposal to Congress addressing the competitive disincentives of current anti-trust law?

ANSWER: The Administration has proposed legislation to eliminate concern that our antitrust laws may be applied unreasonably to joint ventures that produce goods and services, including joint ventures between competitiors, and thereby benefit U.S. international competitiveness and consumers alike. On May 7, 1990, Attorney General Thornburgh and Secretary Mosbacher transmitted to Congress the Administration's proposed "Cooperative Production Act of 1990." This bill would amend the National Cooperative Research Act of 1984 to extend its coverage of reseach and development joint ventures to production joint ventures as well. The NCRA clarifies that the potentially procompetitive joint ventures it covers are to be analyzed under the antitrust "rule of reason" that takes full account of international competition as well as potential efficiences. NCRA coverage also provides for reduced antitrust damage exposure upon notification to the antitrust agencies.

24. Please submit to the Committee the memorandum to EPA listing your nominees for witnesses at the Science Advisory Board hearings on the EMF report. Who (by name and organizational affiliation) provided you with the names of your recommended witnesses?

ANSWER: We are not at liberty to disclose the confidential deliberative processes within the Executive Branch, but the Committee can be confident that all responsible points of view were considered in our reflections on this important issue.

91-2004

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WASHINGTON, DC 20515
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DIRECTOR

February 28, 1991

Dr. D. Allan Bromley, Director
Office of Science and Technology Policy
Executive Office of the President
Washington, D.C. 20506

Dear Dr. Bromley

The Committee's R&D Posture hearing earlier this week was a fine success. Your excellent statement and thoughtful answers to Members' questions was central to that success, and I want, on behalf of the Committee, to express our thanks for your most valuable contribution.

The inevitable time constraints did not allow all our Members to pose the many questions which they had in mind. I wonder if we might impose on you for the answers to some of those questions, a set of which I attach. To meet our printing schedule for the hearing transcript, I would ask that the answers be provided to us no later than Friday, March 22nd. I would greatly appreciate your assistance in this matter.

I know that you share with me a strong conviction about the importance to the nation's future of the Federal Government's investment science and technology. I intend to work closely with all the officers in the Executive Branch and all the elected officials in the Congress to further augment that investment. Your own pivotal role in that endeavor is one I fully appreciate, and I look forward to working with you toward our common objective.

Sincerely,

George

GEORGE E. BROWN, JR.
Chairman

GEB/Htm
Attachment

QUESTIONS FOR THE RECORD
DR. D. ALLAN BROMLEY

1991 R&D Posture Hearing
February 20, 1991

1. What has been OSTP's involvement in assessing the results of the Report on the Advisory Committee on the Future of the U.S. Space Program? Do you plan on making any recommendations of your own as a member of the National Space Council?

2. The Augustine Committee identified once again the need for a broad and stable consensus on what we should be doing in space and how much we should spend on these activities. Such a consensus must involve the Administration, Congress and, most importantly, a well-informed public. What role will you play in developing a durable consensus on a long-term budget for NASA?

3. The Augustine committee noted the value of international cooperation for space activities, but recommended being more careful about entering into cooperative ventures. The committee also recommended that such cooperative ventures not include "in-line critical program elements." What guidelines would you recommend for evaluating potential cooperative space activities?

4. One of the President Bush's stated goals is to "make America number one in math and science." Please elaborate on how we can make that happen, and how that achievement can be measured.

5. We hear conflicting reports from the media as to the health of the scientific community; in your opinion what criteria should be used to assess the health of science in the U.S.?

6. Despite increasing budgets for federally-funded research, the demand for grants continues to increase. How do you think that the science community can more realistically prioritize its funding requests?

7. The High Performance Computing initiative includes creation of a National Research and Education Network (NREN). How will the views and concerns of the non-federal user community for the NREN be included in the planning process for the network, since FCSET membership is limited to federal agencies?

8. Do you think that a full multi-year program funding approach adopted last year by the Congress for CRAF/Cassini and the House for Superconducting Supercollider, can be available for other large projects such as the GOES weather satellites, National Weather Service modernization, and Space Station Freedom?

9. What is the status of United States participation in ITER, the international program to build a large-scale fusion reactor?

10. While the intramural research programs of the National Institute of Standards and Technology have been given a long overdue increase, the extramural programs designed to help industry strengthen its technological base are either frozen or eliminated. What do you see as the role of NIST in fostering U.S. industrial competitiveness?

11. The Advanced Technology Program is due for an increase from $10 million to $37.9 million this year. What are the priorities for how that increase will be allocated?

12. What is the relationship between the priorities in the Critical Technologies list which your office will submit to the Congress and the priorities in the Advanced Technology Program?

13. Would you recommend that the Advanced Technology Program money be earmarked by Congress for particular technologies?

14. Legislation passed last year authorized a Critical Technologies Institute organized as a federally funded, contractor-operated organization attached to OSTP. What is the current status of this Institute? How do you see the Institute being used by OSTP? Will it help OSTP, which has been chronically understaffed in the past, more effectively carry out its many responsibilities?

15. What do you believe should be our priorities for funding research in the areas of energy alternatives to fossil fuels and more efficient energy technologies? Do you believe the President's budget request is adequate to meet our current energy R&D needs?

16. This Committee expects to address the issue of uranium enrichment this year. What is the Administration's policy on the importation of Soviet SWUs? Will there be unlimited importation or will some type of restraint agreement be worked out using the Department of Energy as the broker?

17. Despite the EPA Science Advisory Board's 1988 recommendation that the EPA R&D budget be doubled over the next 5 years, the FY'92 budget is the first request for a significant increase (14%) in funding. Is the Administration committed to requesting similar or greater increases over the next few years so that we might approach the SAB's recommended levels?

18. In the Superfund Amendments and Reauthorization Act of 1986, the Congress established at the National Institute of Environmental Health Sciences (NIEHS) a university-based multidisciplinary research program to develop better methods for assessing the risks to human health and for reducing those risks. With an FY 1991 appropriation of $21.9 million, the NIEHS is funding 11 grants involving 99 separate projects at 21

institutions. Although the President's Request includes a substantial increase for the Superfund budget, the NIEHS Superfund Research Program was cut by 46% to $11.9 million while the 1990 reauthorization provided $35 million for FY 1992-1994. What is the reason for the drastic cut in this excellent program?

19. In its review of the FY 1991 United States Global Climate Research Program, the National Academy of Sciences commented on the need to achieve an appropriate balance between space-based observational capabilities and ground-based process studies and modeling research as the program evolves. How does the FY 1992 budget respond to this recommendation?

20. Last year you expressed considerable pride in the model that the Committee on Earth and Environmental Sciences and the USGCRP provided for interagency program development and integration, and your intentions to apply that model to other science and technology arenas. Could you give us an update on your efforts?

21. The Budget proposes a 71 percent increase ($52 Million) for Agricultural Research, most of which is for the competitive grants program. In the longer term, how do you see the balance in the Agricultural Research program between the competitive grants program and the older, decentralized formula program under which block funding is provided to the agricultural land grant colleges in each state?

22. The President's budget calls for making permanent the research and development tax credit as a means of spurring long-term R&D. Please elaborate on what you see as the potential benefits of such a tax policy. What are the potential tax expenditures?

23. Does the Administration plan to submit a proposal to Congress addressing the competitive disincentives of current anti-trust law?

24. Please submit to the Committee the memorandum to EPA listing your nominees for witnesses at the Science Advisory Board hearings on the EMF report. Who (by name and organizational affiliation) provided you with the names of your recommended witnesses?

ENHANCING RESEARCH AND DEVELOPMENT AND EXPANDING THE HUMAN FRONTIER

- R&D: The budget proposes to invest about $76 billion in 1992 for research and development, including R&D facilities. This is an increase of over $8 billion, or 13 percent over 1991. The budget proposes over $13 billion for basic research, $1 billion or about 8 percent over 1991. Federal civilian R&D will increase by 10 percent while defense-related R&D will increase by 14 percent.

- Space: The budget proposes $16 billion for space activities, $2 billion, or 15 percent, over 1991. The budget for the National Aeronautics and Space Administration (NASA) will increase by 13 percent to $15.7 billion.

- Biotechnology: The budget proposes over $4 billion for biotechnology, $319 million, or 8 percent, over 1991.

- NSF: The budget proposes an 18 percent increase for the National Science Foundation (NSF), to a total of $2.7 billion, continuing the commitment to double NSF's budget between 1987 and 1994.

- Individual Investigators: The budget emphasizes support for individual investigators at universities, and proposes $50 million for a new program to provide state-of-the-art research instrumentation to academic researchers. Funding for grants for basic research through NSF will increase by 16 percent, and a 9 percent increase for research project grants at the National Institutes of Health is proposed.

- High Performance Computing and Communications: The budget proposes a total of $638 million, an increase of $149 million, or 30 percent, over 1991 for a new initiative in high performance computing and communications. This initiative involves 8 Federal agencies. The goal is to assist in the development of computing capability with about 1,000 times improvement over current systems by 1996.

- Energy R&D: The budget proposes over $900 million, an increase of $227 million or 34 percent above 1991, for research investments in targeted, high-payoff technologies in support of the National Energy Strategy. The R&D initiatives would increase the efficiency of energy use, develop alternatives to petroleum and advance new electricity technologies.

- Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome (HIV/AIDS): The budget proposes an increase of 5 percent to $1.2 billion for R&D on HIV/AIDS. The budget includes a total increase of $558 million, or 15 percent,

for HIV/AIDS research, treatment, prevention and income support.

- Superconducting Super Collider (SSC): The budget proposes an increase of $291 million, to a total of $534 million, to support continued work toward the transition from prototype superconducting magnets to production, and to begin the construction of facilities.

- Mission to Planet Earth and the U.S. Global Change Research Program (USGCRP): The budget includes an increase of $232 million, or 24 percent, to a total of $1,186 million to support a broad range of research efforts, including NASA's Mission to Planet Earth/Earth Observing System (MTPE/EOS) and ground-based programs such as the World Ocean Circulation Experiment.

- New Launch System: A new space launch system is proposed, jointly funded by the Department of Defense and NASA ($175 million each in 1992), consistent with the recommendations of the Advisory Committee on the Future of the U.S. Space Program.

- Mathematics and Science Education: The budget includes an increase of $225 million, or 13 percent, to $1,941 million, for a major initiative in mathematics and science education. This initiative will help address problems that limit the pool and performance of math and science learners. Of the total increase, $146 million, a 28 percent increase, is targeted toward the precollege level.

- Human Genome Project: R&D for this project will increase by $35 million, or 26 percent, to a total of $169 million in the Departments of Energy and Health and Human Services (National Institutes of Health).

- Research and Experimentation (R&D) Tax Credit: The budget proposes that this credit be made permanent and be reformulated to increase its effective rate.

Table II–2. ENHANCING RESEARCH AND DEVELOPMENT AND EXPANDING THE HUMAN FRONTIER—HIGHLIGHTS

(Dollar amounts in millions)

	Budget Authority			
	1991 Enacted	1992 Proposed	Dollar change	Percent change
Basic Research				
Doubling the NSF budget	2,316	2,722	+406	+18
Increasing Basic Biomedical Research at NIH	4,634	4,968	+334	+7
Human Genome Project	135	169	+35	+26
Agricultural Research Initiative	73	125	+52	+71
Superconducting Super Collider	243	534	+291	+120
Applied Research				
High Performance Computing and Communications	489	638	+149	+30
Energy R&D	676	903	+227	+34
Advanced Manufacturing and Materials	1,316	1,310	−6	—
HIV/AIDS	1,152	1,210	+58	+5
Moving Fusion Energy from Science to Engineering	275	337	+62	+23
Aeronautics R&D	482	543	+61	+13
Expanding R&D at the National Institute of Standards and Technology	215	248	+33	+15
Maintaining National Security: Defense R&D	37,783	43,247	+5,464	+14
Expanding the Geographic Frontier: Space Exploration				
Space Transportation Infrastructure	4,801	5,517	+716	+15
Space Science	1,774	2,141	+367	+21
Mission to Planet Earth (Global Change)	954	1,186	+232	+24
Mission From Planet Earth	2,199	2,470	+271	+12
Expanding the Human Frontier through Biotechnology	3,788	4,107	+319	+8

MAJOR OSTP ISSUES AND ACTIVITIES 1989-1990

- Develop High Performance Computing Initiative
- Participate in Federal Budget Process on R&D
- Coordinate Administration's Scientific Work on Global Climate Change
- Formulate Math/Science Education Goals of Agencies with respect to R&D
- Establish FCCSET Structure

Legislation

(1) America T' Pre-Eminence Act
- markup sometime in April in House; no SAB yet
- foreign participation issues
- battle over $'s

(2) High Perf. Computing
- procedural issues
- OMB putting together this week sub. issues
- Bromley would oppose on procedural + too narrow

(3) Space Commercialization
- not have great chance this year
- surplus auction

(4) Small Bus. Innovation Research Act
- up for reauth.
- set asides for small bus.; we've supported
- well-established

(5) R+E tax credit
- expand to permanent; expand to development

(6) DOE to do Critical Technologies Report?

(7) Joint Production Venture

Agenda - S+T Group

1. Legislation
2. IPR
3. consortia guidelines
4. technology transfer
5. Uruguay Round

6. Tech Institute

Office of Management and Budget
Energy and Science Division

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Message: For your information:

- House & Senate FY 91 Rept. Lang on OSTP & notations
- E.O. & current list of PCAST Members
- Summary of US-EC consultative group on S&T

I hope this is helpful.

House Report 100-556
FY 1991

NATIONAL SPACE COUNCIL

1990 appropriation	$363,000
Estimate, 1991	1,363,000
Recommended in bill	1,000,000
Decrease below estimate	−363,000

The National Space Council was established by Public Law 100-685, the National Aeronautics and Space Administration Authorization Act of 1989. The Council provides advice and assistance to the President on national space policy and strategy. The Vice President is the President's principal advisor on national space policy and serves as the Council Chairman. Other Council members include: the Secretaries of State, Treasury, Defense, Commerce, and Transportation, the Directors of the Office of Management and Budget and the Central Intelligence Agency, the Administrator of the National Aeronautics and Space Administration, the Chief of Staff to the President, the Assistant to the President for National Security Affairs, and the Assistant to the President for Science and Technology.

The budget request for fiscal year 1991 is $1,363,000 and 7 full-time equivalents for the National Space Council. The bill provides for $1,000,000, the same level as provided for in the fiscal year 1990 appropriation before the Gramm-Rudman-Hollings sequestration and section 517 reductions. This amount is $363,000 below the request. The bill language also continues a proviso requiring reimbursement to other agencies for at least one-half of the cost of detailed individuals.

OFFICE OF SCIENCE AND TECHNOLOGY POLICY

1990 appropriation	$2,829,000
Estimate, 1991	3,300,000
Recommended in bill	3,300,000

The Office of Science and Technology Policy (OSTP) was created by the National Science and Technology Policy, Organization, and Priorities Act of 1976. OSTP provides advice to the President concerning policies on science and technology and supports other organizations within the Executive Office of the President. In addition to being the source of science and technology analysis, the Office coordinates research and development programs for the Federal Government.

The Committee recommends the Administration's request of $3,330,000 and 43 fulltime equivalents for the Office of Science and Technology Policy in fiscal year 1991. The bill language also continues a proviso requiring reimbursement to other agencies for at least one-half of the cost of detailed individuals.

Last year, the Committee took action to designate the Office of Science and Technology Policy as the lead agency to coordinate activities pertaining to the "Decade of the Brain." The Committee understands that OSTP is developing an interagency program and budget for government-sponsored research relating to the diseases and disorders of the brain and nervous system. The Committee commends OSTP for undertaking this activity and urges the Office to complete its plan as quickly as possible. The Committee hopes that this effort leads to a coordinated and comprehensive approach

doud

by the Federal government to harness our knowledge about brain physiology and function during the "Decade of the Brain."

FEDERAL EMERGENCY MANAGEMENT AGENCY

1990 appropriation	$1,799,320,000
Estimate, 1991	819,272,000
Recommended in bill	656,787,000
Decrease below estimate	−162,485,000

The Federal Emergency Management Agency (FEMA) was created by reorganization plan no. 3 of 1978. The Agency carries a wide range of program responsibilities for emergency planning and preparedness, disaster response and recovery, and hazard mitigation under the following authorities:

—Under the Federal Civil Defense Act of 1950, as amended, responsibility for administering a national program for population protection preparedness and response in emergency conditions.

—Under the Earthquake Hazards Reduction Act of 1977, programs designed to identify and reduce earthquake vulnerabilities and consequences.

—Under Executive Order 12148, responsibility for oversight of the national dam safety program.

—In accordance with provisions of the Nuclear Regulatory Commission 1980 Appropriations Act and other statutes, Executive Order 12657, and by Presidential directive, responsibility for offsite emergency preparedness for fixed nuclear facilities.

—Under the National Security Act of 1974, as amended, and the Defense Production Act of 1950, as amended, programs to provide for continuity of government as well as emergency resources assessment, management, and recovery.

—Under the Federal Fire Prevention and Control Act of 1974, programs to reduce national fire loss, including training and education.

—Under the National Flood Insurance Act of 1968, as amended, and the Flood Disaster Protection Act of 1973, administration of a national program to provide flood insurance and to encourage better flood plain management.

—Under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, programs to provide assistance to individuals and State and local governments in Presidentially-declared major disaster or emergency areas.

—Under the Inspector General Act of 1978, as amended, agency-wide audit and investigative functions to identify and correct management and administrative deficiencies which create conditions for existing or potential instances of fraud, waste and mismanagement.

—Under the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, and Executive Order 12316, responsibility for specific emergency response activities.

—Under Title III of the Stewart B. McKinney Homeless Assistance Act, a program to provide food and shelter to the homeless through a National Board chaired by FEMA and composed of representatives of various charities.

03/25/91 11:50 OMB/ESD FAX# 3954817 OR 3953165 002

Until this policy is established, the Committee believes it would be inappropriate to fund this new initiative.

The Committee directs the Council to prepare a strategic plan for the environment, including how it will improve coordination with the myriad of Federal agencies involved in environmental protection. This report is due to the Committee by January 4, 1991.

The Committee is encouraged by improvements in the Council's ability to produce its annual environmental quality report in a timely manner. The Committee wishes to underscore its concern that this report be issued expeditiously each year in a manner that is useful to the Congress. The Committee urges CEQ to incorporate into this report its strategic plan for the environment.

The Committee has not included bill language requested by the administration to increase representation expenses from $500 to $2,000.

NATIONAL SPACE COUNCIL

Appropriations, 1990	$983,000
Budget estimate, 1991	1,363,000
House allowance	1,000,000
Committee recommendation	1,363,000

PROGRAM DESCRIPTION

The National Space Council was reestablished by section 501 of Public Law 100-685. Its primary function is to provide advice and assistance to the President on national space policy and strategy. The Council has been directed by the President to review U.S. Government space policy, including long-range goals, and develop a strategy for national space activities. The Council will also develop recommendations for the President on space policy and space-related issues and will encourage cooperation and exchange among the civil, national security, and commercial space sectors. In addition, it will monitor and coordinate implementation of the President's national space policy by executive departments and agencies, and will resolve differences concerning major space and space-related policy issues. The Council is composed of the Vice President as Chairman, the Secretaries of State, Treasury, Defense, Commerce, Transportation, and Energy, the Director of the Office of Management and Budget, the Chief of Staff to the President, the Assistant to the President for National Security Affairs, the Assistant to the President for Science and Technology, the Director of Central Intelligence, and the Administrator of the National Aeronautics and Space Administration.

COMMITTEE RECOMMENDATION

The Committee recommends $1,363,000 for the National Space Council. This amount is the same as the administration's request, $363,000 more than the House allowance, and $380,000 more than the fiscal year 1990 appropriation.

The Committee expects by January 31, 1991, a progress report on the Council's review of the Nation's space policy, its strategy for national space activities, specific recommendations to the President on space policy and related issues, and the status of its efforts to coordinate the implementation of space policy by the executive departments and agencies.

Senate Report 100-474
FY 1991

The Committee is concerned about the ability of the United States to service polar-orbiting satellites launched from the west coast. Since this requirement may affect both civilian and national security payloads, the Committee directs the Council to prepare a report that outlines options, cost estimates, Agency roles, and recommendations for addressing this problem. The report should be submitted to the Committee by April 1, 1991.

OFFICE OF SCIENCE AND TECHNOLOGY POLICY

Appropriations, 1990	$2,829,000
Budget estimate, 1991	3,300,000
House allowance	3,300,000
Committee recommendation	3,560,000

PROGRAM DESCRIPTION

The Office of Science and Technology Policy [OSTP] was created by the National Science and Technology Policy, Organization, and Priorities Act of 1976 (Public Law 94-282) and provides advice to the President concerning policies in science and technology and on the utilization of science and technology in addressing important national problems. OSTP also supports other organizations within the Executive Office of the President with regard to issues involving science and technology considerations; reviews and analyzes the research and development budgets and programs of the Federal Government, in concert with the Office of Management and Budget; coordinates research and development programs of the Federal Government; and fulfills other obligations, duties, functions, and activities mandated by the National Science and Technology Policy, Organization, and Priorities Act of 1976.

OSTP chairs and provides both administrative and fiscal support for the President's Council of Advisors on Science and Technology [PCAST].

COMMITTEE RECOMMENDATION

The Committee recommends $3,560,000 for the Office of Science and Technology Policy [OSTP]. This amount is $260,000 more than the administration's request and the House allowance, and an increase of $731,000 above the fiscal year 1990 appropriation.

The Committee directs the OSTP to report by January 31, 1991, its recommendations for simplifying and institutionalizing the responsibilities (currently shared with CEQ) for focusing and coordinating the R&D agencies' global climate change programs. done

The Committee directs the OSTP with NSF to report as part of its 1992 budget request its recommendations for stimulating specific civilian R&D sectors, ranked by priority within the overall Federal budget request, that will make real contributions to the Nation's economic competitiveness. For supercomputers and bioengineering, which the OSTP has identified as high-priority sectors, the report should describe the administration's approach to help

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strengthen U.S. economic interests in both areas, and how efforts in both areas will enhance U.S. civilian research capabilities. Also, the OSTP shall identify the top 20 civilian science projects in the Federal budget, ranked according to the administration's priority, and show their life-cycle cost projections.

The Committee is deeply concerned about the tremendous need for funds for the modernization and rehabilitation of the Nation's academic research facilities. The 1986 Bromley-Packard report, done at the request of the OSTP, estimated that the current backlog of facilities' modernization needs, just for those institutions of higher education dealing with the National Science Foundation, was a staggering $10,000,000,000, and that a $500,000,000 a year Federal investment, matched by an equal amount from non-Federal sources, was need to reduce this shortfall over the next decade. Unfortunately, this 1986 report, whose results have since been confirmed by additional studies by the National Science Foundation, has not led to the development of a Federal strategy on academic research facilities. Only the National Science Foundation, with a modest $20,000,000 a year program, has attempted to address this glaring deficiency in higher education. As a result, the Committee directs OSTP to develop a policy on academic research facilities modernization that includes all Federal research and development agencies and a 5-year funding projection of the Federal contribution to this effort. This interagency policy should be submitted to the Committee by April 1, 1991, and its funding profile should be clearly identified in the fiscal year 1992 budget submission for all agencies.

The Committee applauds the establishment of the Federal Coordinating Council on Science, Engineering, and Technology [FCCSET] interagency Committee on Science Education and Human Resources. The Committee requests that this FCCSET committee prepare and submit a strategy document with its 1992 budget request that will describe how the President intends the Nation will achieve the objective that by the year 2000, U.S. students will be first in the world in science and mathematics achievements. The Committee expects that the report will be modeled after the strategy document prepared by the FCCSET Committee on Earth Sciences, and it shall include measurable objectives supporting the national goals.

In addition, it shall include a multilevel priority-setting framework that will focus, integrate, and where necessary, reassign agency roles and responsibilities, along with the requisite program development and budget proposals. The Committee requests that this report specifically include milestones and assessment methods that will be used to chart the Nation's progress in meeting the objectives. The OSTP should provide a draft report to the Committee by November 30, 1990.

The Committee directs the OSTP to guide the mission agencies in establishing and restructuring their offices of education to support science and mathematics education and to make the agencies fully responsive to the FCCSET Education Committee's plan. Also, OSTP shall ensure that each agency's office of education has programs directed at student and teacher segments from K through graduate school.

The Committee strongly encourages efforts within the Federal Government to strengthen the educational activities of Federal research laboratories. Further, the Committee believes that the OSTP should require all Federal agencies with research and development activities to establish education offices at each particular Federal laboratory under its control. The goal of such an effort is to improve internal Federal agency science, mathematics and engineering education programs, as well as foster education partnerships between various Federal labs and schools and academic institutions which are located near them. The Committee notes there is a need to coordinate and disseminate information on these programs among the various Federal mission agencies, as well as between the National Science Foundation [NSF] and the Department of Education. Therefore, the Committee directs OSTP to work with the NSF, the Department of Education, and Federal mission agencies to coordinate agency efforts to improve math, science, and engineering education, particularly in the area of developing laboratory education partnerships. The OSTP shall report the status of this effort and the agencies' funding needs for this activity to the Committee by March 15, 1991.

Last year the Congress authorized funds for OSTP to establish the national critical technologies panel, and a Critical Technologies Institute, a federally funded research and development center under the OSTP, to support it. The Congress took this step in the belief that there was a need for the Federal Government to help focus the Nation's efforts in developing precompetitive technologies to support our knowledge-based economy, without picking winners and losers in the marketplace. The Committee notes its strong support for this investment, and directs the OSTP to move forward in establishing the Critical Technologies Institute, and to report to the Committee on its efforts in this area by February 1, 1991.

The Committee is aware that a recent study by the National Academy of Sciences Council strongly endorsed the U.S. Global Change Research Program [USGCRP]. At the same time, the Academy's review raised concerns about the program which are shared by the Committee. The Committee directs the OSTP to respond to the review by February 1, 1991, with an emphasis on providing stronger program management to: (a) use extramural advisory expert panels for defining and evaluating the USGCRP's various programs and the products they are designed to develop; (b) focus agencies to produce research results specifically agreed upon by the USGCRP interagency committee; (c) assure greater interagency cooperation; (d) broaden involvement at the project level by the academic community, local, and State governments, and other nations; and (e) schedule and report interim assessments of the USGCRP in public forums.

Despite the Committee's strong support for the current global climate research program, the Committee believes that additional global climate policy action needs to take place. In that light, the Committee directs the OSTP to submit to it a report by March 1, 1991, that addresses several key issues. First, what the OSTP considers to be the maximum concentration of greenhouse gases which is acceptable, and the date by which those concentrations will be reached and stabilized. Second, what is the U.S. contribution to the

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concentration of greenhouse gases, and what specific policy measures does the administration intend to propose that would reduce levels of emissions consistent with the levels of concentration which they expect to occur. Third, what is the administration's decisionmaking process on the greenhouse issue, what are the steps which the administration has already taken to reduce emissions and what quantifiable reductions have taken place, and how is responsibility for the control of greenhouse gases divided among Federal agencies. Finally, what is the administration's plan, if any, for achieving an international consensus on the proper strategy for coping with the potential of the greenhouse effect, and what is the timetable, if any, for implementation of that strategy.

POINTS OF LIGHT INITIATIVE FOUNDATION

Appropriations, 1990	
Budget estimate, 1991	
House allowance	
Committee recommendation	$5,000,000

PROGRAM DESCRIPTION

The Foundation is a Government, nonprofit corporation within the Executive Office of the President, which will receive grants from the private sector and departments and agencies in the Federal Government for the purpose of integrating community service into the work and life of each individual in the country. The Foundation is to accomplish this by such means as set forth in S. 1430, including: encouraging Americans and American institutions to volunteer their time and services to community services projects; identify successful community service projects and disseminate information on them to other communities; and to discover and encourage individuals that serve as a strong example of commitment to serving others.

COMMITTEE RECOMMENDATION

The Committee recommends an appropriation of $5,000,000. The Committee has included bill language that requires the President to report to the Congress within 6 months of the date of enactment on the use of these funds.

FEDERAL EMERGENCY MANAGEMENT AGENCY

Appropriations, 1990	$1,790,220,000
Budget estimate, 1991	819,272,000
House allowance	656,787,000
Committee recommendation	646,793,000

GENERAL DESCRIPTION

FEMA is responsible for coordinating Federal efforts to anticipate, prepare for and respond to a spectrum of major civil emergencies. The Agency also works to assure the effectiveness of the National Civil Defense Program and the availability of civil defense systems and resources in coping with all manmade and natural disasters; consolidates the programs aimed at preventing and

mitigating the effects of potential disasters with the programs designed to deal with the disasters once they occur; coordinates and plans for the emergency deployment of resources that are used on a routine basis by Federal agencies; and helps to coordinate preparedness programs with State and local governments, private industry, and voluntary organizations.

FEMA's budget submission describes several principal activities, including:

Civil defense.—This activity provides for the development of plans and functional emergency capabilities to mitigate, prepare for, respond to, and recover from attack and natural disasters, including technological hazards. It has financial and technical assistance programs which support State and local organization requirements, and operating costs. Federal civil defense objectives and support are integrated with State and local emergency operational requirements, thereby enhancing overall emergency preparedness for all hazards. Under the administration's new civil defense policy, this activity places emphasis on ensuring a basic emergency response infrastructure with potential for rapid enhancement of capabilities when necessary (the surge concept). Included in this activity are preparedness programs that address functions including planning, warning, communications, direction and control, shelter, movement of people, and provision of food and medical resources. This activity also provides for development of training materials and training programs, and for research and development activities that provide the technical basis for national planning for such activities as population protection.

National Earthquake Program and other hazards.—This activity provides for the enhancement of Federal, State, and local governments' capability to prepare for, respond to, and mitigate potential impact of disasters and emergencies. Programs include the following: National Earthquake Program, which provides for technical and financial assistance to State and local governments to develop and implement hazard reduction programs, development and adoption of improved seismic design and construction standards, public education and information transfer, and Federal response planning; hurricane, which provides technical and financial assistance for the development of population preparedness and property protection; dam safety, which provides for coordination and monitoring of activities to enhance the safety of Federal and non-Fedetal dams, including provision of technical assistance on design, construction, maintenance, and operation of safe dams; and hazard mitigation assistance, which funds planning efforts to reduce potential hazards. FEMA is also designated as lead Agency for the National Earthquake Hazards Reduction Program and is responible for planning, coordinating, and recommending goals and priorities for the multiagency program.

Radiological emergency preparedness.—This activity is focused on improvement of Federal, State, and local planning for emergencies in areas surrounding nuclear power reactors and enhanced capabilities to cope with radiological accidents at fixed nuclear facilities, including commercial nuclear powerplants, and nuclear materials license holders. The activity provides assistance to State and

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THE WHITE HOUSE

Office of the Press Secretary
(Knoxville, Tennessee)

For Immediate Release February 2, 1990

The President today announced the appointment of the President's Council of Advisers on Science and Technology (PCAST), comprised of 12 distinguished scientists and engineers. This panel will provide high-level advice directly to the President on a wide range of important issues concerning science and technology.

PCAST will be the first Presidential scientific advisory group in many years to report directly to the President. Its establishment is a measure of the Bush Administration's high esteem for science and a recognition that advances in science and technology contribute in a major way to increased economic competitiveness. It also reflects the President's desire to strengthen Federal science and technology policy, enhance Federal research and development activities, and encourage private sector involvement in research and development.

The United States scientific community leads the world in creating new knowledge. Through PCAST, the President is seeking to provide the best obtainable private sector advice to Executive Branch decision-making in science and technology.

PCAST will be chaired by Dr. D. Allan Bromley, Assistant to the President for Science and Technology. A list of the members and their affiliations is attached, along with a fact sheet on science and technology accomplishments in the Bush Administration.

PCAST was established January 19, 1990, by Executive Order 12700. Its members will be sworn in later today by the Vice President at the White House.

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NORMAN E. BORLAUG

Nobel Laureate Borlaug, of Texas, is currently leader of the Sasakawa-Global-2000 agricultural program in sub-Saharan Africa, Distinguished Professor of International Agriculture at Texas A&M University, and a Senior Consultant to CIMMYT. He was Director of the Wheat Research and Production Program of the International Maize and Wheat Improvement Center, Mexico, from 1964 until his retirement in 1979.

Dr. Borlaug's career began in 1935 in the U.S. Forest Service, and he subsequently worked as an instructor in plant pathology at the University of Minnesota in 1941, where he received his Ph.D. From 1942 through 1944 he was a microbiologist with the E. I. DuPont de Nemours & Co.. He also served as research scientist in charge of wheat improvement with the Cooperative Mexican Agricultural Program, Mexican Ministry of Agriculture and the Rockefeller Foundation, 1944-60, and later, as Associate Director of the Foundation assigned to the Inter-American Food Crop Program, 1960-63.

D. ALLAN BROMLEY, CHAIRMAN

D. Allan Bromley, of Connecticut, is Assistant to the President for Science and Technology and Director of the Office of Science and Technology Policy (OSTP).

Dr. Bromley carried out pioneering studies on both the structure and dynamics of nuclei and is considered the father of modern heavy ion science. He has played major roles in the development of accelerators, of detection systems, and in computer based data acquisition and analysis systems. He is currently on leave from his position as Henry Ford II Professor of Physics at Yale University, where he was founder and Director of the A.W. Wright Nuclear Structure Laboratory.

Dr. Bromley has been a leader in the national and international science and science policy communities for more than 20 years, serving as a member of the White House Science Council throughout the Reagan Administration and as a member of the National Science Board in 1988-89. He received the President's National Medal of Science in 1988 and the Presidential Medal of the New York Academy of Sciences in 1989. He has served as President of the American Association for the Advancement of Science and of the International Union of Pure and Applied Physics.

Dr. Bromley received the B.Sc. degree in 1948 at Queen's University, Canada, the M.Sc. degree from Queen's University in 1950, and the Ph.D. degree in nuclear physics from the University of Rochester in 1952. He has since been awarded 10 honorary doctorates.

SOLOMON J. BUCHSBAUM

Solomon J. Buchsbaum, of New Jersey, has been Senior Vice President, Technology Systems, at AT&T Bell Laboratories since 1979. His early career included work at the MIT Research Laboratory of Electronics. He received his Ph.D. in physics from MIT in 1957. He joined Bell Laboratories in 1958 as a member of the technical staff and later became department head and director of the Electronics Research Laboratory. In 1968, he was named Vice President for Research at the Sandia Laboratories and served in a number of different capacities. He returned to Bell Laboratories in 1971 as an Executive Director. In 1976 he became Vice President, Network Planning and Customer Systems.

Dr. Buchsbaum is a member of the National Academy of Sciences and of the National Academy of Engineering. He was the recipient of the President's National Medal of Science in 1986.

CHARLES L. DRAKE

Charles L. Drake, of Vermont, has been the Albert Bradley Professor of Earth Sciences at Dartmouth since 1984 and Professor of Geology since 1969. Dr. Drake's professional career began at Columbia University in 1953. He joined the staff at Dartmouth in 1958 after receiving his Ph.D. in geology from Columbia University where he has continued his career, including service as Professor and Chairman of the Department, 1967-69; as Dean of Graduate Studies and as Associate Dean of the Science Department, 1978-81.

Dr. Drake is a recipient of the G. P. Woollard Award, Geophysical Division of the Geological Society of America.

RALPH E. GOMORY

Ralph E. Gomory, of New York, is President of the Sloan Foundation and, until his recent retirement, was Senior Vice President for Science and Technology, IBM Corporation. He received his Ph.D. in mathematics from Princeton in 1954.

Dr. Gomory's professional experience includes teaching and research at Princeton from 1957-59. In 1959, he joined the Research Division of IBM and was named Director of the Mathematical Sciences Department in 1965. In 1970 he became IBM Director of Research and held that position until 1985, becoming IBM Vice President in 1973, Senior Vice President in 1985, and IBM Senior Vice President for Science and Technology in 1986. He has been awarded a number of honorary degrees and prizes, including the John von Neumann Theory Prize in 1984 and the National Medal of Science in 1988.

BERNADINE HEALY, VICE CHAIRMAN

Bernadine Healy, of Ohio, is Chairman of the Research Institute of The Cleveland Clinic Foundation, a position she assumed in 1985, and is a staff member of the Clinic's Department of Cardiology. Prior to that time, she was Deputy Director of the Office of Science and Technology Policy at the White House, and until that appointment had been a Professor at The Johns Hopkins University School of Medicine and Hospital. Dr. Healy received her medical degree from Harvard Medical School in 1970. Her medical career continued at Johns Hopkins from 1976 to 1984, where she was Professor of Cardiology and Medicine, Director of the Coronary Care Unit, and Assistant Dean for Postdoctoral Programs and Faculty Development.

Going off as Director-designate, NIH

Dr. Healy is a member of the Institute of Medicine of the National Academy of Sciences. She is the immediate Past President of the American Heart Association and a former President of the American Federation for Clinical Research.

PETER W. LIKINS

Peter W. Likins, of Pennsylvania, has been President of Lehigh University since 1982. His professional career began as a development engineer with the Jet Propulsion Laboratory, California Institute of Technology, in 1958. In 1964 he joined the faculty at the University of California, Los Angeles, where he became Professor of Engineering and later, Associate Dean. Dr. Likins received his Ph.D. in engineering mechanics from Stanford in 1965. In 1976 he became Professor and Dean of Columbia University, serving until 1980, when he became Provost of the University.

THOMAS E. LOVEJOY

Thomas E. Lovejoy, of Virginia, is the Assistant Secretary for External Affairs, The Smithsonian Institution. His previous experience includes service as a research assistant at the University of Pennsylvania, 1971-74, after receiving his Ph.D. in biology from Yale University in 1971; as Executive Assistant to the Science Director and as Assistant to the Vice President for Resources and Planning of the Academy of Natural Sciences, 1972-73; as the Vice President for Science of the World Wildlife Fund-U.S., 1973-87; and as Executive Vice President, 1985-89.

Dr. Lovejoy is President of the Society for Conservation Biology.

WALTER E. MASSEY

Sworn off as Director, NSF

Walter E. Massey, of Illinois, has been the Vice President of the University of Chicago for Research and for Argonne National Laboratory since 1984. He has also been Professor of Physics at the University since 1979.

Dr. Massey previously served as a physics instructor at Morehouse College, 1958-59; and after receiving his Ph.D. in physics from Washington University in 1966, as a staff physicist with the Argonne National Laboratory until 1968; as Assistant Professor of Physics, University of Illinois, Urbana, 1968-70; Associate Professor of Physics and Dean of the College, Brown University, 1975-79. He is Vice President, and President-elect, of the American Physical Society and is the Past President and Chairman of the American Association for the Advancement of Science.

JOHN P. MCTAGUE

John P. McTague, of Michigan, is Vice President-Research, Ford Motor Company, and has served in that position since 1986.

In 1983 Dr. McTague was appointed Deputy Director of the Office of Science and Technology Policy, becoming Acting Science Advisor to the President and Acting Director of OSTP in 1986. Prior to that, he was Chairman of the National Synchrotron Light Source Department, Brookhaven National Laboratory, 1982-83. He was Professor of Chemistry and a member of the Institute of Geophysics and Planetary Physics, University of California, Los Angeles, 1970-82. Dr. McTague began his professional career as a member of the Technical Staff, North American Aviation Science Center, on receiving his Ph.D. in physical chemistry from Boston University, and remained there until 1970. He is U.S. Chairman of the U.S. Japan Joint High Level Advisory Panel on Cooperation in Research and Development in Science and Technology.

DANIEL NATHANS

Nobel Laureate Nathans, of Maryland, is Professor of Molecular Biology and Genetics at The Johns Hopkins University Medical School and Senior Investigator of the Howard Hughes Medical Institute. He has been on the faculty of The Johns Hopkins University Medical School since 1962.

After receiving his Medical Degree from Washington University in 1954, he served as Medical Resident at the Columbia-Presbyterian Medical Center in New York, 1955, 1957-59; as Clinical Associate at the National Cancer Institute, 1955-57, and Guest Investigator in biochemistry at the Rockefeller University, 1959-62.

Dr. Nathans received the Nobel Prize in Physiology or Medicine in 1978 for his research with enzymes that cut DNA into specific pieces, one of the basic tools of genetic engineering.

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DAVID PACKARD

David Packard, of California, has been Chairman of the Board of the Hewlett-Packard Co. since 1972. Mr. Packard received his B.A. and B.S.E.E. degrees from Stanford University in 1934 and 1939, respectivaly.

His professional experience includes service as an engineer with the Vacuum Tube Engineering Department, GE Co., 1936-38; co-founder and partner, the Hewlett-Packard Co., 1939-47; President, 1947-64; and Chairman and Chief Executive Officer, 1964-69. Prior to his present position, Mr. Packard served as U.S. Deputy Secretary of Defense from 1969-71.

Mr. Packard received the Vannevar Bush Award of the National Science Board in 1987 and the President's National Medal of Technology and the Presidential Medal of Freedom in 1988.

HAROLD T. SHAPIRO

Harold T. Shapiro, of New Jersey, has been President of Princeton University since 1988.

Dr. Shapiro's previous academic experience has been with the University of Michigan, after receiving his Ph.D. in economics from Princeton in 1964, first as an Assistant Professor of Economics. His career progressed from Associate Professor, 1967-70; Professor, 1970-76; Chairman of the Department of Economics, 1974-77; Professor of Economics and Public Policy, 1977; Vice President for Academic Affairs, 1977-79.

Dr. Shapiro was President of the University of Michigan from 1980 until 1987. He has served as a member of many industrial, governmental and academic boards and commissions.

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Office of the Press Secretary
(Miami, Florida)

For Immediate Release **January 19, 1990**

#12700

EXECUTIVE ORDER

* * * * * * *

PRESIDENT'S COUNCIL OF ADVISORS ON SCIENCE AND TECHNOLOGY

By the authority vested in me as President by the Constitution and laws of the United States of America, and in order to establish, in accordance with the provisions of the Federal Advisory Committee Act, as amended (5 U.S.C. App. 2), an advisory committee on science and technology, it is hereby ordered as follows:

Section 1. Establishment. There is established the President's Council of Advisors on Science and Technology ("Council"). The Council shall be composed of not more than 15 members, one of whom shall be the Director of the Office of Science and Technology Policy, and 14 of whom shall be distinguished individuals from the private sector to be appointed by the President. The Director of the Office of Science and Technology Policy shall serve as Chairman of the Council. The Vice Chairman shall be appointed by the President from among the 14 private sector members. The Chairman shall report directly to the President.

Sec. 2. Functions. (a) The Council shall advise the President on matters involving all areas of science and technology.

(b) In the performance of its advisory duties the Council shall conduct a continuing review and assessment of developments in science and technology, and shall, through the Chairman, report thereon to the President whenever requested.

(c) The Chairman may, from time to time, invite experts to investigate and report to the Council on specific issues of national consequence.

Sec. 3. Administration. (a) The heads of Executive agencies shall, to the extent permitted by law, provide the Council and its panels such information with respect to scientific and technological matters as required for the purpose of carrying out its functions.

(b) Members of the Council shall serve without any compensation for their work on the Council. However, members appointed from among private citizens of the United States may be allowed travel expenses, including per diem in lieu of subsistence, as authorized by law for persons serving intermittently in the Government service (5 U.S.C. 5701-5707).

(c) Any expenses of the Council shall be paid from the funds available for the expenses of the Office of Science and Technology Policy.

(d) The Office of Administration shall, on a reimbursable basis, provide such administrative services as may be required.

Sec. 4. General. (a) Notwithstanding any other Executive order, the functions of the President under the Federal Advisory Committee Act, as amended, except that of reporting to the Congress, which are applicable to the Council, shall be performed by the Office of Administration in accord with the guidelines and procedures established by the Administrator of General Services.

(b) The Council shall terminate on June 30, 1991, unless sooner extended.

GEORGE BUSH

THE WHITE HOUSE,
January 19, 1990.

# # #

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

National Institutes of Health
Bethesda, Maryland 20892

December 3, 1990

TO: CISET Subcommittee on S&T Cooperation with Industrialized Countries

FROM: Dr. Philip Schambra, Chairman

SUBJECT: Next Subcommittee Meeting, December 10, 1990

The first meeting of the U.S.-E.C. Joint Consultative Group on Science and Technology (JCG), has been scheduled for the week of February 18, 1991 in Washington, D.C. Dr. Bromley has requested that our Subcommittee provide recommendations concerning the agenda and preparations for this meeting and advice on the preferred scope of the JCG discussions. Dr. Bromley's memorandum containing this request is attached, as is a background paper prepared by OSTP to facilitate our discussion. You will note that Dr. Bromley would appreciate our recommendations covering several administrative matters as well.

Our meeting also will provide an opportunity to discuss topics which the Subcommittee might address in the future including S&T cooperation with Central and Eastern European countries. The meeting will be held December 10, from 4:00 p.m.- 5:00 p.m. at the National Science Foundation, Room 540.

Please phone Ms. Nanette Hawk at (301) 496-4784 to confirm your attendance.

I look forward to seeing you again.

Philip E. Schambra, Ph.D.
Director
Fogarty International Center
and
Chairman
CISET Subcommittee on S&T
Cooperation with
Industrialized Countries

Attachment

Addressees:
Dr. Thomas Ratchford
Ms. Sara Bowden
Dr. William Tallent
Ms. Susan Lipsky
Mr. Stuart Schwartzstein
Dr. Harold Jaffe
Mr. Harlan Watson
Dr. John Boright
Mr. Mark Dowis
Dr. Alan Hecht
Mr. James A. Nix
Mr. Peter G. Smith
Mr. Dan V. Jacobs
Mr. Peter Allgeier
Mr. Stephen Litwin
Dr. Richard Ries
Dr. Richard Bradshaw
Mr. Ron Morony

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EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY POLICY
WASHINGTON, D.C. 20506

November 26, 1990

MEMORANDUM FOR REGINALD BARTHOLOMEW

FROM: D. ALLAN BROMLEY

SUBJECT: CISET SUBCOMMITTEE ON S&T COOPERATION WITH INDUSTRIALIZED COUNTRIES AND PREPARATION FOR FIRST MEETING OF U.S.-E.C. JOINT CONSULTATIVE GROUP

Thank you for your memorandum of November 17 outlining current activities of the CISET and enclosing the excellent report prepared by the CISET Subcommittee on S&T Cooperation with Industrialized Countries entitled "Implications of European Integration for Science and Technology in Europe and the United States." I found it to be one of the most informative pieces I have read in some time on the state of science and technology in the E.C. and our relations with the Community. Over the next few weeks I will review the report more fully and discuss with you and others the recommendations contained therein.

The report provides an excellent basis from which we can begin our activities under the newly formed Joint Consultative Group on Science and Technology (JCG). As you know, the first meeting of that group is tentatively planned for the week of February 18 here in Washington. The Executive Secretary of CISET or his designee will serve as Executive Secretary for the JCG. However, Dr. Schambra's Subcommittee can be particularly helpful in preparations for meetings of the JCG. Drawing on their recently completed work, I would like to request that Subcommittee reconvene 1) to recommend an agenda for the meeting which I could then propose to the E.C., 2) to recommend which other FCCSET Committees or agencies within the USG might develop position and briefing papers for the meeting, and 3) to advise me as to the preferred scope of discussions for the JCG. Members of my staff will participate in the Subcommittee's deliberations in order to facilitate preparations for the meeting.

Attached you will find a short summary of the status of the Joint Consultative Group as well as my decisions concerning preparations for the first meeting. This should assist the Subcommittee in its deliberations.

Again, many thanks for your update. I appreciate the excellent work of the Committee and welcome your new and ongoing initiatives.

Attachment

cc: Philip Schambra

Withdrawal/Redaction Sheet
(George Bush Library)

Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
01. Report	Status report on Joint Consultative Group (2 pp.)		(b)(1)	

Collection:

Record Group: Bush Presidential Records
Office: Policy Development, White House Office of
Series: Buchholz, Todd, Files
Subseries:
WHORM Cat.:
File Location: Science & Technology [2]

Date Closed:	2/2/2010	**OA/ID Number:**	07429-008
FOIA/SYS Case #:	2005-0336-F	**Appeal Case #:**	
Re-review Case #:		**Appeal Disposition:**	
P-2/P-5 Review Case #:		**Disposition Date:**	
AR Case #:		**MR Case #:**	
AR Disposition:		**MR Disposition:**	
AR Disposition Date:		**MR Disposition Date:**	

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

P-1 National Security Classified Information [(a)(1) of the PRA]
P-2 Relating to the appointment to Federal office [(a)(2) of the PRA]
P-3 Release would violate a Federal statute [(a)(3) of the PRA]
P-4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
P-5 Release would disclose confidential advice between the President and his advisors, or between such advisors [a)(5) of the PRA]
P-6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

C. Closed in accordance with restrictions contained in donor's deed of gift.

PRM. Removed as a personal record misfile.

Freedom of Information Act - [5 U.S.C. 552(b)]

(b)(1) National security classified information [(b)(1) of the FOIA]
(b)(2) Release would disclose internal personnel rules and practices of an agency [(b)(2) of the FOIA]
(b)(3) Release would violate a Federal statute [(b)(3) of the FOIA]
(b)(4) Release would disclose trade secrets or confidential or financial information [(b)(4) of the FOIA]
(b)(6) Release would constitute a clearly unwarranted invasion of personal privacy [(b)(6) of the FOIA]
(b)(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
(b)(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
(b)(9) Release would disclose geological or geophysical information

THE WHITE HOUSE

WASHINGTON

MEMORANDUM FOR SOLOMON J. BUCHSBAUM
President's Council of Advisers on Science and Technology (PCAST)

FROM: **D. ALLAN BROMLEY**
Chairman, PCAST

SUBJECT: **Terms of Reference for the PCAST Panel on High Performance Computing and Communications**

You are requested to chair a PCAST Panel on High Performance Computing and Communications.

The purpose of this Panel is to enable PCAST to advise the President on issues related to high performance computing and communications that have a bearing on long-range national goals, government regulation, the transition of Federal programs to industry, participation of the States, and foreign access.

The U.S.'s technological leadership in computing, communications, and applications is critical to its ability to compete effectively in world trade. Maintaining a strong national defense capability is also directly related to the advancement and application of computing and digital communications technology. There is a five-year history of development for a Federal initiative in high performance computing supported by reports authored by participants from academia, industry, the National Academy of Sciences, the National Research Council, the White House Science Council, the Office of Technology Assessment, and professional societies, that include the Institute of Electrical and Electronics Engineers and the Society for Industrial and Applied Mathematics. The Office of Science and Technology Policy (OSTP) and the Federal Coordinating Council for Science, Engineering and Technology (FCCSET) have issued six reports that have led to plans for such an initiative. Federal science agencies, including DOD, NSF, DOE, and NASA, have created major programs that support the initiative. Congress has shown growing interest as well: three pieces of legislation are active, and a fourth is under development. The goal is to maintain and extend U.S. leadership, encourage additional U.S. sources of production, quicken the pace of innovation by diffusing the technology into the research and education communities, and increase U.S. productivity and competitiveness through networked computing in analysis, design and manufacturing. Finally, the OSTP report, The Federal High Performance Computing Program, issued on September 8, 1989, calls for an advisory panel consisting of eminent individuals from industry and academia.

Chairman

The Panel Chairman shall convene meetings of the Panel at times and locations of the Chairman's choice in consultation with the Chairman of the PCAST.

Vice Chairman

The Vice Chairman shall act in the stead of the Chairman at his request.

Compensation

Private sector members of the Panel shall receive no compensation for their service. Their travel expenses and per diem subsistence shall be reimbursed in accordance with regulations which apply to persons serving intermittently in government service.

Temporary supporting staff of the Panel who are not Federal employees may be reimbursed in accordance with contracts developed by the OSTP in accordance with regulations which apply to temporary employees of the Executive Office of the President.

Determination

I hereby determine that the formation of the PCAST Panel on High Performance Computing and Communications is in the public interest in connection with the performance of duties imposed on the Executive Branch by law, and that such duties can best be performed through the advice and counsel of such a group.

The Terms of Reference for the PCAST Panel on High Performance Computing and Communications include no assignment requiring Panel members to participate personally and substantially in the conduct of any specific procurement, or place any member in the position of acting as a "procurement official."

Approved:

D. Allan Bromley

April 26, 1990
Date

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OFFICE OF CABINET AFFAIRS STAFFING MEMORANDUM

Date: 3-21-91 **Due by:** 4:00 Friday March 29

Subject: OMB Clearance: OSTP Report on 5 year Outlook on Science & Tech.

From: Holly Williamson

	ACTION	CONCUR	FYI
HOLIDAY	☐	☐	☐
DANZANSKY	☐	☐	☑
ADAIR	☐	☐	☐
BUCHHOLZ	☑	☐	☐
CASSE	☐	☐	☑
EVANS	☐	☐	☐
FARRAR	☐	☐	☐
GUNN	☐	☐	☑
HEIMBACH	☐	☐	☐
JACKSON	☐	☐	☑

	ACTION	CONCUR	FYI
FITZHENRY	☐	☐	☐
MCMUNN	☐	☐	☐
PORTER	☑	☐	☐
SCHALL	☐	☐	☑
SECHLER	☐	☐	☑
WETHINGTON	☑	☐	☐
WILLIAMSON	☐	☐	☐
_____	☐	☐	☐
_____	☐	☐	☐
_____	☐	☐	☐

Comments:

Please review & provide comments to me by 4:00 on Friday March 29. Thanks

23 pages total

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
Washington, D.C. 20503

MAR 20 1991

LEGISLATIVE REFERRAL MEMORANDUM

LRM #M-126

TO: Legislative Liaison Officer:

COMMERCE - Michael A. Levitt - 377-3151 - 324
DEFENSE - Samuel T. Brick, Jr. - 697-1305 - 325
EDUCATION - John Kristy - 401-2670 - 207
HHS - Frances White - 245-7760 - 328
CEA - Francine Obermiller - 395-5036 - 242
EPA - Thomas C. Roberts - 382-5414 - 326
NASA - Martin P. Kress - 453-1948 - 219
NSC - William Sittmann - 456-6534 - 249
NSF - Charles H. Herz - 357-9435 - 248

SUBJECT: OSTP Proposed Report on Five Year Outlook on Science and Technology

Chapter 8 -- "Funding Research Facilities"

DEADLINE: Friday MAR 29 1991

The Office of Management and Budget requests the views of your agency on the above subject before advising on its relationship to the program of the President, in accordance with OMB Circular A-19.

Questions should be referred to Norine Noonan (395-3534).

James J. Jukes

JAMES J. JUKES (for)
Assistant Director for
Legislative Reference

CC:
Connie Bowers
Greg Henry
Cora Beebe
Barry Clendenin
Barry White
Holly Williamson
Holly Fitter
Janet Forsgren

CHAPTER 8

FUNDING RESEARCH FACILITIES

Research in science and engineering requires laboratories, sophisticated instruments and equipment, and computing facilities. These in turn require appropriately-designed buildings to house them. Thus a concern for the nation's ability to expand the frontiers of knowledge and to remain competitive in science and technology with other nations requires ultimately a concern for bricks and mortar--for expanding and renewing the nation's research facilities.

Historically, academic institutions have performed more than half of all basic research conducted in the United States, and they also have the fundamental responsibility for training the nation's future scientists and engineers. In the period after Sputnik, in the 1960's and early 1970's, the Federal government contributed substantially to building the nation's academic research capacity. But these programs were phased out and other sources of funding have also been constrained, while the need has grown in parallel with the size and sophistication of the nation's research effort. As a result, the nation's universities have deferred many capital expenditures and have been unable to modernize and expand research facilities rapidly enough. Surveys indicate that a significant portion of U.S. academic research facilities have deteriorated and that colleges and universities face an estimated $12 billion

backlog in repairs and new construction for these facilities.

Concerns emanating from Congress and the academic community about the increasingly critical shortage of modern research facilities in universities and colleges led to extensive hearings during the 1980's in both the House and the Senate. The Congress mandated systematic data collection to document the magnitude of the problem, and the National Science Foundation conducted full-scale surveys in 1988 and 1990 and reported the results to the Congress. The Congress also passed legislation in 1988 establishing an Academic Research Facilities Modernization Program, intended to provide up to $0.9 billion over five years for renovation and repair, but so far funded with only $40 million over two years.

A second Congressional response to the growing backlog of repair and renovation projects and the need for new high-tech facilities has been an increasing--and controversial--trend to earmark Federal funds for specific facilities and specific institutions. While earmarking is a well-entrenched practice in many areas of government spending, its application to the funding of academic research facilities is a relatively new phenomenon, beginning in the early 1980's.

Earmarking is the practice of funding research facilities, instruments, or projects which have not been subjected to peer review and are not competitively awarded. It has been controversial both within the scientific community, where it violates established practices of expert review of technical merit, and within the Congress, because earmarks often stem from actions by

appropriations committee that bypass the authorizing committees. Additional concerns are that the practice may waste scarce national resources and can disrupt agency budgeting and force inefficient reallocation of resources.

Of particular concern is the perception that the practice of earmarking is growing rapidly. In fiscal years 1980-1989, over 300 earmarks for academic facilities and projects totalling more than $900 million have been identified--an average rate of $90 million per year. In the FY 1991 budget, academic earmarks accounted for at least $270 million and perhaps as much as $348 million. In addition, research and development earmarks for non-academic institutions totalled an estimated $460 million. At this rate of growth, the practice may rapidly become a serious threat to the peer review process itself as well as a significant constraint on the research activities of several agencies. At the same time, the amounts of funds appropriated through earmarking do not substantially reduce the backlog of research facilities needs.

OVERVIEW OF RESEARCH FACILITIES

In 1990, according to the most recent study by the National Science Foundation, 116 million square feet was allocated to research use at the nation's universities and colleges. Research facilities amounted to 40 percent of all space used for science and engineering in these institutions. Seventy percent of this research space was located at the 100 largest research-performing institutions and more than 85 percent was concentrated in five

major fields: biological, medical, agricultural, and physical sciences, and engineering.

The quality of existing research facilities varied. Institutions reported in 1990 that 26 percent of their total research space was "suitable for use in the most highly developed and scientifically sophisticated research in its field." Another 35 percent of space was reported to be "effective for most purposes...." At same time, 39 percent was reported to be in need of repair and renovation (Figure 1).

Over the four-year period 1986-1989, institutions spent a $4.5 billion to construct new research facilities and $1.9 billion to repair and upgrade research space. Facilities spending was heavily concentrated in medical, biological, physical sciences, and engineering fields. Over this same period, public universities and colleges acquired nearly half of their funding for facilities construction and renovation from state and local government sources. Private institutions relied mainly on private donations, institutional funds, and debt financing. The Federal government provided only 11 percent of total direct funding for facilities at private institutions and 8 percent at public institutions. Direct Federal funds for new construction and for repair and renovation projects at academic institutions more than doubled during 1986-1989.

Facilities Needs

In 1986, the White House Science Council Panel on the Health of U.S. Colleges and Universities issued the Packard-Bromley report,

which called for a 10-year, $10 billion program to renovate and construct scientific research facilities. The report suggested that $5 billion should come from the Federal government and the other half from non-Federal sources. Later studies have confirmed a growing backlog of facilities modernization and new construction needs.

In 1988, the National Science Foundation estimated that universities needed $11.6 billion in research facilities improvements but planned to spend only $3.0 billion over the 1988-1989 period. By 1990, the gap had widened: $15.6 billion in research facilities needs compared with planned spending of about $3.6 billion for the 1990-1991 period, leaving a $12 billion backlog. Thus for every $1.00 of new facilities construction or renovation that institutions planned for 1990-1991, they deferred an additional $3.00 in needed construction spending and $4.00 in needed repairs.

Academic research institutions ascribe the growing deficit in research facilities to a variety of factors, including:

* the accelerating pace of scientific progress and the increasing development of new, more powerful instruments;

* the high cost of specialized research facilities;

* the impact of regulatory, technical, and other requirements on building standards;

* the cost of upgrading older buildings and facilities, many of which are structurally inflexible and obsolete to the point where it may be neither cost effective nor possible to renovate

them to meet today's research needs;

* chronic underfunding due to other priorities.

HISTORICAL PERSPECTIVE

As early as 1956 there were concerns about the condition of academic research facilities and the role of the federal government in providing assistance to improve them. In 1957, a report by the National Science Foundation concluded that the nation's laboratories were deteriorating and that rising college enrollments would place added stress on science laboratory needs. The launching of Sputnik shortly after the report was published served as a catalyst for substantially increased Federal support for facilities. In addition, a 1960 report issued by the President's Science Advisory Committee recommended expanding the research base by increasing the number of high quality research universities.

It was in this climate that a number of programs for construction or renovation of general research facilities were established. Several Federal agencies, including the National Institutes of Health, the National Science Foundation, and the National Aeronautics and Space Administration began sizable programs to expand and enhance research facilities. Most of these programs required cost sharing or matching funds from non-Federal sources. Federal research facility support programs and other initiatives of the 1960's and early 1970's were instrumental in helping to build and strengthen the nation's academic research capacity.

Many of these facilities programs were phased out in the late 1970's and early 1980's in response to more austere budgets and changing national priorities. During the 1980's, there have been only a few programs for research facilities, mostly aimed at specific medical problems such as AIDS.

An Academic Research Facilities Modernization Program was established by the National Science Foundation Authorization Act of 1988 to "assist in modernizing and revitalizing the nation's research facilities." While this merit-based competitive program was authorized at nearly $900 million over five years, only $20 million was appropriated each year for FY 1990 and 1991. The purpose of the program is explicitly repair and renovation, not construction of new facilities. Grants totaling $39 million to 78 colleges, universities, and nonprofit institutions nationwide were made in early 1991. These grants will be combined with over $61 million in required matching funds from the institutions themselves, from state and local governments, and from private sources to provide over $100 million in total support for projects in 37 states. The National Science Foundation is the only agency with broad research facilities construction authority at this time.

ISSUES IN RESEARCH FACILITIES FUNDING

Two methods have been are used to provide federal support for science and engineering research projects, facilities, instruments, or other research-related expenses. The usual method is that of competitive grants requiring merit review, usually by expert

representatives from the relevant research community; the grants are awarded by Federal agencies based on levels of program funding established by Congress. This form of collaboration among the Congress, the executive agencies, and the science and engineering community emerged from extensive discussion and debate following World War II. It defines an informal social contract under which the government grants to representatives of the scientific community an unusual role in determining the allocation of funds for research activities in return for expert advice on its research investments. The resulting competitive grants are based on published evaluation criteria and reviews by knowledgeable scientists and engineers. Since most competitive grant programs for facilities require a substantial matching commitment, federal funding is leveraged so that other sectors must also determine priorities and bear their fair share of the costs.

A second method for providing support to research facilities or projects is direct Congressional appropriations. Direct Congressional action, or earmarking, is an approach used by a Congressional committee or subcommittee to designate a certain portion of an agency's appropriation for a specific facility or project at a specific institution. Earmarking is a time-honored practice and widely used political tool in other areas, often as a redistributive device that addresses fiscal inequalities and legislative power. It has only recently become prominent as a means of appropriating Federal funds for academic facilities and projects. As applied to research facilities, the earmarking

approach usually lacks competitive scientific or technical merit reviews or comparative analyses based on need or impact. Substantial matching or cost sharing by the recipient or leveraging of the public funds also may not be required.

Earmarking appears to have accelerated since the early 1980s. There are, however, few sources of academic earmarking information, and longitudinal data of a comprehensive nature do not exist. In many cases, reports cannot characterize the earmarks fully by location, institution, and type of activity. Intentional obfuscation of detail is apparent in some appropriations bills. Therefore, in systematic listings of earmarks, it is very difficult to identify amounts going specifically for academic research facilities. The reports that do exist acknowledge these deficiencies and point out that the total number of earmarks and their dollar value are probably underestimated in the data presented. Still, trends in the magnitude and direction of such earmarks can be ascertained from the few studies that have been completed.

Data from the Congressional Research Service and the University of California show that from FY 1980 through FY 1989, more than $900 million was earmarked for at least 300 academic facility and research projects in the federal government's appropriations bills. "Identifiable apparent earmarks" rose steadily from just over $10 million in FY 1980 to $113 million in 1987, with a doubling to over $200 million in both 1988 and 1989. Similar earmarks totaled $132 million in FY 1990 and are estimated

in a report by the Office of Technology Assessment to be at least $270 million in FY 1991.

New Study of Direct Congressional Action

A more recent study done for the Office of Science and Technology Policy indicates that in the FY 1991 appropriation process, Congress earmarked a total of $810 million for R&D items for specific institutions or locations (See Table 1). A total of 492 such earmarks were identifed, of which 325 were in Agriculture, 48 in Energy, and 28 in DOD. On the basis of the often meager explanations given, 111 earmarks have been classified as for construction or provision of facilities and 381 for R&D operations. A total of 65 of the earmarks were specified in the appropriations bills; the other 381 appeared in appropriations committee reports only.

Some qualifications should be noted with respect to this analysis. The apparent earmarks identified excludes programmatic earmarks not pointed at particular institutions or locations, earmarks to established federal and national laboratories, earmarks for non-R&D related purposes, and "invisible" earmarks communicated by Congress to the agencies in ways other than the appropriation bills or reports.

The analysis includes earmarks for R&D operations as well as for construction of facilities, earmarks for on-going activities and for new activities specifically authorized by law where the budget recommended no funding, and earmarks where a specific

institution or location appears to be implied although not named. In cases where the reports do not characterize the earmarks fully by location, institution, and type of activity, judgments have been necessary in classifying them for analysis.

The data available do not support judgments on the merits of the earmarks or on the motivations for the earmarking. Without a case-by-case review with agency or Congressional staff directly involved, it is not possible to determine to what degree each earmark was a response to advocacy by an institution, a Congressional initiative, or a recognition by Congress of a significant national or programmatic need.

Analysis of FY 1991 Earmarking. The FY 1991 data on apparent earmarking show that academic institutions can be reliably identified as the beneficiaries of only about half of the earmarks for which the type of recipient can be established. The data include 221 earmarks totalling $724.4 million for R&D operations and facilities, of which only 101 ($348.1 million) are for academic institutions. The other recipients include non-profit institutions, and private, state, local, and cooperative federal-state entities. In addition there are 271 earmarks in operations of the Department of Agriculture for which the data do not reliably identify the type of recipient.

For facilities earmarks only, the ratio is somewhat higher. Including those in the Department of Agriculture, academic institutions received 67 ($276.3 million) out of the total of 111 ($427.5 million). The agency breakdown of the 67 is 30 in the

Department of Agriculture, 15 in the General Services Administration, 13 in the Department of Energy, 7 in the Department of Defense, and 2 all others.

There were no earmarks in most of the major programs supporting science in universities, including the National Science Foundation, the National Institutes of Health, the general science program of the Department of Energy, the National Aeronautics and Space Administration, and the Department of Agriculture competitive grants program. The exceptions are the Department of Energy programs in basic energy sciences, biological and environmental research, and energy supply programs (33 earmarks) and the Department of Defense university research initiative (7 earmarks).

Although comparable data for prior years is not available, it is apparent that there was a significant increase in Congressional earmarking in the FY 1991 appropriations. This and other evidence indicate a major change in FY 1991 in Congressional practices with respect to R&D earmarks, especially in certain subcommittees of the Appropriations Committees. The Energy and Water Resources subcommittees accounted for 33 earmarks. The Defense subcommittees accounted for 28 earmarks and specifically exempted them from previously enacted legislative requirements for competition. The Treasury-Post Office subcommittees inserted funding for 21 earmarks for R&D construction at non-federal institutions into the appropriation of the General Services Administration, which normally provides only for construction of federal office buildings. The Veterans-HUD subcommittees appear to have inserted

more earmarks than usual in the funds for the Environmental Protection Agency and for the first time also inserted earmarks into the construction account of the National Aeronautics and Space Administration. It is not clear whether earmarking is on the rise in the Agriculture and Interior subcommittees or if the FY 1991 earmarks are simply a continuation of their normal practices.

Impacts of FY 1991 Earmarking. Generally, any earmarks within a constrained total put a corresponding squeeze on the agency's overall program. Analysis of the budget data cannot isolate the impact of these earmarks from other factors, but it can indicate some areas of greater or lesser apparent impact. It is possible, however, to compare for each program area the amounts earmarked with the net change made by Congress in the proposed Fy 1991 budget. To the extent Congress has provided a net increase over the proposed budget for R&D, the squeeze has been applied elsewhere in the budget and the earmarks can be said to have been covered by "new money." To the extent that funding increases fall short of the amounts earmarked, and in all cases where Congress has reduced the proposed budget, there is a negative impact on the R&D budget which the agency will have to find ways to absorb.

On this basis, R&D earmarks totaling $283.1 million appear to have been covered with "new money." Earmarks totalling $403.4 million appear to have been partially covered by $208.9 million in budget increases, so that the squeeze on them could be as little as $194.5 million. In the few cases where earmarks were made in programs reduced by Congress, the budget squeeze will be the full

amount of the earmarks; this is the case, for example, in some programs within the Department of Defense and in the National Aeronautics and Space Administration.

In total, this analysis suggests that the impact on R&D budgets of the $809.6 million of earmarks will be net reductions totaling at least $332.0 million. The reductions will be greater to the extent that agencies with budget increases are not able to apply the increases as offsets to their earmarks, and could be less to the extent they are able to accept earmarked items as adequate substitutes for programs in the budget.

From all indications, the most serious budgetary impacts would appear to be in Department of Energy programs budgeted under Energy Supply R&D, in the Agricultural Research Service, and in the Forest Service. In the other cases the earmarked amounts are a relatively small percent of the total budgets.

The FY 1991 earmarks include about 25 instances in which new centers, institutes, or other entities are to be established. In most of these instances continued Federal support in future years seems clearly implied. Most of the operations earmarks also imply continuing support in future years. Thus FY 1991 earmarks have put a built-in squeeze on future year budgets, an effect that will be compounded as additional earmarks are made each year.

Divergent Points of View

Much of the growth in research facilities funding since the mid-1980's has been due to Congressional earmarking of appropriations.

The practice has been controversial, welcomed by some as an effective way to confront a serious national problem and deplored by others concerned that the tendency to use earmarks threatens the very fabric of academic institutions and the integrity of the U.S. research enterprise.

Those who support the concept of Congressional earmarking for research facilities point to the historical presence of this phenomenon over time and argue that it can be considered a form of constituent service. They also argue that universities and colleges who seek earmarks are merely exercising their constitutional rights to petition Congress on their own behalf. To supporters, the practice constitutes accepted ethical behavior on the part of Congress, particularly since everyone in the Congress has the opportunity to vote on any given earmarked project or facility.

Some who favor earmarking also cite a redistributive rational, claiming that an "old boys network" is actively at work in the regular merit-review process of making research awards. In their opinion, merit review works to the disproportionate advantage of major research institutions, at the expense of smaller and less prestigious institutions that would like to establish a stronger research presence. This argument holds that earmarking is necessary to correct an unfair situation by allowing the "have nots" to improve their status relative to the "haves," so that they become more competitive. In this argument, earmarks are seen as furthering socially justifiable goals.

Data on earmarking, however, indicate that this may not be

the case. Over the FY 1980-89 period, for example, more than 40 percent of the $900 million in earmarks went to just five states, while two-thirds of the earmark dollars went to only ten states. Ten institutions received nearly 40 percent of all earmarked funds and the top twenty schools received nearly 60 percent of all earmarked funds. In FY 1990, 71 percent of the $132 million in apparent academic earmarks went to 10 states, while the "top ten" earmark recipients accounted for 52 percent of the dollar value of all academic earmarks. It appears that the practice of earmarking may in fact be geographically inequitable, primarily benefiting only a handful of states and academic institutions.

Another rational advanced for Congressional earmarking is that, more than 20 years, there has been no federal program for funding of research facilities on a merit-review basis. Before the implementation of the National Science Foundation facilities modernization program in FY 1989, there was no alternative for getting facilities funding, because no competitive federal programs existed. Proponents of earmarking argue that the current program is not large enough. If there were substantial competitive programs for research facilities, they assert, there would be less pressure from institutions to get earmarked funds and it would be correspondingly easier for legislators to refuse constituent demands.

Those who oppose earmarking in the research arena are concerned about the lack of competition and open debate regarding the merits of the project or facility to meet national needs and

goals. The 1986 Packard-Bromley report on the health of U.S. colleges and universities stressed that assessments made by technically qualified review individuals and panels as to how reasonable and necessary a research project or budget is are generally viewed as sound and credible. The report recommendation that a facilities fund be established was accompanied by the recommendation that all proposals be subjected to review within the scientific or technological community involved.

While earmarking attempts to address a real problem, the limited availability of federal funds for research infrastructure, it often does it outside the quality control process which has worked so well in the past. Proponents of merit review cite instances when Congress has responded to the pressures for facilities earmarks by approving funds without debate or review by committees. There have been instances when facilities projects were added as last minute floor amendments, bypassing peer review, the agency, and the appropriate Congressional committee.

In a time of scarce resources for research, merit competition appeals to the American sense of fair play--everyone should compete fairly for the taxpayers' dollar. The competitive process uses standardized evaluation criteria to judge the merits of proposed facilities, the need for such facilities, and the capability of the institution. Moreover, the 1986 Packard-Bromley report argued that the system of awarding grants and contracts on the basis of technical review is essential to the U.S. ability to maintain excellence in science. The direct appeal to Congress for funding

scientific facilities, it can be argued, threatens this process and, if the practice grows, could seriously undermine the system of competition for research funding.

Earmarking also upsets the decision-making balance and division of labor between the Congress, the Executive agencies, and the science and engineering community. The current tiers of decision making allow each body to contribute its unique expertise. Congress is charged with setting national priorities; Federal agencies evaluate specific activities to meet national objectives; researchers provide expertise to the agencies in an advisory capacity, providing merit review. In contrast, earmarking places all of the responsibility in the hands of Congress.

Partial responsibility for the possible erosion of the merit review process also lies in the hands of the scientists, engineers, and university research administrators who have been trusted by the Federal government to determine the nature of academic research activity and ensure its excellence. Increased reliance of the scientific community on direct political measures could destroy the perception of its objectivity and integrity, erode the trust with which it has been vested, imperil its autonomy, and forfeit its right to play a significant role in Federal resource decision-making.

Finally, it can be argued that bypassing the merit review process has the quality of being a short term solution to a long term problem. The major need that exists for research facilities cannot be satisfied by earmarking, nor is this process an efficient

way to allocate scarce resources to meet this need. In this view, the Nation needs a comprehensive approach to meeting the needs for research facilities, preferably a cooperative one involving the Federal government, the academic community, the states, and other sponsors of research.

SELECTED ADDITIONAL READING

1. Association of American Universities and National Association of State Universities and Land-Grant Colleges, University Research Facilities: A National Problem Requiring a National Response, The Ad Hoc Committee on Academic Research Facilities (Washington, D.C.) June 1989.

2. Congressional Research Service, Bricks and Mortar: A Summary and Analysis of Proposals to Meet Research Facilities Needs on College Campuses (Washington, D.C.) March 1987.

3. Government-University-Industry Research Roundtable, Perspectives on Financing Academic Research Facilities: A Resource for Policy Formulation, National Academy of Sciences (National Academy Press: Washington, D.C.) October 1989.

4. Government-University-Industry Research Roundtable, "Research Facility Financing: Near-Term Options" (Washington D.C.) October 1990.

5. National Science Foundation, Scientific and Engineering Research Facilities at Universities and Colleges: 1988, NSF 88-320 (Washington, D.C.) September 1988.

6. National Science Foundation, Scientific and Engineering Research

Facilities at Universities and Colleges: 1990, NSF 90-318 (Washington, D.C.) September 1990.

7. National Science Foundation, Modernizing Academic Research Facilities: A Comprehensive Plan, NSF 89-61, (Washington, D.C.) June 1989.

8. Office of Science and Technology Policy, Report of the White House Science Council: Panel on the Health of U.S. Colleges and Universities, Washington, D.C., February 1986.

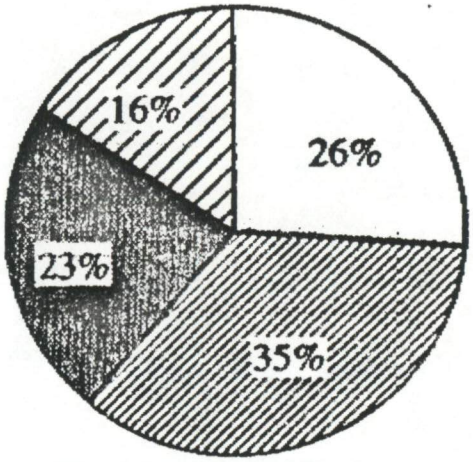
9. James Savage, "The Distribution of Academic Earmarks in the Federal Government's Appropriations Bills, FY 1980-1989" (Oakland, CA: University of California) March 7, 1989.

10. James Savage, "Apparent Academic Earmarks in the FY 1990 Federal Appropriations Bills" (Oakland, CA: University of California) December 19, 1989.

11. United States Senate, The Committee on Rules and Administration, Hearing on Senate Resolution 206, "To Establish a Point of Order against Material that Earmarks Research Monies for Designated Institutions without Competition" (Washington, D.C.) June 21, 1990.

FIGURE 1

Institution-assessed quality/condition of academic research facilities: 1990



(base = 116.3 million sq. ft.)

- Suitable for use in most sophisticated research
- Effective for most uses
- Needs limited repair/renovation
- Needs major repair/renovation

Source: National Science Foundation, SRS

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Table 1

~~TABLE III~~

CONGRESSIONAL EARMARKS OF R&D ITEMS FOR SPECIFIC INSTITUTIONS OR LOCATIONS BY 1991 APPROPRIATIONS

A - BY AGENCY
(in millions)

Agency	Facilities No.	Facilities Amt.	Operations No.	Operations Amt.	Total No.	Total Amt.	In Law	Repts. Only
Defense	8	106.5	20	146.9	28	253.4	16	12
Energy	15	104.1	33	81.4	48	185.5	16	32
Commerce	2	3.0	12	11.4	14	14.4	4	10
Interior	2	.8	23	16.7	25	17.5	-	25
EPA	4	37.2	16	29.7	20	66.9	1	19
HHS	1	.2	1	3.2	2	3.4	1	1
Education	-	-	5	7.6	5	7.6	5	-
NASA	4	18.0	-	-	4	18.0	1	3
NSF	-	-	-	-	-	-	-	-
Smithsonian	-	-	-	-	-	-	-	-
GSA	21	60.7	-	-	21	60.7	21	-
Agriculture	54	97.0	271	85.2	325	182.2	-	325
TOTAL	111	427.5	381	382.1	492	809.6	65	427

Unwanted Advice?

George Bush has elevated his science adviser to the rank of assistant to the President, but that doesn't necessarily mean that D. Allan Bromley's advice is being sought or heeded.

BY GRAEME BROWNING

In the 30 years he taught at Yale University, D. Allan Bromley, a natty, Canadian-born physicist with a keen sense of order, never scheduled a class or an appointment before 9 A.M.

"I refused. Absolutely refused. I'm just not a morning person," Bromley said recently as he sat in his light-filled suite in the Old Executive Office Building.

Since Bromley was confirmed as science adviser to President Bush in October 1989, however, he has been arriving at the office by 6:45 A.M. Shortly after he appointed Bromley to that post, Bush formally elevated him to the level of assistant to the President—which means that the science adviser now has to be ready, along with other presidential aides, to participate in the 7:30 A.M. senior staff meeting each workday.

"My old Yale colleagues," Bromley said with a small grin, "are suitably impressed."

Well they might be. The science adviser holds what is arguably the highest post open to a practicing scientist in American government. His job, in the sweeping language of the 1976 legislation that established the Office of Science and Technology Policy, which he heads, is no less than to provide, "within the Executive Office of the President, advice on the scientific, engineering and technological aspects of issues that require attention at the highest levels of government."

But previous science advisers found it as likely that their advice was ignored as acted upon. In the more than three decades that there have been science advisers in the White House, no President has been able—or willing—to delineate the functions of the office clearly. Consequently, the men (there have been no women) who have held the post have been among the most revered and the most reviled of presidential aides. Sometimes, they have been both.

The present holder of the title falls into the last category. Critics complain that Bromley, despite his reputation as the "father of modern heavy-ion science," has let himself be bullied by White House colleagues—especially chief of staff John H. Sununu, a former engineering professor—into taking a low profile on such critical scientific issues as global warming and U.S. economic competitiveness.

"Sununu thinks of himself as a scientist, and unfortunately, Dr. Bromley has deferred to Dr. Sununu on the global environment," said Sen. Albert Gore Jr., D-Tenn., a champion of aggressive action on the environment. "On almost every other issue, Dr. Bromley has been a breath of fresh air," Gore added.

"In our wisdom 15 years ago, we gave the science adviser the responsibility for looking at all the interconnections" between research and development, the availability of capital and the need for government regulation of technology as they relate to American competitiveness in the marketplace, Rep. George E. Brown Jr., D-Calif., chairman of the Science, Space and Technology Committee, said. "All of this should be a part of science and technology policy. Dr. Bromley understands this and is trying his best to get a coordinated Administration policy viewpoint on it, but so far he hasn't succeeded."

Other observers, however, praise Bromley for reinvigorating an office that has long lain fallow. Only recently, the science adviser's office was seen as "almost a black hole," said congressional Office of Technology Assessment senior analyst Daryl Chubin, director of a major study for Congress on federal financing of scientific research. Today, he added, "most of us are thrilled to pieces that the science adviser's office is not only back on track but also on an upward trajectory."

Even those who agree wholeheartedly with Chubin, however, disagree on the point at which the train left the track in the first place. Much of that controversy stems from the fact that since its very beginning, there have been widely differing concepts of just what role the science adviser is supposed to fill.

The office was conceived as an independent post whose broad-ranging advisory powers would be commensurate

No. 2 wool-producing state.) At the end of the day, the finished farm bill limited wool and mohair payments to $200,000 in 1991, dropping to $125,000 in 1994.

As the sheep and goat farmers saw it, the bad news was that their program had for the first time been successfully attacked by outsiders. The good news was that $125,000 is still a lot of money. In fact, it is three and a half times the U.S. average family income.

"I was disappointed," Schumer said, "but if at first you don't succeed, try, try again."

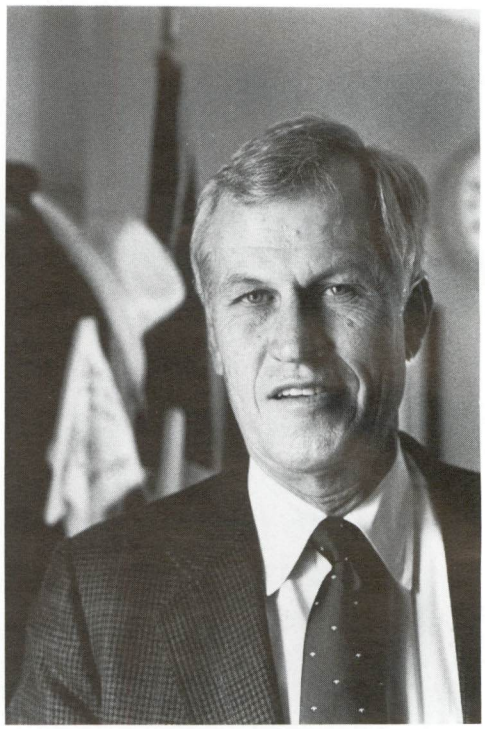
SHEAR POWER

Schumer is likely to be trying again for a long time. Some federal programs, such as social security and the home-mortgage tax deduction, survive serious challenge because they are too important to too many people. Others, such as the Strategic Petroleum Reserve and foreign aid, have a compelling case for serving vital national interests. Still others, such as infant-feeding programs and the missile defense program, become partisan rallying points. The wool and mohair program has none of those advantages. Yet a survivor it certainly is. To understand why, consider the following:

Favorable geography. "You look at a map, and they've got a hell of a geographical spread," said Macon T. Edwards, a longtime farm lobbyist who used to represent the wool growers. Every state in the union has at least somebody raising sheep, and therefore at least some interest in the wool program. Beneficiaries are not so thinly dispersed, however, as to be politically ineffective. About 60 per cent of the combined wool and mohair program benefits go to Texas, a political powerhouse.

A favorable beneficiary spread. A program that has many beneficiaries getting tiny amounts of money can run into political trouble: The benefits may be too small to energize a strong lobby. A program that has mainly a few very large beneficiaries has the opposite problem: Inevitable populist attacks on the ladling of federal gravy to millionaires and big businesses.

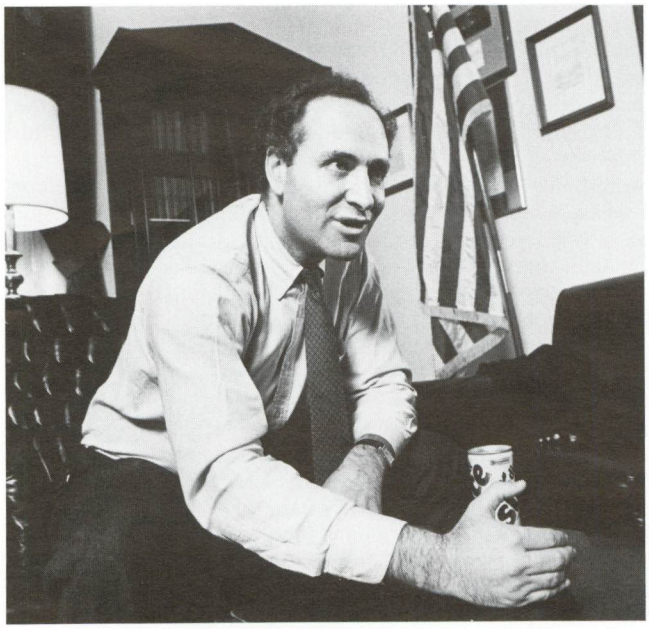
The wool and mohair program comes close to an ideal solution. It has thousands of small (often needy) beneficiaries who tug at taxpayers' heartstrings. During last year's farm bill debate, a Montana woman wrote Schumer to say: "My daughter raised a small flock of sheep as a 4-H project. The wool incentive payment, selling of wool and lambs, *together* provided the biggest share of her college education." But the program also has big beneficiaries who have both the motive and the means to run an effective lobbying operation.



John Eisele

Rep. Charles W. Stenholm, D-Texas
His subcommittee has jurisdiction over mohair.

Texans in high places. The wool and mohair program was a favorite child of W.R. Poage, the Texas Democrat who ruled the House Agriculture Committee until 1975. The committee's current chairman, E (Kika) de la Garza, is also a Texas Democrat and also a strong supporter of wool and mohair. Even more important is the support of Livestock, Dairy and Poultry Subcommittee chairman Stenholm, a straight-shooting Texan who commands broad respect on both sides of the aisle, and whose congressional district ranks sixth in the nation in wool production.



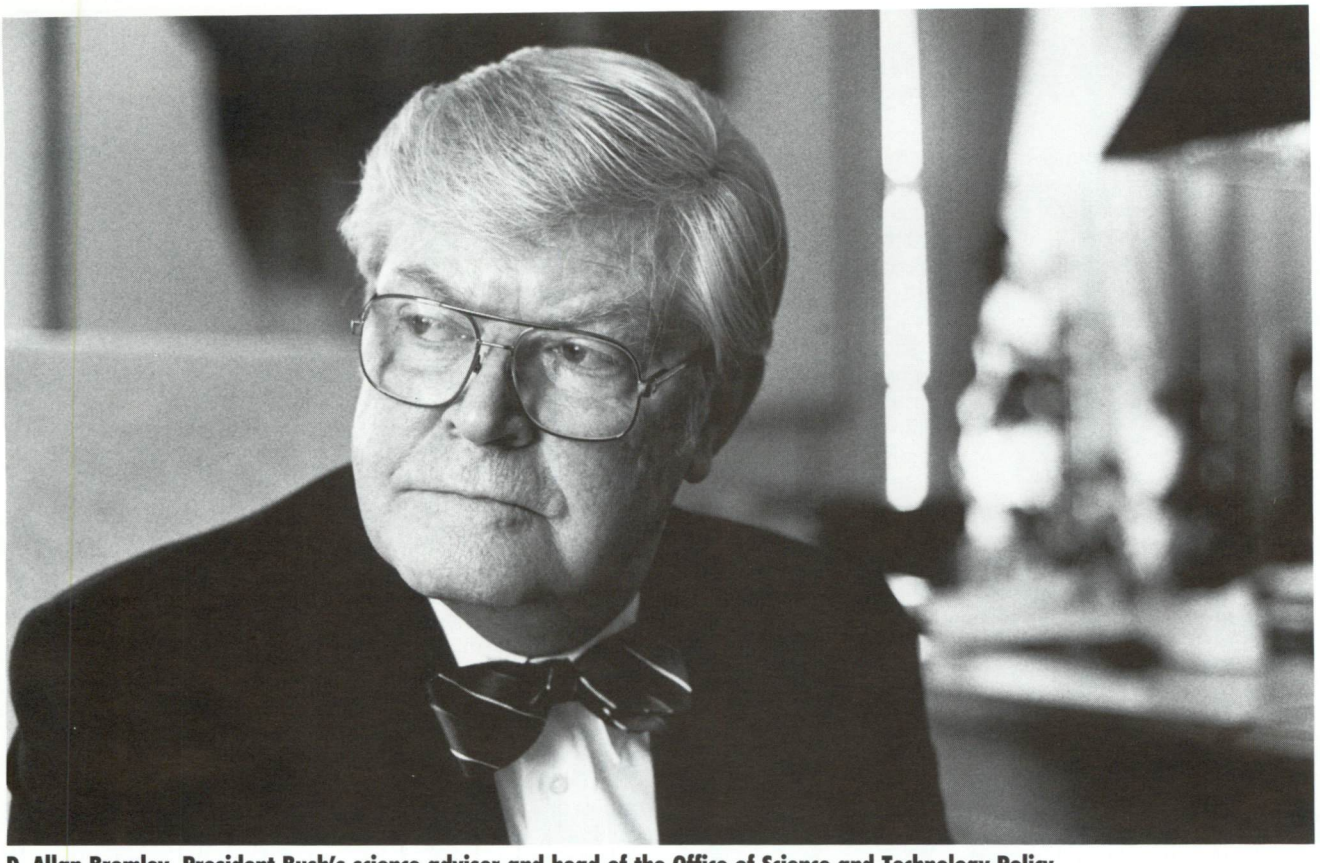
Richard A. Bloom

Rep. Charles E. Schumer, D-N.Y.
"I went after the program because it had outlived its need."

A low profile. The $105 million that the program cost in fiscal 1990 may sound like a lot of money, but it accounts for less than 2 per cent of farm program spending. Budget reducers have bigger fish to fry. So do ideologues and economists, who find more that annoys them in the other commodity programs. An important advantage for the wool and mohair program has been its simple design: cash for fleece. The program doesn't offend economists by causing gross market distortions and artificial surpluses and shortages, as so many other farm programs do; it doesn't offend free-market conservatives by telling farmers how much they can grow, setting prices in Washington or otherwise looking like "socialism"; it doesn't draw attention to itself by going haywire, as the honey, dairy and sugar programs (among others) have done at various times; it has not become an international trade issue, as the larger farm programs have. All the program does is to write some checks. And so hardly anyone cares enough to try to kill it or maim it.

Powerful Texans, salt-of-the-earth beneficiaries in 50 states, obscurity: Wool and mohair growers could hardly ask for luckier stars. Yet they feel less than entirely secure. After the 1990 experience, an industry source said, a majority of Texas's mohair farmers fearfully expect the program to die in the 1995 farm bill.

Judging by the record since 1954, they may be overworried. What began as, in effect, a 1950s industrial policy for fiber is still going strong as a new century approaches. Those weighing the merits of temporary assistance for strategic U.S. industries might consider the lesson of the wool and mohair program. "There's nothing more permanent in this town," farm lobbyist Edwards said, "than a temporary program." ■



Richard A. Bloom

D. Allan Bromley, President Bush's science adviser and head of the Office of Science and Technology Policy
As science adviser, it's important to "understand you're not there as a special pleader for some outside constituency."

with the "Golden Age" passion for science of the 1950s and 1960s. *(See box, p. 1174.)* By 1973, however, those powers had ranged too broadly for the White House's taste and the science adviser's office was abolished. It was reborn in 1976 as the Office of Science and Technology Policy, with the science adviser to the President as its director, subject to Senate confirmation.

This has worked to the disadvantage of the science adviser's office, however. Because the Senate must approve the choice of director, other members of the President's inner circle tend to view the science adviser as an interloper, observers in the scientific community say. "If you have to be confirmed by Congress, you can't really be one of the boys," said Robert L. Park, a physics professor at the University of Maryland and director of the Washington office of the American Physical Society.

Some academic scientists also say they feel strongly that the science adviser should not only advise the President, as the 1976 measure says, "of scientific and technological considerations involved in areas of national concern," but should also bring the scientific community's concerns to his attention. Because the adviser has traditionally been drawn from the top ranks of this community, some of its members feel he is duty-bound to see

Science advisers have been among the most revered and the most reviled of presidential aides. Sometimes, they have been both.

to what Daniel Greenberg, editor and publisher of *Science & Government Report*, a Washington newsletter, and a longtime observer of science policy making, called "the care and feeding of the scientific community, meaning getting money to the research universities."

Those who have seen the office from the inside couldn't disagree more with both viewpoints. They say nothing destroys the science adviser's effectiveness more quickly than the impression that he represents interests other than those of the President.

"The science adviser has a constituency of one: his boss, the President," insisted National Academy of Sciences president Frank Press, who was science adviser to President Carter. If the adviser is perceived within the White House "as a lobbyist for this or that, he will rarely make it into the inner circles."

Bromley agrees with Press. "The crucial thing is that the other members of the inner circle recognize you as a team player, recognize that you understand you're not there as a special pleader for some outside constituency," he said.

THE PRESIDENT'S CALL

When all is said and done, observed John P. McTague, Ford Motor Co. vice president for technical affairs and a science adviser to President Reagan, "the job is whatever the President wants it to be, regardless of what you write down on a piece of paper."

Over the years, however, different Presidents have handed out vastly different job descriptions.

In the 1950s, the United States, flush with the wartime victories that technology had wrought, went science-mad. Interest in mathematics and science courses boomed, and kids raced home from school every day to see science programs such as *Watch Mr. Wizard* on that

SCIENCE ADVISER'S RISE, FALL AND RISE

"Few institutions of the federal government have had as rapid a rise to prominence and lapse into oblivion," Jerome B. Wiesner, President Kennedy's science adviser and perhaps the most prominent American scientist ever to hold the post, once wrote of the President's Science Advisory Committee (PSAC), the advisory committee initiated by Weisner's predecessors.

At certain points in its history, the same could have been said of the science adviser's position itself.

The science adviser's post was the brainchild of William Golden, a Wall Street investment banker who had been a top aide to the Atomic Energy Commission during its formative years. After World War II ended, interservice rivalry for control of emerging military technologies and controversy over the use of nuclear weapons became so heated that President Truman asked Golden to study ways to defuse the disagreements. After months of research, Golden proposed a twofold plan: the appointment of a science adviser who would report directly to the President, assisted by a Scientific Advisory Committee of "highly qualified scientists."

Truman followed both recommendations. In the scientific community's view, however, he stripped Golden's plan of its effectiveness by directing that both the science adviser and the advisory committee report to the Office of Defense Mobilization instead of to the President directly.

In the fall of 1957, the Soviet Union launched *Sputnik* before the United States was even close to launching a satellite of its own. Shaken and outraged by the Soviet success, President Eisenhower appointed Massachusetts Institute of Technology president James R. Killian Jr. as his special assistant for science and technology. Eisenhower also brought the advisory committee under the aegis of the White House and renamed it the President's Science Advisory Committee.

A number of well-regarded scientists followed Killian as science adviser, including Wiesner, an electrical engineering professor at MIT and a passionate advocate of arms control, who was named to the post in 1961. In the meantime, federal support for scientific research boomed, from $1.1 billion (2.5 per cent of the federal budget) in 1950 to a peak of $16 billion (12.5 per cent of the budget) by the mid-1960s. Support for science was so all-encompassing during the 1960s, in fact, that the decade was dubbed the Golden Age of U.S. science.

The Golden Age came to an abrupt halt during the Administration of President Nixon, however, when PSAC members openly criticized Nixon's Vietnam policies and his Administration's plans to build a supersonic transport plane. Angered by what he considered a gross breach of loyalty, Nixon abolished the office of science adviser, and PSAC with it, in July 1973.

The function of science advising was shifted to the National Science Foundation. In 1975, according to the reminiscences of those involved in the effort, prominent academic scientists enlisted the aid of Vice President Nelson A. Rockefeller in their efforts to bring the science adviser's office back to life. A year later, Congress passed the Presidential Science and Technology Advisory Organization Act, which established the Office of Science and Technology Policy, an arm of the Executive Office of the President whose director is confirmed by the Senate and serves as the President's science adviser.

Proposed outlays for the Office of Science and Technology Policy in fiscal 1977, its first year of operation, were $2.1 million. For fiscal 1992, the Bush Administration has proposed a budget for the science office that is almost double that figure.

Here are the science advisers and the Presidents they served:

James R. Killian Jr.	Dwight D. Eisenhower
George B. Kistiakowsky	Dwight D. Eisenhower
Jerome B. Wiesner	John F. Kennedy
Donald F. Hornig	Lyndon B. Johnson
Lee A. DuBridge	Richard M. Nixon
Edward E. David Jr.	Richard M. Nixon
H. Guyford Stever	Gerald R. Ford
Frank Press	Jimmy Carter
Benjamin Huberman (acting)	Ronald Reagan
George A. Keyworth II	Ronald Reagan
John P. McTague (acting)	Ronald Reagan
William R. Graham	Ronald Reagan
D. Allan Bromley	George Bush

most popular of all new technologies, the television. Perhaps in deference to this popularity, President Eisenhower began to call the scientists he gathered in the White House "my wizards," according to William Golden, the former financier and Atomic Energy Commission aide who developed the original plans for a science adviser at President Truman's behest.

"Eisenhower was temperamentally sympathetic and appreciative of the advice of scientists," said Golden, now chairman of the board of the American Museum of Natural History in New York City. "He was the high spot of receptivity" to science advice.

It was also under Eisenhower that the President's Science Advisory Committee (PSAC) began its meteoric ascent. The committee, composed of scientists drawn from academia and the federal government, was charged with "strengthening the links between the scientific and technical community and the processes and administrators of government," according to a letter by David Beckler, PSAC's executive officer, written after the panel was dismantled in 1973.

But PSAC quickly became more. Committee members were given "free access to the President, who knew he needed their help," James R. Killian Jr., a PSAC member and the first science adviser to serve in the White House, wrote in his memoir, *Sputnik, Scientists and Eisenhower* (MIT Press, 1977). George B. Kistiakowsky, who succeeded Killian, called PSAC a "coherent thinking organism." The science adviser and the committee "were designed to influence major policies. They did so . . . substantially in the late 1950s and the early 1960s," Kistiakowsky explained in *Science and Technology Advice to the President, Congress and Judiciary* (Pergammon Press, 1988), a collection of essays edited by Golden.

During the Kennedy and Johnson Administrations, however, power struggles with national security advisers gradually whittled away PSAC's influence. By the time Richard M. Nixon took the oath of office, relations between the White House and the committee had deteriorated to the point that Richard Garwin, head of a PSAC subcommittee studying

the feasibility of building a supersonic transport plane, broke the committee's long-standing rule of confidentiality by testifying before Congress on his opposition to the project.

Some members of the scientific community hailed Garwin's move. "We gave him an award for doing it," Jeremy J. Stone, president of the Federation of American Scientists, said. "We felt he took an honorable position." Nixon, however, took a different view.

If Eisenhower was the high point of receptivity to scientific advice, "Nixon was the nadir," Golden said. "He abolished the whole system because he didn't like what they advised him."

By the time the Office of Science and Technology Policy was established, scientific savvy, spurred by the invention of personal computers, had begun to seep into all levels of the American consciousness. And the science adviser began to encounter a new stumbling block: the President or presidential aide who considers himself a scientist.

President Carter, who had training as an engineer, for example, "held Frank Press on a pretty short leash," Greenberg said. Press denied the description but added that every President "has to learn about the office and how he can use his science adviser. And it takes them time to do so."

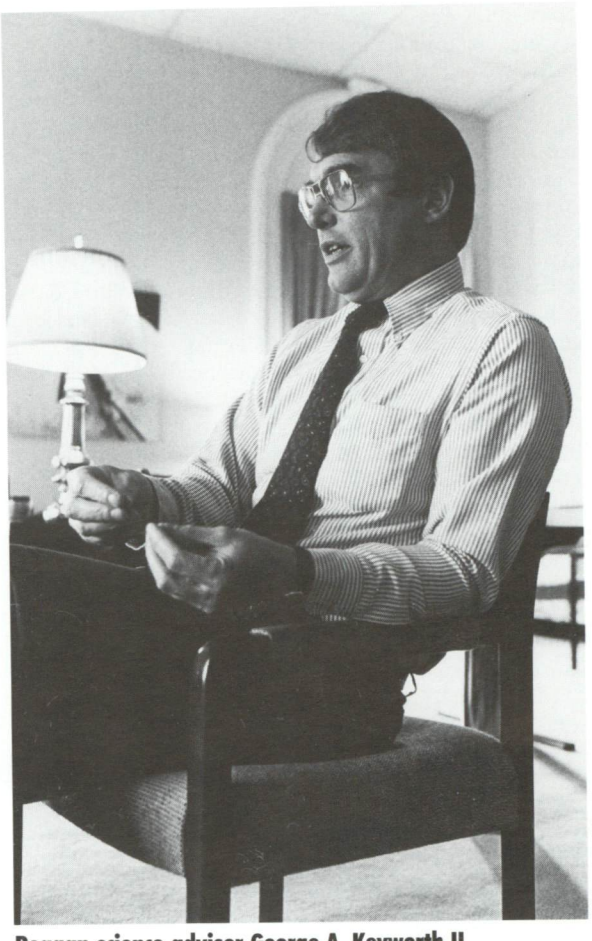
Press's successor, George A. Keyworth II, a physicist who had spent most of his career at Los Alamos National Laboratory in New Mexico, arrived in Washington as Reagan's science adviser to a hostile reception from activist sectors of the scientific community.

"Jay Keyworth was the least well known, the least qualified guy ever to be science adviser," Stone said. Park of the American Physical Society insists that Keyworth was so out of the loop that he found out Reagan was going to introduce the Strategic Defense Initiative only by hearing about it in a chance meeting with national security adviser Robert C. (Bud) McFarlane in the hall of the Old Executive Office Building two days before Reagan's speech was scheduled.

Advice on weaponry and defense issues has always been a major role for science advisers, Park said. "That's why 'Star Wars' was such a failure. The country spent $20 billion and ended up with nothing. A good science adviser could have prevented that."

Keyworth said the story that he was kept in the dark about Reagan's plans for Star Wars is "factually, categorically false. From the day of my arrival in the White House, the President and I had innumerable conversations on strategic defense." He added that he and McFarlane wrote the Strategic Defense Initiative portion of Reagan's speech. Afterward, Keyworth said, he threw the weight of his office behind the program not only because he believed it was technologically feasible but also because he believed that the project was the right thing to do. "I'm more proud of my support for the Strategic Defense Initiative than anything else I did while I was in Washington," Keyworth said in a telephone interview from his home in Santa Fe, N.M., where he maintains a consulting firm.

McTague, who was Keyworth's deputy from 1983-85 and acting science adviser for a year after Keyworth left, said he cannot recall the science adviser's being left out of a decision. At least that never happened "early on" in his tenure, he said. "Things were much more systematic under Ed Meese and Jim Baker [Reagan's counselor and chief of staff, respectively]. When Don Regan was chief of staff, it was pretty much an every-man-for-himself kind of White House," McTague said, adding that "these days, the office is functioning more smoothly and more substantially than it has since it was in Keyworth's hands."



Richard A. Bloom

Reagan science adviser George A. Keyworth II
He says he's "proud" of his support for "Star Wars."

CREDIT AND BLAME

Even those who take issue with Bromley's position on specific points agree with that assessment.

"Dr. Bromley does enjoy the confi-

Richard A. Bloom

Carter science adviser Frank Press, now National Academy of Sciences president
Every President "has to learn about . . . how he can use his science adviser."

dence of the President. And he does participate much more in the work of the National Security Council and the Council of Economic Advisers in the White House than previous science advisers have," said House Science Committee chairman Brown, who has worked with every science adviser since Jerome B. Wiesner, who served under President Kennedy.

The office of science adviser "right now looks as good as it has ever been," said Nobel laureate Leon M. Lederman, president of the American Association for the Advancement of Science. Although Lederman caused an uproar among scientists and policy makers with a recent report that predicts a drastic decline in U.S. scientific prowess if federal spending for research and development is not increased *(see NJ, 5/4/91, p. 1078)*, his comments on that subject, he said, were not meant to be critical of Bromley. "I think he's doing all he can do on that score," Lederman said.

The current science adviser has also won praise throughout the executive branch for his efforts to revitalize the Federal Coordinating Council for Science, Engineering and Technology (FCCSET, pronounced *fix-it*) and for initiating a new science advisory committee, called the President's Council of Advisers on Science and Technology, a year ago.

"Allan's really to be commended for getting that whole process going," said Commerce undersecretary for technology Robert M. White, who chairs a FCCSET subcommittee on industry and technology. "This is getting people at the higher levels of science and technology in the government to start to communicate. They didn't do that before." *(For more on FCCSET, see box, this page.)*

Some observers even say that the science adviser now plays a more important policy role in the White House than ever before.

"The history of that office is a history of how scientists and engineers have been involved with national issues over the course of time," Press said. "At the beginning, the major issues for the science adviser were national security and defense and space. Today it's the environment, it's productivity, it's competitiveness, it's health issues and policies, it's education, energy, resources, just about everything, when you come right down to it. What we're seeing is the growing impact of science and technology in everything we do because that's the way the world is going."

By elevating the science adviser to the status of assistant to the President, Press added, "the Bush Administration deserves great credit for recognizing this."

Others are somewhat less sanguine than Press.

Despite promising during his presidential campaign that the science adviser would be one of his first appointments, Bush took eight months to submit Bromley's name to the Senate, Park said. In the meantime, he said, the *Exxon Valdez* ran aground, spilling millions of gallons of oil into pristine Alaska waters, and two academic scientists declared that they had discovered so-called cold atomic fusion, an assertion that, if true, could have had a revolutionary impact on modern science.

A science adviser could have provided valuable insight into the consequences of both events, Park said, "and it was a telling failure of the system that there was no one in place." ■

REVITALIZED FIX-IT PANEL

A committee with one of the unlikeliest acronyms the federal government has yet devised is at the forefront of Bush Administration thinking on global warming, high-speed computing and expansion of science and mathematics education in American schools.

D. Allan Bromley, President Bush's science adviser, is widely credited with revitalizing the Federal Coordinating Council for Science, Engineering and Technology (FCCSET, commonly pronounced *fix-it*). Established by the same 1976 law that created the Office of Science and Technology Policy, which the science adviser heads, FCCSET was intended to bring key executive branch agencies together to coordinate federal research and development programs and prevent waste and duplication.

Under Frank Press, President Carter's science adviser, FCCSET had a brief period of activity. But it lay dormant throughout the Reagan years.

When Bromley came to the White House in October 1989 as Bush's science adviser, he immediately revived FCCSET. "It seemed fundamentally that it was the most effective tool I had to influence things here in Washington," Bromley said recently.

FCCSET operates on a pyramidal structure. The governing council, the so-called plenary FCCSET, includes a representative each from the Agriculture, Commerce, Defense, Education, Energy, Health and Human Services, Housing and Urban Development, Interior, State, Transportation and Veterans Affairs Departments, as well as the National Aeronautics and Space Administration, the National Science Foundation and the Environmental Protection Agency (EPA). National security adviser Brent Scowcroft and budget director Richard G. Darman are also members. Beneath the plenary FCCSET are seven standing committees that address science and technology issues that Bromley has defined. In turn, several of the committees have established working groups to do the spadework on those issues and recommend action.

FCCSET "is basically interagency cooperation. It's that simple," said Commerce undersecretary Robert M. White, who chairs a committee on industry and technology. In two years, FCCSET committees have developed interagency programs on global warming and high-performance computing. A program to expand science and mathematics education in U.S. schools is proposed for fiscal 1992.

Active members say they are communicating with other agencies in ways they never thought possible. FCCSET "overcomes the centrifugal forces in government," said EPA deputy administrator F. Henry Habicht II, who sits on the FCCSET. "People in federal agencies worry that if they collaborate with someone else, their turf might be taken over. This gives us a forum that facilitates people's ability to see how everybody benefits."

FCCSET committees also survey the funds agencies devote to each panel's area of interests, which gives the White House "a real good inventory of what we're doing and helps us target the budget better," said Charles Kolb, Bush's deputy assistant for domestic policy.

As popular as FCCSET has been with the White House, however, it has recently ruffled feathers in Congress. When Sen. Albert Gore Jr., D-Tenn., asked for the names of members of a FCCSET working group on biotechnology research, the council's support staff refused. In turn, Gore, who sits on the Commerce, Science and Transportation Committee, put the confirmation of Donald A. Henderson as associate director of the Office of Science and Technology Policy on hold. The tiff was eventually resolved, and Henderson was confirmed.

OFFICE OF CABINET AFFAIRS STAFFING MEMORANDUM

Date: 3-20-91 **Due by:** 11:00 Friday, March 22

Subject: OMB Clearance: OSTP Progress Report

From: Holly Williamson

	ACTION	CONCUR	FYI
HOLIDAY	☐	☐	☐
DANZANSKY	☐	☐	☑
ADAIR	☐	☐	☐
BUCHHOLZ	☐	☐	☑
CASSE	☐	☐	☑
EVANS	☐	☐	☐
FARRAR	☐	☐	☐
GUNN	☐	☐	☑
HEIMBACH	☐	☐	☐
JACKSON	☐	☐	☑

	ACTION	CONCUR	FYI
FITZHENRY	☐	☐	☑
MCMUNN	☐	☐	☐
PORTER	☑	☐	☐
SCHALL	☐	☐	☐
SECHLER	☐	☐	☑
WETHINGTON	☑	☐	☐
WILLIAMSON	☐	☐	☐
_____	☐	☐	☐
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Comments:

I will submit no comment unless I hear otherwise from you by 11:00 on Friday, March 22. Thanks.

6 pgs

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
WASHINGTON, D.C. 20503

SPECIAL

March 19, 1991

LEGISLATIVE REFERRAL MEMORANDUM

TO: Legislative Liaison Officer

Department of Agriculture-Marvin Shapiro-382-1516
Department of Commerce-Michael Levitt-377-3151
Department of Defense-Sam Brick-697-1305
Department of Education-John Kristy-401-2670
Department of Energy-Bob Rabben-586-6718
Department of Health and Human Services-Frances White-245-7760
Department of Housing and Urban Development-Edward Murphy-755-7093
Department of Interior-Pam Somers-343-6706
Department of Justice-Paul McNulty-514-4606
Department of Labor-Bob Shapiro-523-8201
Department of Transportation-Tom Herlihy-366-4687
Department of Veterans Affairs-Raoul Carroll-233-3832
National Science Foundation-Charles Herz-357-9435
Environmental Protection Agency-Christopher Hoff-382-5414
National Aeronautics and Space Administration-Lynn Heninger-453-1948
Smithsonian Institution-Margaret Gaynor-357-2962

SUBJECT: Draft Office of Science and Technology Policy progress report. A list of members of the FCCSET Committee on Education and Human Resources is also attached for your information.

The Office of Management and Budget requests the views of your agency on the above subject before advising on its relationship to the program of the President, in accordance with OMB Circular A-19. **A response to this request for your views is needed no later than noon on Friday, March 22, 1991.** Questions should be referred to Jack Fellows (202-395-3935).

Janet Rice Forsgren for
Janet Rice Forsgren for
Assistant Director for
Legislative Reference

Enclosure

cc: Rae Nelson, OPD
Doreen Torgerson, OPD
Holly Williamson, OCA
Tom Scully
Barry White
Bob Grady
Norine Noonan
Joe Hezir
John Morrall
Dan Chenok
Kathy Burchard
Janet Forsgren

FCCSET COMMITTEE ON EDUCATION AND HUMAN RESOURCES

Name	Telephone	FAX
Admiral James Watkins, DOE, Chairman	202-586-6210	202-586-9988
Dr. Ted Sanders, Education, Vice-Chairman	202-401-1000	202-401-3093
Dr. Luther Williams, NSF, Vice-Chairman	202-357-7557	202-357-9813
Mr. John Schrote, Interior	202-208-6182	202-208-5048
Dr. Charles E. Hess, USDA	202-447-5923	202-755-7842
Mr. Roberts T. Jones, Labor	202-523-6050	202-523-6827
Mr. John C. Weicher, HUD	202-708-1600	202-619-8000
Ms. Kate Moore, Transportation	202-366-9191	202-366-6031
Ms. Nancy Mason, Commerce	202-377-1091	202-377-4498
Mr. Erich W. Bretthauer, EPA	202-382-7676	202-475-9761
Ms. Ann I. Bay, Smithsonian	202-357-2425	202-357-2116
Mr. William G. Myers, III, Justice	202-514-3116	202-514-4699
Dr. Frederick K. Goodwin, HHS/ADAMHA	301-443-4797	301-443-0284
Mrs. Margaret Finarelli, NASA	202-453-8310	202-755-3741
Dr. Ted G. Berlincourt, DOD	703-697-3228	703-697-3762
Mr. D'Wayne Gray, Veterans Affairs	202-233-2455	202-233-5584
Mr. Charles E. M. Kolb, OPD	6515	2878
Mr. Joseph Hezir, OMB	3404	4817
Mr. Barry White, OMB	4532	3910
Ms. Peggy Dufour, DOE, Executive Secretary	202-586-7970	202-586-9988

DRAFT

March 19, 1991

Dear Madam Chair:

I am pleased to send you this progress report describing efforts, developed under OSTP leadership, to accomplish the following: (A) The establishment and restructuring of offices of education in mission agencies to support science and mathematics education and to make the agencies fully responsive to the plan of the Federal Coordinating Council for Science, Engineering, and Technology (FCCSET) Committee on Education and Human Resources (CEHR); and (B) OSTP activities, working with the National Science Foundation, the Department of Education, and Federal mission agencies, to coordinate agency efforts to improve mathematics, science, and engineering education, particularly in the area of developing laboratory-education partnerships. I am also pleased to report on progress of Federal agencies with research and development activities toward establishment of education offices at each Federal laboratory under its control.

FCCSET COMMITTEE ON EDUCATION AND HUMAN RESOURCES

The White House Office of Science and Technology Policy (OSTP), through the Federal Coordinating Council for Science, Engineering, and Technology, established the Committee on Education and Human Resources in the spring of 1990. The Committee played a central role in preparing the Presidential Initiative on mathematics and science education included in The President's FY 1992 Budget.

The CEHR is chaired by Secretary of Energy James Watkins, with the Deputy Secretary of Education, Ted Sanders, and the Assistant Director for Education and Human Resources of the National Science Foundation (NSF), Luther Williams, serving as vice chairmen. The Committee includes sixteen departments and independent agencies, each represented by a senior policy-level official, generally at the Assistant Secretary level. The CEHR has representation from all Federal agencies with significant responsibilities in the area of science, mathematics, engineering, and technological education, including those with jurisdiction over the education of scientists, mathematicians, and engineers, as well as those with responsibilities for technician training and science literacy for the general public. The Committee also includes those agencies that are major users of scientific and engineering personnel.

SENATE REQUEST (A): MISSION AGENCY EDUCATION OFFICES

This progress report is submitted in response to the Senate Appropriation Committee's request, as set forth in its Report No. 101-474 to accompany H.R. 5158. The request appears on page 114 of the Committee Report:

> The Committee directs the OSTP to guide the mission agencies in establishing and restructuring their offices of education to support science and mathematics education and to make the agencies fully responsive to the FCCSET Education Committee's plan. Also, OSTP shall ensure that each agency's office of education has programs directed at student and teacher segments from K through graduate school.

Summary of Departmental and Agency Actions

Each of these departments and agencies has programs related to mathematics and science education. Descriptions of these programs are provided in the enclosed report, By the Year 2000, First in the World, which was prepared by the Committee on Education and Human Resources. The report includes a separate chapter for each of these departments and independent agency, beginning on page 67 and continuing through page 301. (Although it is not a member of the CEHR, the report includes information about programs of the Barry M. Goldwater Scholarship and Excellence in Education Foundation, which awards undergraduate scholarships for study in the fields of mathematics and the natural sciences.)

The names of the departmental and agency officials who are contacts for mathematics and science education programs are included with the descriptive materials for each agency. In a number of the departments and agencies, there are several offices that share in these responsibilities, and more than one contact is provided where appropriate to facilitate inquiries from educators and the public. Most agencies have programs that span the educational spectrum from kindergarten through graduate school.

SENATE REQUEST (B): LABORATORY-EDUCATION PARTNERSHIPS

This progress report is submitted in response to the Senate Appropriation Committee's request, as set forth in its Report No. 101-474 to accompany H.R. 5158. The request appears on page 115 of the Committee Report:

> The Committee strongly encourages efforts within the Federal Government to strengthen the educational activities of Federal research laboratories. Further, the Committee believes that the OSTP should require all Federal agencies with research and

development activities to establish education offices at each particular Federal laboratory under its control. The goal of such an effort is to improve internal Federal agency science, mathematics and engineering education programs, as well as foster education partnerships between various Federal labs and schools and academic institutions which are located near them. The Committee notes there is a need to coordinate and disseminate information on these programs among the various Federal mission agencies, as well as between the National Science Foundation [NSF] and the Department of Education. Therefore, the Committee directs OSTP to work with the NSF, the Department of Education, and Federal mission agencies to coordinate agency efforts to improve math, science, and engineering education, particularly in the area of developing laboratory education partnerships. The OSTP shall report the status of this effort and the agencies' funding needs for this activity to the Committee by March 15, 1991.

Summary of Departmental and Agency Actions

A number of these departments and agencies have research and development activities that are conducted through in-house and/or sponsored Federal laboratories. Many of the laboratories, particularly the larger ones, have established education offices or have designed certain staff to carry out this function. Furthermore, a number of partnerships between the departments and agencies and their laboratories have been established to bring their resources, especially the expertise of their scientists and engineers, to bear on efforts to improve mathematics, science, and engineering education. Funds to initiate or continue partnership activities are included in each department's and agency's FY 1992 budget request under the President's Initiative.

The CEHR report, By the Year 2000, First in the World, provides descriptions of a number of these partnerships. Mathematics and science education activities conducted by Federal laboratories, including examples of specific partnership agreements for some departments and agencies, are described in the respective chapters for the following departments and agencies:

Department of Agriculture (pages 75-79);

Department of Commerce/National Institute of Standards and Technology (pages 84-85) and National Oceanic and Atmospheric Administration (pages 88-92);

Department of Defense (pages 95-109);

Department of Energy (pages 132-146);

Department of Health and Human Services (pages 153-161);

Department of Housing and Urban Development (pages 161-169);

Department of the Interior (pages 175-181);

Department of Transportation (pages 222-230);

Environmental Protection Agency (pages 255-259);

National Aeronautics and Space Administration (pages 266-271); and

Smithsonian Institution (pages 292-297).

OSTP has worked with the Department of Education, the National Science Foundation, and the mission departments and agencies to further interagency cooperation with the goal of improving mathematics and science education. These activities are summarized in the chapters on the Department of Education (page 118) and the National Science Foundation (page 280).

Under the leadership of OSTP, and with the assistance of the FCCSET Committee on Education and Human Resources, departments and agencies will continue to strengthen their activities related to mathematics and science education. OSTP intends to continue to foster the advances being made in terms of partnerships and in tapping the resources of the Federal laboratories to help improve mathematics and science education. We much appreciate the support for these efforts provided by you and your colleagues and look forward to working with you as we work on this vitally important topic.

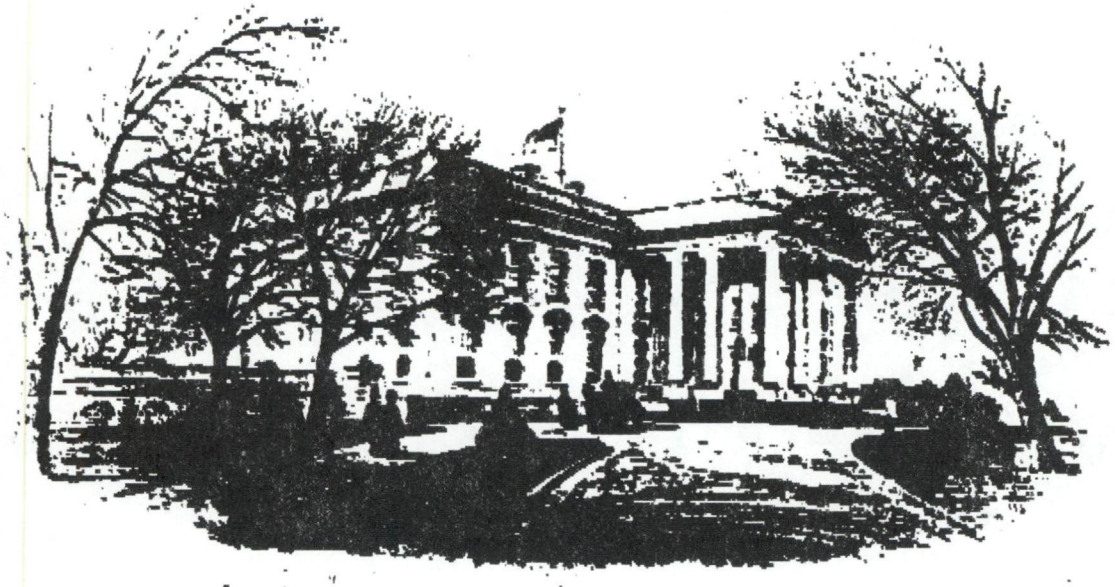
Sincerely,

D. Allan Bromley
Director

Enclosure

The Honorable Barbara A. Mikulski
Chair, Subcommittee on Veterans Affairs,
Housing and Urban Development, and
Independent Agencies
Committee on Appropriations
U.S. Senate
Washington, DC 20510

Executive Office of the President
Office of Legislative Affairs



FACSIMILE TRANSMITTAL SHEET

NUMBER OF PAGES INCLUDING COVER 3

DATE 4/2/91

TO Todd Buckholtz

FAX NUMBER 7739

OFFICE NUMBER _____

COMMENTS _____

FROM Jack Howard

FAX NUMBER _____

OFFICE NUMBER _____

SCIENCE, SPACE, AND TECHNOLOGY

Whereas the Senate has preferred single year authorizations for science and technology programs, the House has preferred multiyear authorizations to provide sound long-term planning of capital intensive projects, and will likely continue to seek such multiyear authorizations.

Emerging Technology Bill--The 101st Congress reached a final agreement on an emerging technology bill, but failed to bring it before both bodies before adjournment. The final agreement (1) set the authorization for the advanced technology program (ATP) at $100.0 million annually with paybacks required and (2) established a National Capital Cost Reduction Commission chaired by the Vice-President with three members appointed by the President, House and Senate. It is likely that this legislation will move through both bodies quickly, provided it is based on the agreement reached at the end of the 101st Congress.

National Atmospheric and Space Administration (NASA) Authorization--Although the House passed a multi-year NASA authorization bill, the final agreement provided funding only through FY 1991 ($15.0 billion). The 102nd Congress will therefore need to provide funding beyond the current fiscal year. As a result of the Report of the Augustine Advisory Committee on the Future of the U.S. Space Program, debate during reauthorization will likely focus on questions of reorganization and reform within NASA, as well as specific project funding.

Space Commercialization Bill--Republican Chairman Walker has submitted legislation designed to bring America's entrepreneurial skills to bear upon the exploration and industrial development of outer space. The bill requires an inventory of federal space launch support facilities which may be surplus to public or national security needs and makes such facilities available for auction to the private sector.

Additionally, the bill: (1) creates commercial space zones; (2) offers tax incentives to the private sector for building space zones and for space launches and manufacturing undertaken from or in such zones; (3) requires the government to procure launch services from the private sector when such services are not related to national security or government-sponsored research; (4) includes antitrust exemptions to permit private sector collaboration in space R&D and production; and (5) authorizes non-federal cash awards for persons who have substantially advanced space transportation, manufacturing, or R&D.

National Oceanic and Atmospheric Administration (NOAA)--Although the House sent two NOAA multi-year reauthorization bills to the Senate during the 101st Congress, neither bill was considered on the Senate floor. The 102nd is expected to take up a multiyear NOAA reauthorization measure providing over $1.0 billion annually for: (1) "dry" NOAA activities; (2) stable, long-term support for weather service modernization including the replacement of aging satellites; and (3) global change research. The Science Committee's standing proposal is consistent with current Commerce Department planning and could serve as the basis for early action.

Environmental Protection Agency (EPA) Research and Development (R&D)--During the 101st Congress, the Committee passed an EPA R&D bill authorizing $409.1 million in FY 1991, increasing to $555.1 million in FY 1993. Because of jurisdictional claims by the Committee on Energy and Commerce, however, the measure failed to reach the House floor. Legislation is to include, among other things: (1) the R&D provisions required under the Clean Air Act (P.L. 101-549); (2) pollution prevention technology R&D; and (3) groundwater and indoor air quality and radon research

Department of Energy (DOE) Civilian Research and Development--During the 101st Congress, the Committee only marked up two civilian DOE R&D programs -- renewables-conservation and the Super Conducting Supercollider (SSC) project. The Committee's jurisdiction over DOE's

civilian energy R&D projects totals over $5.0 billion, yet in the 101st Congress other authorizing legislation was simply not marked up. During the 102nd Congress, the Committee is expected to be more active in authorizing funding for projects within its jurisdiction (e.g., advanced reactor legislation) based on the President's National Energy Strategy.

Uranium Enrichment--It was proposed in the 101st Congress that the Uranium Enrichment program be allowed to operate as a government corporation. The issue of converting the program into a profitable commercial enterprise with an equitable sharing of existing liabilities that protects the taxpayer will once again be considered by the Committee.

SMALL BUSINESS

Procurement--Legislation implementing recommendations for small business procurement programs from a number of White House Conferences on Small Business are anticipated.

Veterans Entrepreneurship Promotion--It is expected that the Veterans Entrepreneurship Promotion Act of 1991 will be reintroduced during this session. The legislation establishes programs to assist in the creation, development, and growth of small business concerns owned and controlled by veterans, targeting these businesses for government contracts as well as private-sector assistance

Oversight Hearings--Oversight hearings are expected to be held regarding the state of a number of SBA programs, especially those related to trade and exports.

Technology--The Committee will examine technological changes in the marketplace as well as the affect of these changes on the SBA and its programs.

VETERANS' AFFAIRS

Cost of Living Adjustment (COLA)--The Committee has made it a top priority to take up legislation related to the disabled veterans COLAs. The Committee anticipates the passage of a clean 5.4% COLA. It has been reported that the leadership is in support of an up-or-down-vote on the COLA which died in the Senate last year.

Agent Orange--The Committee expects to reconsider legislation to compensate those affected by Agent Orange during the Vietnam War. The legislation is likely to be similar to that which passed the House last year.

Soldiers and Sailors Amendments--Due to the need presented by the continuation of Operation Desert Shield, the Committee anticipates amendments to the Soldiers and Sailors Act. This Act provides assistance to those serving in the Armed Forces.

Physicians' Pay--The Committee anticipates legislation providing for more competitive recruiting of physicians and dentists for Veteran's Health care. Also included will be language to streamline nursing pay scales and provide for more equitable labor relations.

WAYS AND MEANS

Simplification of Tax Code--Over the past year the Committee has collected tax simplification recommendations from Treasury, the Majority, the Minority and the Joint Committee on Taxation. It will likely be a top priority this year.

FAXmail FROM: *REPUBLICAN STAFF Office*
FAX Number (202) 225-3170

COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY

U.S. House of Representatives

Date: 4-2-91

TO: Todd Buckholtz At FAX No: 456-7739

ATTN: _____

FROM: Dave Clement
Republican Staff
FAX No. (202) 225-3170

Number of Pages sent: 11
(includes cover sheet)

COMMENTS: _____

Any Problems, call 225-8772 or _____

SUBCOMMITTEE ON INVESTIGATIONS AND OVERSIGHT
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY
Agenda for the 102nd Congress

THEME I: PURSUING EFFICIENCY. For too long conventional wisdom has held that the goals of economic growth and environmental protection are mutually exclusive. However, pollution and wasted energy are simply indications of inefficiency. It should therefore be understood that industrial energy conservation and pollution prevention--both industrial and agricultural--are "win-win" situations: American business becomes more productive and competitive while environmental protection is enhanced.

A. Industrial Energy Conservation. An analysis of the Department of Energy's industrial energy conservation activities will seek to answer a number of questions: What role does industrial energy conservation play in the Administration's National Energy Strategy (NES)? Why does the NES highlight industrial waste reduction in the Industrial Energy Use chapter? What are independent estimates of potential energy savings in the industrial sector? What contribution can increased efficiency make to the competitiveness of U.S. industry? Links between efficiency improvements and pollution prevention will be explored.

B. Pollution Prevention R&D. The passage of the Pollution Prevention Act of 1990 and the anticipated reauthorization of the Resource Conservation and Recovery Act raise numerous questions: Where is EPA targeting its R&D priorities? Do these priorities reflect the passage of the Pollution Prevention Act? Why has DOE placed such an emphasis upon hazardous waste reduction in the NES? What is DOE doing with its waste reduction R&D program? Are these R&D efforts coordinated with EPA? What is the role of waste-to-energy projects in both waste management and energy policy? Are there both hazardous and solid waste reduction issues that should be addressed in the R&D title of RCRA? It is possible that this investigation could lead to a single hearing incorporating the findings of this and the previous entry.

C. Low-Input Agriculture. Both agricultural subsidies and research programs sponsored by USDA encourage the proliferation of large farms which practice monoculture farming and employ chemically intensive techniques. This approach has contributed to the high costs of farming, the demise of small and medium sized farms, and the growing contamination of groundwater supplies. For several years Congress has tried to force USDA to put more resources into the development and promotion of low-input, alternative farming methods less dependent upon intensive use of chemicals and crop specialization and more dependent on post-planting tillage practices. Congress has also encouraged USDA and EPA to cooperate more closely, so that low-input techniques will be taken into account when developing groundwater policies and conducting pesticide reviews. To date, USDA has moved very slowly and reluctantly on low-input farming -- a

3. Oversight of Contractors at Federal Technical Agencies. Because of hiring ceilings, many technical agencies under the Committee's jurisdiction, including NASA, EPA, and DOE, have become increasingly reliant on contractors. The Subcommittee will conduct a series of hearings and investigations on this trend, focused both on the effectiveness of the system in procuring technical products and services and on the ability of the agencies to maintain adequate oversight and accountability for their contractors.

a. For NASA, issues examined will include the effect of recent changes in procurement policies and procedures, GAO studies on cost and schedule overruns in NASA in general and in the Space Station in particular, a recent study by the National Academy of Public Administration on NASA's problems in managing its contractors, and the bias toward "low-bidders" in procurements. Related issues include the ability of technical agencies to attract and retain qualified personnel and the role of independent validation and verification in computer software procurements.

b. For EPA, issues examined will include the use and control of contractors in the formulation and implementation of EPA policies and programs and the emerging scandal of fraud at EPA contract laboratories, whose analyses are used to guide cleanup strategies at CERCLA sites and to support prosecution and claim recovery efforts.

c. The entire DOE complex, most importantly its weapons production facilities and its national laboratories, is managed and operated by private contractors. Historically, these operations have been virtually autonomous, with little management or control exercised by DOE. Moreover, government and agency policies uniformly shielded such contractors from any liability, effectively establishing a situation where there was no accountability or control. The problems associated with such a "least interference" policy have been manifested in a large number of contractor scandals, in addition to numerous management, environmental and safety problems at weapons facilities and national labs. The Subcommittee will be closely monitoring activities at these facilities to ensure that DOE is taking a more direct management role in the operation of its facilities, and that its contractors are adequately performing their assigned duties. The review will also cover DOE reform efforts related to contractor control and accountability, including award fees, indemnification policies, and implementation of Price-Anderson amendments authorizing DOE to levy civil penalties for violation of Department rules.

B. COST ACCOUNTABILITY

1. Superconducting Super Collider. The Subcommittee will hold hearings to investigate several issues related to the SSC: 1) reliability of cost estimates for SSC construction and operations; 2) status of efforts to secure international

perfect example of the "pollution prevention" approach to environmental protection. The Subcommittee will examine the extent and severity of the threat to groundwater posed by agricultural chemical use; the potential economic and environmental benefits of low-input farming; the barriers to widespread implementation of low-input practices, with an accent on EPA/USDA policies and practices; and potential administrative and legislative initiatives which could eliminate those barriers.

THEME II: SEEKING ACCOUNTABILITY. Government agencies are entrusted with billions of dollars to manage and execute increasingly complex environmental and scientific programs and policies. A critical mission of the Subcommittee is to ensure that the agencies under its jurisdiction are making wise and reasonable use of the limited funds available to address these pressing issues. The Subcommittee will focus on the following inter-related areas: management of specific high-cost scientific projects (such as the SSC and the Space Station) and of environmentally critical projects such as the cleanup of the DOE Weapons complex; management and control of contractors hired to perform critical agency functions and to develop agency policies; and agency policies to ensure contractor accountability.

A. CONTRACTOR ACCOUNTABILITY

1. Nuclear Weapons Clean-Up. Estimates of the costs of correcting the environmental and safety problems at DOE weapons plants, and modernizing the facilities to ensure environmental compliance in the future, range as high as $150 billion. In recent years DOE Secretary Watkins has initiated a number of programs and organizational changes designed to improve the "culture" at DOE and to effect an efficient and responsible restoration program. To date, the program has made little measurable headway. The Subcommittee will monitor the Department's policies and programs in these areas to identify problems that are obstacles to thorough and timely cleanup and restoration of the weapons complex and to the development of responsible attitudes and practices towards management and safety.

2. Performance/Liability Issues in NASA Contracting. The CHALLENGER accident and the Hubble Space Telescope highlight the lack of exposure for NASA contractors whose products fail to live up to design specifications. NASA is generally incapable of recovering damages unless fraud is proven. The Subcommittee will investigate the incentives and disincentives that NASA has in place to ensure that its contractors deliver products as promised. The investigation will focus on issues raised by the "NASA Quality Assurance and Contracting Reform Act of 1991" (H.R. 672), on GAO's findings with respect to the Morton-Thiokol settlement on CHALLENGER, on the Inspector General's findings on the Hubble contract, on ongoing studies of "award fees" by IG and GAO, and on investigations by the IG into counterfeit electrical parts.

contributions to the project; 3) technical and management challenges; 4) evaluation of other options for meeting the scientific goals of the SSC, including participation in foreign high-energy physics projects; and 5) effect of SSC funding on other basic fields of science.

2. Space Station. By May of this year, NASA will submit to the Congress its final plan for Space Station redesign. There are a number of critical questions regarding the Station that the Subcommittee may investigate in conjunction with the Space Subcommittee. Is the final design sensible in terms of scientific goals and technological feasibility? Is it a cost-effective expenditure? Have repair time and EVA time been brought under control? Are the cost estimates reliable? Have we honored our international commitments? Has NASA implemented management initiatives as suggested or implied by the Augustine Commission and other observers. What will be done to reduce the bloated management in the program? What is the role if any of advanced launch vehicles in construction of the Station? Are there alternative designs to the Station that should be considered in the short term (e.g., Industrial Space Facility)?

3. Cost Estimations and Cost Controls in NASA. The Augustine Commission found that, by consistently underestimating program costs (e.g., the cost of the Space Station has risen from $8 billion to $38 billion in 6 years), NASA is chronically over-committed in terms of the projects that it is pursuing. A related problem is that NASA also tends to grossly underestimate operational program costs. Shuttle operational costs, for example, are eating up huge amounts of resources that might be available for other projects. In response to these problems, the Commission recommended that an independent cost-analysis group be formed within NASA to provide the Administrator with reliable cost estimates. The Subcommittee will examine NASA's implementation of this recommendation, in addition to recent related studies by the RAND Corporation, the Congressional Budget Office, and NASA. In addition, GAO has produced several studies on life-cycle costs of NASA projects and is scheduled to provide the Committee, within the next few weeks, an historical study of Space Station cost estimates.

C. MANAGEMENT ACCOUNTABILITY

1. NSF/Antarctica. Last year, in response to criticism regarding the environmental impact of U.S. operations in Antarctica, the National Science Foundation launched a Special Initiative for Safety, Environment, and Health in Antarctica. The Subcommittee will undertake a critical review of the effectiveness of this and other programs designed to reverse the growing environmental degradation of the ice-bound continent.

2. Waste Isolation Pilot Plant (WIPP). As the nation's first geologic repository for radioactive waste, WIPP will store transuranic waste from weapons programs. DOE has continually billed WIPP as an "R&D" facility, insisting that a decision on

whether to utilize the facility as a permanent repository will only occur after a five-year testing program. Since 1988, DOE has tried to obtain Congressional authorization to withdraw the land from public use and emplace waste in the facility. However, the project has been plagued by a series of management, technical and scientific difficulties. DOE has been unable to prove that the in-situ tests it wants to conduct will yield data that will be helpful in making a determination on the facility's compliance with EPA radiation protection standards. It has been unable to justify the need for the vast quantities of waste it has proposed to use for its "experimental program". The project management has had difficulty complying with the Department's own Safety Analysis Report requirements to verify that the facility's design is sound and that the construction was carried out as planned. There are questions about compliance with RCRA standards governing land disposal of mixed wastes, and EPA's resolve in enforcing those standards against DOE. WIPP undermines DOE claims that it has sufficiently changed its management style and approach to environmental and safety compliance. The Subcommittee will closely monitor this project to ensure that DOE complies with all regulations and internal requirements before WIPP is allowed to be opened.

THEME III: GOVERNMENT IN THE ENERGY MARKETPLACE. Two-thirds of U.S. petroleum consumption occurs in the transportation sector, while only five percent of oil consumption occurs in the generation of electricity. What federal R&D activities will result in displacing petroleum in the fastest, cheapest, and cleanest manner possible? If increased electrical capacity is in fact required, what federal R&D activities will encourage the most cost-effective and clean technologies to meet demand?

A. New Electric Technologies. Brown-outs are forecast for parts of the U.S. by the end of this decade. What technologies offer the best hope of meeting demand at the lowest economic and environmental costs? What contribution can increased efficiency make in meeting expected demand? How would electricity demand be affected by the widespread use of electric vehicles? What are the priorities of DOE's R&D programs in the electric supply area? Is nuclear electricity the only near-term option for meeting this demand, as recently asserted by Dr. Bromley? Is the administration's heavy emphasis upon nuclear power dictated by hard-headed analysis of the options or by special interest pressure? Could photovoltaics reach the commercial market place sooner than the administration predicts if given additional R&D support?

B. Electric Vehicles R&D. Clean-air requirements and the national debate over energy strategies have highlighted the need for cost-effective electric vehicles. What is the short-term and long-term potential for electric vehicles to displace petroleum in the transportation sector? What progress has been made in

developing promising alternatives to lead-acid batteries? Can government and industry research be effectively coordinated? How is U.S. industry positioned to capture export markets?

C. Energy Forecasting and Policy. Policy makers rely upon forecasts of future energy requirements to establish federal energy R&D priorities. How accurate have these forecasts been over the past 20 years? What is the range of forecasts for the next 40 years? Do these forecasts determine policy, and do desired policy directions influence the forecasts?

D. Uranium Enrichment. The administration and Congressional initiatives propose to restructure the U.S. Uranium Enrichment Enterprise (UEE) in an attempt to make it competitive in the world market. The success of such an effort will be determined by a number of factors: cost; development and implementation of Avlis technology; capacity; and future demand. The subcommittee will carefully review the status of and progress made on each of these factors.

E. Synfuels. The Synthetic Fuels Corporation ceased to exist on April 16, 1986. A multi-billion dollar effort to create a commercial industry from scratch ended a dismal failure. This is the perfect example of how not to displace petroleum use. Five years later, what is the status of the handful of projects funded by the SFC? What has happened to the Great Plains and Dowsyn projects? What is the current status of oil shale development? As we consider a new National Energy Strategy, what lessons can be learned from the SFC fiasco?

THEME IV: THE ROLE OF SCIENCE IN THE REGULATORY PROCESS. "Policy-for-Science" refers to policies and activities that affect the way the scientific enterprise is conducted. An equally important, and often neglected, realm is "science-for-policy", which refers to the ways in which scientific findings and processes are used or abused in the formulation of policy. In a series of hearings, the Subcommittee will examine the interaction of science, economics, and politics in the formulation of public policy.

A. Electromagnetic Fields (EMF). Concern has grown that magnetic fields generated by electrical power lines and appliances may be related to cases of childhood leukemia and cancer in utility workers. In a series of joint hearings with the Environment Subcommittee, the Subcommittee will review current research to determine the level of consensus in the scientific community (including the recent EPA report on EMF and cancer) and will examine the future program of research needed to clarify health effects from exposure to these fields. The hearings will include discussion of research funded by the Electric Power Research Institute and of mitigation techniques.

B. Global Change. The "Global Change Research Act of 1990", an initiative of the Committee, created an interagency U.S. global change research effort and pointed toward the development of effective international linkages in research and in technology transfer. Oversight of the U.S. research program should be undertaken, especially in light of criticisms that land and ocean studies are being squeezed out in favor of the $17 billion space-based Earth Observing System (EOS). While EOS will no doubt produce interesting science, the project is very vulnerable to launch and mission failures and will require an as-yet unproven data management system to be effective. EOS should receive the same level of intense oversight as other "mega-projects" like the Space Station and the SSC. In addition to these research management issues, the linkages between scientific consensus and the U.S. position in international negotiations on climate change should be examined.

C. USGS/Groundwater. The USGS is the repository of expertise and information on geology and hydrology in the U.S. Government. Despite this position, and the resources provided to it each year, the USGS has historically not been used as a source of expertise and advice for the development of policies and regulations to protect groundwater supplies in the U.S. - an increasingly important task. The Subcommittee will review the mission and activities of the USGS to determine if the resources of this agency are being utilized in the most efficient manner.

THEME V: SCIENCE, TECHNOLOGY, AND INTERNATIONAL COMPETITIVENESS. As competition in the international marketplace intensifies (particularly in high-technology areas), there has been a growing appreciation of the importance of science and technology to national competitiveness. A critical factor in competitiveness is the close cooperation between the Federal government, State and local governments, and industry in formulating and implementing effective policies. The Subcommittee will conduct a series of hearings examining the effectiveness of these linkages.

A. Science Education. The subcommittee will explore ways to strengthen science education in America. Special attention will be given to problems facing historically black colleges and universities.

B. Technology Transfer

1. Technology Extension Programs in manufacturing and energy efficiency. Hearings will be held to examine the performance and promise of the extension program approach in the areas of manufacturing technology and industrial energy efficiency. An "extension service" approach promises to be an effective way for the federal government to assist small and medium-sized firms in getting access to expert advice and exposure to the most modern technologies.

2. State Technology Transfer Programs. The Subcommittee will hold hearings on technology transfer efforts by the states, examining both the range of state programs and how states view Federal support -- i.e. what does the federal government do well and what might be done better? How can the federal government shape its emerging technology transfer programs in ways that are responsive and supportive of state efforts?

3. Protecting the federal government's investment in R&D at national labs. The Subcommittee will focus on federal policies and practices governing the transfer of technologies developed at government labs, to ensure that the public's interests and investments are protected and that the potential for conflicts of interest in the direction of future research is eliminated.

C. SEMATECH. Five years ago, Congress authorized the expenditure of $500 million to support a government-industry consortium intended to regain U.S. leadership in semiconductor manufacturing. At the Committee's request, GAO is investigating SEMATECH's progress toward achieving the goals established in 1987, with a final report to be delivered in September. Since SEMATECH could be a model for further cooperation in improving industrial competitiveness, the Subcommittee should evaluate the consortium's success and identify lessons which might be applied to similar efforts in the future.

D. The Relation between Federally Funded Military and Civilian R&D. Hearings may be held to examine: the appropriateness of the balance between military and civilian R&D; the effect of both this balance and of DOD dual-use programs in promoting U.S. competitiveness; budget cuts at DARPA; and the implementation of DOD's environmental R&D initiatives.

E. Export of Renewable Energy Technologies. The Committee on Renewable Energy Commerce and Trade (CORECT) was established under P.L. 98-370 "to assist the U.S. renewable energy industry in developing international markets and to improve the coordination of Federal agency programs relating to industry marketing efforts". Yet overall, the collective efforts of the U.S. government can only be characterized as piecemeal. Successes in funding and exporting projects which are alternatives to fossil fuels are rare, and the global market share of U.S. companies in the renewables market is dwindling. The Subcommittee could convene hearings, in conjunction with the Environment or Technology Subcommittees, to assess renewables exports in general and CORECT in particular. The Subcommittees should consider: 1) how scattered successes in renewables could be leveraged into a comprehensive program of greater scope and impact; 2) policies that might bring about a quantum leap in the number of successful projects initiated by CORECT; and 3) new opportunities for government-industry joint ventures in the area of renewable energy.

F. Internationalization of the Aerospace Industry. The Committee held hearings in the 101st Congress on the proposal to

codevelop a next-generation fighter aircraft with Japan (FSX). Congress later passed a joint resolution disapproving the program on the grounds that the balance in transferred technologies was unfavorable to the United States. President Bush vetoed the resolution. Although commercial aircraft represents one of the few areas where the United States maintains clear competitive advantages in the international economy, U.S. airframe and engine manufacturers are forging closer ties with foreign firms due to the rising costs of development and to the need to protect foreign markets. The Subcommittee should examine Boeing/Japanese cooperation in the 777 and 7J7 development, the agreement between McDonnell-Douglas and Samsung in the Korean Fighter Program, and the dispute between the United States and the European Community involving subsidies to the Airbus consortium, to assure that commercial firms are not seeking short-term advantages at the expense of long-term U.S. economic security.

VI: MISCELLANEOUS ISSUES

Great Lakes Issues. Hearing issues could include: 1) oversight of technology development required for cleaning up contaminated sediments in the Great Lakes, with an emphasis on cleanup costs and amelioration of human health risks; 2) oversight of ecosystem research and control technologies related to exotic species unintentionally released into the Great Lakes (zebra mussel, spiny water flea, and ten others).

Scientific Misconduct. The Subcommittee should continue and enhance its involvement in the issue of scientific misconduct. This involves reviewing NIH and NSF guidelines for investigating misconduct as well as examining legislative solutions to problems related to institution's monitoring of and investigations into scientific misconduct.

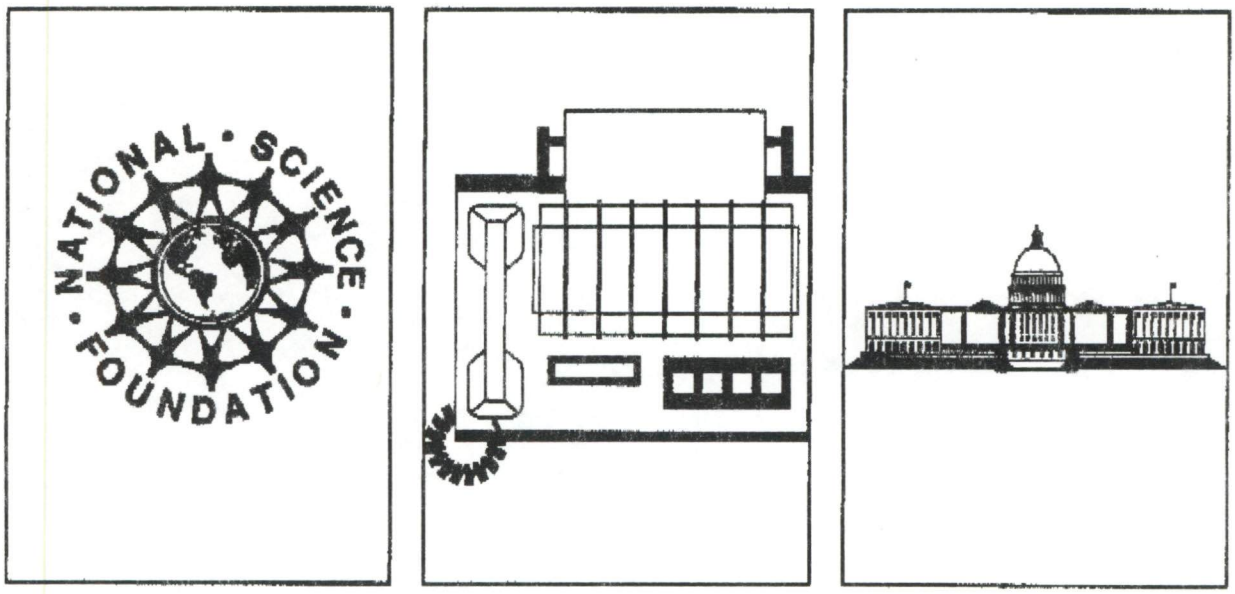
Miscellaneous Space Issues. The Subcommittee could examine a number of space issues, including: 1) need for the space nuclear program, including a review of the recent purchase by DOE of a Soviet space reactor; 2) Space Shuttle issues, including safety, reliability, component fatigue (e.g., the current problem with cracks in fuel line door hinges), operational costs, and the status of "civilians in space"; and 3) the future of the Landsat program.

Aircraft Flight Management Systems. Northwest Airlines is the first U.S. airline to operate the Airbus A-320, a twinjet with new computer-controlled "fly-by-wire" technology. America West is preparing to introduce the A-320 on some of its routes. Some in the computer science community question the safety of these systems, since failure of the digital computers might disconnect the pilot from the aircraft's control surfaces and rudder. American Airlines is not satisfied with the performance of the new McDonnell-Douglas MD-11 it is now testing for certification.

Aircraft manufacturers are applying computers in "glass cockpits" and "fly-by-wire" to assist pilots as airlines reduce crew sizes to save money. Have the airlines considered the "human factors" involved as pilots become passive monitors in the cockpit? Does the FAA certification process for commercial aircraft adequately address the new technologies? Are FAA inspectors ready to deal with next-generation aircraft? The Subcommittee staff is working with GAO to design studies of these questions.

[3/14/91]

NATIONAL SCIENCE FOUNDATION
OFFICE OF LEGISLATIVE AND PUBLIC AFFAIRS



TO: TODD BUCKHOLTZ.....

ADDRESS: WHITE HOUSE ECONOMIC POLICY COUNCIL.....

FAX PHONE: 456-7739..... OFFICE PHONE: 456-7968.....

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FROM: JOEL WIDDER, DIRECTOR, LEGISLATIVE AFFAIRS

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MESSAGE: 14 pages

HOPE THIS INFORMATION IS USEFUL.

NSF AND THE 102nd CONGRESS: ISSUES AND EXPECTATIONS

Significant legislative challenges are facing National Science Foundation in the 102nd Congress (1991-1993). They are subject to unexpected changes in the international arena, the economy, the federal budget, Congress, and its committees.

This article is divided into three parts. Part A describes the budget environment NSF will probably face over the next few years. Part B focuses on the committees with appropriations and oversight responsibilities for NSF, their priorities, and recent changes. Part C describes programmatic issues expected to be considered by the 102nd Congress and how they might impact on NSF.

PART A: THE BUDGET ENVIRONMENT

The FY 1991 budget process concluded on November 5, 1990, over a month after the start of the fiscal year. At that time the President signed into law a deficit reduction bill that is expected to reduce the deficit by more than $40 billion in FY 1991 and by almost $500 billion between FY 1991 and 1995. The deficit reduction bill represented agreements reached between the White House and the Congressional leadership.

What the Budget Agreement is Supposed to Accomplish

The five-year budget agreement seeks to reduce the deficit through a combination of revenue increases ($137.2 billion), outlay reductions ($281.4 billion), and debt service savings. Over one-third of the spending reductions ($99 billion) will come from mandatory programs, including some increased user fees. The remaining two-thirds ($182.4 billion) will come from cuts in discretionary appropriations.

Discretionary spending reductions fall principally on defense, at least for the first three years of the agreement. The summit establishes "spending caps" for FYs 1991, 1992 and 1993 for the three major categories that make up discretionary spending -- defense, non-defense, and international. The agreement sets a single ceiling on total discretionary spending for FYs 1994 and 1995. The ceilings will be enforced by an end-of-session sequester applied across-the-board to any of the three categories which exceed their "spending cap."

FY 1991-93 NON-DEFENSE DISCRETIONARY SPENDING ($ in billions)		
FISCAL YEAR	BUDGET AUTHORITY	OUTLAYS
1991	182.7	198.1
1992	191.1	210.0
1993	198.3	221.7

Implications of the Spending Caps for NSF

The non-defense discretionary spending ceilings enacted as part of the summit are of critical to NSF. This portion of the budget includes not only NSF, but also other high-priority areas, including the space program, environmental protection, transportation, housing, health, energy, research, and education.

Over the next three years, total non-defense discretionary spending will increase by almost $40 billion over the comparable level for FY 1990. However, over $25 billion, or 60%, of this allowable growth was already included in the current FY 1991 budget. This will limit annual incremental growth for ALL non-defense discretionary spending will be limited to only about 5% in budget authority and 6% in outlays in FY 1992, and by only 3.7% in budget authority and 5.6% in outlays in FY 1993.

The limitation on all non-defense discretionary spending impacts the non-defense discretionary allocation that is made to the VA, HUD, and Independent Agencies Appropriation Subcommittee. This Subcommittee funds NSF, NASA, the Housing and Urban Development Department, the Department of Veterans' Affairs, the Environmental Protection Agency, and 17 other agencies.

The Subcommittee -- and consequently many of the agencies within its jurisdiction -- have received major funding increases over the last few years. For example, the Subcommittee's allocation for non-defense discretionary spending increased by more than 20% in FY 1991 to $60.4 billion. This particular subcommittee has responsibility for one-third of all non-defense discretionary programs -- the largest of any non-defense subcommittee. Meanwhile, the average growth in other appropriations subcommittees for non-defense resources was about 15% in FY 1991.

The ability of the Foundation to continue to receive double-digit percentage increases depends upon the increases the VA, HUD, and Independent Agencies Appropriations Subcommittee is able to achieve within the parameters of the budget summit agreement. The Subcommittee anticipates a difficult time ahead, as clearly indicated in its conference report accompanying the FY 1991

appropriations act:

> "The five-year budget agreement assumes an annual growth rate in domestic discretionary spending, and therefore, in the VA, HUD, and Independent Agencies Appropriations bill, of approximately five to seven percent."

PART B: THE CONGRESSIONAL PLAYERS

Traditional and Non-traditional Congressional Audiences

The basic budgetary and programmatic oversight functions are the responsibility of five congressional committees:

- The House and Senate Budget Committees prepare the congressional budget resolution, in which NSF appears under Function 250, "General Science, Space, and Technology." Function 250 also includes NASA and the basic research programs of the Department of Energy (including the Superconducting Super Collider).

- The House and Senate Appropriations Subcommittees on Veterans Affairs, Housing and Urban Development, and Independent Agencies are responsible for preparing NSF's appropriations bills. Other agencies included in the VA/HUD appropriations bill, and hence competitors for subcommittee funds, are the Housing and Urban Development Department, the Veterans' Department, NASA, EPA, and OSTP.

- In the Senate, responsibility for NSF's authorization bills is shared by the Labor and Human Resources Committee and the Commerce, Science, and Transportation Committee. The Labor Committee has primary responsibility for NSF as a whole and sole responsibility for NSF's education and human resource activities. In addition, The Senate Labor and Human Resources Committee has sole responsibility for the confirmation of NSF and NSB nominations. The Commerce Committee has a more limited oversight function, but has been active in some specific areas, such as academic research facilities, global change and high-performance computing.

- Finally, in the House, responsibility for NSF's authorization lies solely with the Committee on Science, Space, and Technology (HSST), which also has responsibility for most of NASA, NIST, EPA's research programs, and the civilian research programs of DOE.

As NSF's visibility has increased in recent years, so has its interactions with other congressional committees. For example,

- Increasing concern over the protection of the Antarctic environment has required that the Foundation work closely with the House Merchant Marine and Fisheries Committee, the House Foreign Affairs Committee, and the Senate Foreign Relations Committee. These contacts will remain important in the 102nd Congress.

- Over the past few years, NSF has participated in hearings and legislative activities of the Senate Rules Committee, the House Education and Labor Committee, the Senate Governmental Affairs Committee, the Joint Economic Committee, and others. Issues have ranged from science education and competitiveness to peer review, scientific fraud and misconduct, and international science.

Changing Chairmen

During the last four years, virtually every committee with jurisdiction over NSF has experienced changes in its leadership. While the pace of change is likely to slow in coming years, the Foundation must continue to work closely with new chairmen and senior members to ensure favorable reception of the agency.

A sample of these leadership changes includes the following:

- Both chairpersons of the House and Senate VA/HUD appropriations subcommittees were replaced within the last three years. In the House, Representative Edward Boland, who chaired the subcommittee for close to 20 years, retired and was replaced by Representative Bob Traxler (D-MI). In the Senate, William Proxmire was replaced two years ago by Senator Barbara Mikulski (D-MD). The chairman of the full Senate Appropriations Committee was replaced two years ago, as Senator John Stennis retired making way for Senator Robert Byrd (D-WV) to assume the chairmanship.

- The chairmen of the House and Senate Budget Committees were both replaced two years ago. The ranking minority member in the House has also recently changed. Today, Representative Leon Panetta (D-CA) and Senator James Sasser (D-TN) head these House and Senate panels, respectively.

- The chairmanship of the House Science, Space and Technology Committee has changed hands three times over the last five years. The most recent change was in December 1990, when Representative George Brown (D-CA) was elected by his colleagues as the Science Committee's new chairman. Mr. Brown replaced Robert Roe (D-NJ), who become chairman of the House Public Works and Transportation Committee.

- The chairmanship of the HSST Subcommittee on Science, Research and Technology, which has primary jurisdiction over

NSF in the House, has changed twice in the last year. Representative Doug Walgren gave up the post for another House Subcommittee chairmanship and was then defeated in the 1990 election. Representative Tim Valentine (D-NC) then assumed the chairmanship, but yielded it to Representative Rick Boucher (D-VA) when the House Science, Space, and Technology Committee reorganized on February 7, 1991.

- The responsibilities of the HSST Science Subcommittee have also changed. In order to distribute the workload among the subcommittees more evenly, Chairman Brown split the science and technology functions of the old Subcommittee on Science, Research and Technology. The science functions, which include primarily NSF, were retained by the new Subcommittee on Science. The technology functions, which include primarily the National Institute of Standards and Technology (NIST), were combined with the old Subcommittee on Transportation, Aviation, and Materials to form the new Subcommittee on Technology and Competitiveness, now chaired by Representative Valentine (D-NC).

The membership roster for each of the Committees/Subcommittees in this new Congress is attached at the end of this report.

Committee Interests

Each committee has its own set of interests and priorities for the National Science Foundation. These priorities are briefly described below, and the issues themselves are addressed in more detail later in this discussion.

Both the House and Senate VA/HUD appropriations subcommittees have historically taken a keen interest in NSF's education and human resources activities, particularly those aimed at the precollege level. The subcommittees typically provide more than NSF's request for these activities, usually targeting additional funds for precollege teacher preparation and enhancement, informal science education, women and minorities programs, and, in FY 1990, the new Statewide Systemic Initiative in math and science education.

The new House Science Subcommittee, which retains jurisdiction over NSF, has a broad range of interests regarding NSF and science policy. In 1990, the Subcommittee contributed to the enactment of the "Excellence in Science, Mathematics, and Engineering Education Act" and reauthorized the interagency National Earthquake Hazards Reduction Program. In 1991, the Subcommittee will likely reopen the existing five year (1989-1993) NSF authorization act for the purpose of making the authorization levels consistent with appropriations, new initiatives, and organizational changes. The Subcommittee continues to be concerned about long-range planning and priority-setting in federal science and

technology policy, the balance between support for individual investigators and multidisciplinary centers, and precollege and undergraduate science education.

The Senate Commerce Subcommittee on Science, Technology, and Space has been particularly interested in high-performance computing, technology policy, and global change. These issues are discussed below in more detail.

Finally, the Senate Labor and Human Resources Committee can be expected to continue its oversight of NSF's math and science education programs, having recently completed a major science education authorization bill. In addition, the Committee will continue to press for more aggressive implementation of the Academic Research Facilities Modernization Act. The Committee views that program, and others, as important for providing all kinds of science institutions, research as well as teaching, with improved access to NSF programs.

PART C: ISSUES AND LEGISLATION

The challenges facing the Foundation are changing. Although some themes, such as competitiveness and science education, will continue to be heard in Congress, their tone will be moderated as new issues, such as the environment, come to the fore.

The idea that research and development is critical for any strategy to improve economic competitiveness is generally accepted. Attention is now turning to the theme of generic or precompetitive technologies. Supporters argue that to be truly competitive, the Nation must do a much better job of more quickly and efficiently getting its research results into practical application. To convince the public and the Congress to increase support for research, many in the Congress are saying it must be shown that U.S. tax dollars spent on research are benefitting U.S. industry and not further fueling the economic expansion of foreign competitors.

What follows is a capsule summary and analysis of various policy and program issues NSF has faced and will probably continue to face as the new Congress opens for business.

NSF Authorization Act

The House Science Subcommittee, which has primary jurisdiction over NSF in the House, is expected to reopen NSF's authorization act in 1991. Although the act does not expire until FY 1993, the Subcommittee may make budgetary adjustments and revisit particular issues.

The authorization act (P.L. 100-570), passed in 1988, is the Foundation's first five-year authorization. The centerpiece of

the act is the doubling of the Foundation's budget by 1993. The act also included a five-year, $892 million authorization to establish an Academic Research Facilities Modernization program. Finally, the act authorized several specific programs, including the Experimental Program to Stimulate Competitive Research (EPSCoR), undergraduate science education activities, and Presidential Awards for Teaching Excellence.

The Science Subcommittee is expected to revise the authorization figures throughout the act. In particular, the science education figures will have to be substantially increased in order to accommodate the rapid growth in this particular program area. Similarly, the authorization for the U.S. Antarctic Program (USAP) may be adjusted to recognize substantial growth occurring in the USAP's Safety, Environmental, and Health Initiative.

The Science Subcommittee will probably also add more detail to the authorizations for the research directorates. The act currently provides line-item authorizations for the individual research directorates until FY 1991, after which time the act authorizes only a single sum for research and related activities. The Subcommittee is expected to add line-item authorizations for FY 1992 and FY 1993 within the total amounts authorized for research and related activities.

As part of the reauthorization process, the Science Subcommittee can be expected to focus on a number of specific issues, which may include the following:

- The need to set priorities in science and the subsequent impacts on the allocation of NSF resources. "Prioritization" is a theme commonly sounded by the Subcommittee, which has long advocated a strong role for the Office of Science and Technology Policy.

- Long-range planning and the effectiveness of the five-year authorization process. NSF advocated passage of a five-year bill based on the need for stability in programs and planning.

- The balance between centers and individual investigator research, and the effectiveness of the centers programs. Like the appropriations subcommittees, the Science Subcommittee has advocated a "go slow" approach toward new centers. In addition, the Subcommittee is likely to request assessments of the first few years of the Science and Technology and Engineering Research Centers programs.

- The state of existing specialized centers, such as astronomy facilities and the National Center for Atmospheric Research. The Science Subcommittee has expressed concerns that NSF is too willing to construct new facilities (e.g., LIGO, the 8-

meter telescopes) without fully funding or upgrading existing facilities.

- Other issues of likely interest to the Science Subcommittee are discussed below. These include interagency initiatives involving high-performance computing, global change, education and human resources, and the relationship of research and development to economic competitiveness.

Education and Human Resources

Education will continue to rank among Congress' highest concerns in science policy. Over thirty pieces of legislation to improve science education were introduced in the last Congress, to say nothing of the many hearings, studies, and other activities that took place. With the passage of a major science education authorization bill in 1990, attention may turn away from new legislation toward oversight of NSF programs and the operation of the interagency FCCSET Committee on Education and Human Resources.

Today Congress generally considers NSF to be the leading federal agency in science and mathematics education. Appropriations for NSF's science education activities have annually increased by 30-40% in recent years, rising 46% in FY 1991 alone. NSF's programs and leadership are highly regarded, and the agency is frequently called to testify before Congress on science education reform.

NSF's leadership in this area was clearly recognized with the passage of the "Excellence in Mathematics and Science Education Act" (P.L. 101-589). Over 82% of the funds authorized in the Act for new and expanded precollege, undergraduate, and graduate science education programs is authorized to NSF. The Act also endorses a number of new initiatives by NSF, including statewide systemic reforms, women and minorities programs, and undergraduate activities.

Science education continues to be an issue of high priority, but Congress' attention will shift away from authorizations and toward appropriations and oversight. Some evidence of this change is being seen already. The House and Senate VA/HUD appropriations subcommittees have requested NSF to prepare a number of reports in 1991 on science education programs, priorities, and management. Among them is a request for NSF to conduct a comprehensive study of the effectiveness of federal science education programs, including those of NSF. In a similar vein, the Senate Governmental Affairs Committee has requested GAO to examine NSF's ability to administer effectively its research and education programs in light of the rapid increases in the Foundation's budget. Similar questions may be asked by the Science Subcommittee during its hearings on the NSF reauthorization.

Congress may also examine the Administration's structure for coordinating federal programs in science education. Legislation had been introduced to create an interagency coordinating committee similar to the FCCSET Committee on Education and Human Resources. Although Congress did not pass the bill, interest in effective interagency coordination is probably undiminished. Such interests could be fueled with the Administration's major interagency science education initiative included in the FY 1992 budget request.

Behavioral and Social Sciences

Several members in the Congress have expressed increasing concern over the perceived inattention by NSF to the behavioral and social sciences. The issue is one that may receive increased attention in the 102nd Congress, especially with the upcoming release of a report by a BBS task force that is expected to call for the creation of a separate directorate for the behavioral and social sciences.

Competitiveness and Technology Policy

During the 1980's, NSF repeatedly stressed the importance of basic research and science education to economic competitiveness. That message has been favorably received by many members in Congress, who have responded by supporting double-digit increases for NSF's budget.

NSF's message is aided by the long-awaited release of the White House's report on "U.S. Technology Policy." This brief report emphasizes the importance of basic research and science education, both areas of strength for NSF. In addition, NSF supports research in all five of the "advanced technologies" listed in the report as necessary for defense and civilian agency needs. One of these areas, high-performance computing, is the subject of a major new initiative in FY 1992, spearheaded by the National Science Foundation. Finally, NSF is working actively with state governments, another important area of interaction identified by the technology policy report.

Congressional interest in technology and applied research is expected to continue. The 101st Congress strongly supported legislation to authorize a three-year, $400-million "Advanced Technology Program" within the Department of Commerce. Last-minute wrangling prevented final passage of the bill, but will very likely be reconsidered in 1991.

Environmental Protection in Antarctica and Impacts on the Research Program

Protection of the Antarctic environment will continue to get

Congressional attention this year. In 1990, Congress enacted legislation that imposed an indefinite ban on minerals development in Antarctic. Having "finished" this work for the time being, Congress has the opportunity to address certain unresolved issues, such as the imposition of U.S. environmental and historic preservation laws on Antarctic operations; creation of an Antarctic "World Park" safe from any development; regulation of tourism and fishing in the region; and a reevaluation of whether NSF is fully capable of operating the U.S. Antarctic program along with all its emerging environmental and regulatory functions.

The results of the meeting of the Antarctic Treaty parties in Chile in November and December 1990 will also affect congressional interest and activities. The meeting was convened to consider environmental issues. Congress may attempt to enact legislation based upon the agreements reached by the treaty parties.

A major debate on the Hill will focus on whether NSF -- a scientific, non-regulatory agency -- can or should run the non-scientific aspects of the Antarctic program. Some members believe that a regulatory agency should be given responsibility for policing compliance with environmental requirements under the Antarctic Conservation Act and other international accords. There is concern that NSF lacks the commitment or resources to carry out this important oversight function.

Some members feel that all domestic U.S. environmental laws should apply wherever federal agencies conduct "major federal actions." The Administration has steadfastly opposed the extension of domestic environmental laws outside the confines of the U.S. NSF, along with the State and Justice Departments, has strongly objected to legislation that would make the National Environmental Policy Act (NEPA) applicable to the Antarctic.

NSF has emphasized that it is in the process of implementing an environmental protection agenda. The Foundation expects to spend $30 million by 1995 to clean up past problems and institute procedures to minimize future impacts on the Antarctic environment. This agenda will be implemented while NSF continues to support important scientific research, including global change, ozone depletion, and other environmental research.

NSF is concerned that NEPA would allow private litigants wishing to limit or prevent human activity in Antarctica to seek injunctions and halt important research projects regardless of NSF's compliance with its current environmental regulations. The potential for court injunctions would also lessen international cooperation among U.S. and foreign scientists.

Oversight of NSF's Internal Operations

The last Congress passed several pieces of legislation to in-

crease openness and disclosure among federal agencies. These acts directly affect NSF's internal operations.

The first is the Federal Financial Management Act. A key feature of this bill is the establishment within each agency of a centralized, coordinated financial management structure, headed by a Chief Financial Officer (CFO) and Deputy CFO. In addition, Congress intends to establish a uniform financial system throughout the federal government. A five-year, government-wide financial management plan is now required, as well as financial statements for revolving funds, trust funds, and commercial operations. NSF's Inspector General currently has the responsibility for auditing these financial statements.

Congress has also become more interested in general oversight over NSF's operations. Currently, the oversight committees are concerned with the ability of the Foundation to administer effectively its expanding budget and responsibilities. GAO has been asked to review NSF's grant management and administration procedures.

NSF will also be affected by any amendments to the Federal Advisory Committee Act (FACA) and regulations subsequently issued by the Office of Government Ethics. Legislation probably will be introduced to tighten controls, accountability, and use of government advisory committees. Due to its merit review process, NSF probably uses more advisory committees than any other federal agency.

Indirect costs remain a major concern for the Foundation. OMB has set out principles and procedures to govern indirect cost calculations. Problems, however, arise with the reliability of cost estimates and tracking. In addition, the scientific community is concerned that indirect costs are draining their research to underwrite university expenses. The Department of Health and Human Services, the Department of Defense, OMB, and five university associations have organized a working group to examine the problems associated with indirect costs. Representative John Dingell (D-MI), Chairman of the House Energy and Commerce Committee, has begun a series of oversight hearings to examine the indirect cost rate issue. The recent controversy surrounding Stanford University will underscore the indirect cost issue.

Global Change and the Environment

The 1990's is witnessing a reawakening of public concern for the environment, with global change being at the top of the list. Congress will expect the Foundation to assume a leadership role in some of these areas.

Congress and the President may disagree over the urgency of responding to global change, but there is no disagreement on the

importance of scientific research to understand this problem. Congress has generally supported the Administration's request for increasing funding in this area.

Congress also strongly supports the Administration's efforts to coordinate federal global change research through the FCCSET process. The organization charged with providing such interagency coordination is the Committee on Earth and Environmental Sciences (CEES). In 1990, Congress passed legislation writing the CEES charter into law, an indication of the importance Congress attaches to this issue and to CEES.

High-Performance Computing and Communications

High-performance computing and communications will receive increased congressional attention in 1991, possibly resulting in a separate authorization for this activity.
For the past several years, NSF and other federal mission agencies, working through FCCSET, have been developing a coordinated, interagency program in high-performance computing. The centerpiece of the program would be the development of a multigigabit National Research and Education Network (NREN) that would link researchers and educators throughout the Nation.

The attention to the NREN and high-performance computing may contribute positively to discussions on NSF's other research and education programs. The NREN will avoid the "big science" stigma, because it will primarily serve individual investigators, including those in the traditionally "have-not" institutions that do not host major research facilities. Furthermore, the NREN will improve scientific and technological productivity, and hence competitiveness. Finally, the NREN will assist NSF's science education and dissemination efforts at the graduate, undergraduate, and possibly even precollege levels.

The NREN's strongest supporter is Senator Al Gore (D-TN), who in 1989 introduced legislation authorizing a multi-agency effort in high-performance computing. Progress on the bill was slowed considerably because of intercommittee wrangling over the leadership of the NREN. The Senate Commerce Committee and the Energy and Natural Resources Committee finally negotiated a compromise bill, which passed the Senate during the last week of the 1990 session -- too late for House action.

Senator Gore and House Science Committee Chairman George Brown (D-CA) have reintroduced the legislation, which is expected to move quickly in 1991.

Federal Organization and Support for Ecological Research

Ecologists have been leading the fight to create a National

Institute for the Environment (NIE). This new agency would primarily fund ecological studies, which some scientists contend has been ignored by other agencies and thus underfunded.

Several bills to establish a NIE were introduced in the last Congress. Although hearings were held in both the House and Senate, the legislation did not move. In the end, Congress appropriated $400,000 to the National Academy of Sciences, through the Environmental Protection Agency, to fund a study in the feasibility of establishing such an Institute. The 18-month study will make recommendations regarding the criteria and mechanisms for supporting basic and applied research and training in the environmental sciences. The annual budget of the Institute is estimated to be approximately $500 million.

The environmental community is sensitive to the fact that ecology research is underfunded but is not overly optimistic that new funds will be forthcoming. There are at least a dozen agencies, including NSF, that already fund environmental research. Questions have been raised as to whether funding for the NIE would merely divert funding from other sources or would duplicate support already offered by NSF to academic researchers. Advocates of the NIE respond that NSF is too dedicated to basic research to support the kind of research that is needed to address pressing environmental problems.