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2d Session }

SENATE }

REPORT
No. 94-622

NATIONAL POLICY, ORGANIZATION, AND PRIORITIES FOR SCIENCE, ENGINEERING, AND TECHNOLOGY ACT OF 1976

FEBRUARY 3, 1976.—Ordered to be printed

Mr. KENNEDY, from the Committee on Labor and Public Welfare, the Committee on Commerce, and the Committee on Aeronautical and Space Sciences, submitted the following

JOINT REPORT

[To accompany S. 32]

The Committee on Labor and Public Welfare, the Committee on Commerce, and the Committee on Aeronautical and Space Sciences, to which was referred the bill (S. 32) to establish a framework for the formulation of national policy and priorities for science and technology, and for other purposes, having considered the same, report favorably thereon with an amendment in the nature of a substitute and recommend that the bill, as amended, do pass.

COMMITTEE AMENDMENT

The amendment is as follows:

That this Act may be cited as the "National Policy, Organization, and Priorities for Science, Engineering, and Technology Act of 1976".

TITLE I—NATIONAL SCIENCE, ENGINEERING, AND TECHNOLOGY POLICY AND PRIORITIES

FINDINGS

SEC. 101. The Congress, recognizing the profound impact of science, engineering, and technology on society, and the interrelations of scientific, engineering, technological, eco-

conomic, social, political, international, and institutional factors, hereby finds that—

(1) Federal funding for science, engineering, and technology represents an investment in the future which is indispensable to sustain national progress and human betterment;

(2) the manpower pool of scientists, engineers, and technicians constitutes an invaluable national resource which should be utilized to the fullest extent possible;

(3) the scientific, engineering, and technological capabilities within the United States, when properly fostered, applied, and directed, can effectively assist in improving the quality of life, in anticipating and resolving many critical and emerging international, national, and local problems, in strengthening America's international economic competitive position, and in furthering the Nation's foreign policy objectives;

(4) strong participation by State and local governments is essential to the successful solution of many civilian problems, and in developing programs for the application of science, engineering, and technology to civilian needs and to setting priorities for civilian research and development activities;

(5) the widespread influence of technology in society requires sound planning and management to meet human needs;

(6) the maintenance and strengthening of diversified scientific, engineering, and technological capabilities in government, industry, and the universities, and the encouragement of independent initiatives based on such capabilities, are essential to the most effective use of science, engineering, and technology in resolving critical and emerging national problems;

(7) a systematic approach is needed to identify and anticipate critical and emerging national problems and to analyze, plan, and coordinate Federal science, engineering, and technology programs, policies, and activities intended to contribute to the resolution of such problems, including long-range, inclusive planning as well as intermediate and short-range program development; and

(8) the effectiveness of scientific, engineering, and technological contributions to the achievement of national goals depends on the maintenance of a strong base of knowledge in science, engineering, and advanced technology together with a resource of highly qualified scientists and engineers.

DECLARATION OF POLICIES AND PRIORITIES

SEC. 102. The Congress declares that it is the continuing policy and responsibility of the Federal Government to take appropriate measures to achieve the following goals:

(1) There must be a continuing national investment in science, engineering, and technology adequate to the needs of the Nation.

(2) The level of this investment must be commensurate with national needs and opportunities and the prevalent economic situation.

(3) The Federal Government must promote the effective and efficient utilization in the national interest of the Nation's human resources in science, engineering, and technology.

(4) The Nation's capabilities for technology assessment and for technological planning and policy formulation must be strengthened at both Federal and State levels.

(5) The Federal investment in science, engineering, and technology must be used to help meet the priority needs of the Nation, including but not limited to—

(A) maintaining the Nation's strength in basic and applied research and education in science and engineering;

(B) assuring widespread dissemination of scientific, engineering, and technological knowledge;

(C) utilizing science, engineering, and technology in support of the Nation's domestic and foreign policy goals;

(D) promoting the conservation and efficient utilization of the Nation's natural and human resources;

(E) providing for the protection of the oceans and the coastal zones, and the efficient utilization of their resources;

(F) strengthening the economy and promoting full employment through useful technological innovations;

(G) assuring an adequate supply of food, materials, and energy for the Nation's needs;

(H) strengthening the national security;

(I) improving the quality of health care available to all United States citizens;

(J) improving the Nation's transportation and communication services;

(K) increasing the quality of educational opportunities available to all United States citizens.

(L) assuring the provision of effective public services throughout urban, suburban, and rural areas in fields such as public safety, firefighting, and sanitation;

(M) developing high-quality, low-cost housing systems;

(N) eliminating air and water pollution and unnecessary, unhealthy, or ineffective drugs and food additives; and

(O) enhancing the quality of the environment.

DECLARATION OF PURPOSE

SEC. 103. It is declared to be the purpose of this Act to promote the effective application of science, engineering, and technology to the furtherance of national goals by—

(1) establishing, in the Executive Office of the President, an Office of Science, Engineering, and Technology Policy to provide a continuing source of science, engineering, and technology policy analysis and judgment to the President;

(2) establishing a State and Regional Science, Engineering, and Technology Program to foster the application of science, engineering, and technology to State and regional needs;

(3) establishing an Interagency Federal Coordinating Group on Science, Engineering, and Technology to coordinate agency research and development efforts; and

(4) having the President submit an annual Science, Engineering, and Technology Report to the Congress.

TITLE II—OFFICE OF SCIENCE, ENGINEERING,
AND TECHNOLOGY POLICY

ESTABLISHMENT

SEC. 201. There is established in the Executive Office of the President an Office of Science, Engineering, and Technology Policy (hereinafter referred to as the "Office").

DIRECTOR

SEC. 202. (a) The Office shall be administered by a Director who shall be appointed by the President, by and with the advice and consent of the Senate, and who shall be compensated at the rate provided for level II of the Executive Schedule in section 5313 of title 5, United States Code.

(b) The President shall choose a Director from among individuals who (1) by reason of their training, experience, and attainments, are exceptionally qualified to analyze and interpret the implications of scientific, engineering, and technological development and to appraise and recommend programs, policies, and activities of the Federal Government in the light of the policies and priorities set forth in section 102 of this Act; and (2) are sensitive to the economic, social, esthetic, and cultural needs and interests of the Nation.

ASSOCIATE DIRECTORS

SEC. 203. (a) The President is authorized to appoint not to exceed four Associate Directors, by and with the advice and consent of the Senate, and who shall be compensated at a rate not to exceed level III of the Executive Schedule in section 5314 of title 5, United States Code.

(b) Any Associate Director appointed by the President shall be chosen from among individuals who (1) by reason of their training, experience, and attainments, are exceptionally qualified to analyze and interpret the implications of scientific, engineering, and technological development and to appraise and recommend programs, policies, and activities of the Federal Government in the light of the policies and priorities set forth in section 102 of this Act; and (2) are sensitive to the economic, social, esthetic, and cultural needs and interests of the Nation.

(c) Any Associate Director appointed by the President shall perform such functions as the Director may from time to time prescribe.

FEDERAL INVESTMENT AND PRIORITIES

SEC. 204. (a) (1) Within its first year of operation, the Office shall, to the extent practicable, within the limitations of available knowledge and resources, prepare a five-year forecast of estimated levels of Federal investment in science, engineering, and technology in accordance with established national policies and priorities, including those policies and priorities declared in section 102 of this Act.

(2) The forecast shall include estimates, for each year included in the forecast, of the allocation of Federal funds among major expenditure areas in science, engineering, and technology.

(b) The Office shall annually revise the five-year forecast developed under subsection (a) of this section so that it takes appropriate account of changing national needs and circumstances, and extend the forecast so that it always extends five years into the future.

(c) The Office shall annually appraise progress in science, engineering, and technology in relation to the needs of the Nation and the five-year forecasts developed under subsections (a) and (b) of this section and shall estimate a range of options for various levels of Federal investment in science, engineering, and technology for the fiscal year immediately following the fiscal year in which such estimates are made, including among the options that level of Federal investment which would assure optimum utilization of the Nation's science, engineering, and technology resources.

(d) The Office shall annually assess alternative uses of Federal funds for science, engineering, and technology in relation to scientific, engineering, and technical opportunities and national needs and the five-year forecasts developed under subsections (a) and (b) of this section, and on the basis thereof shall prepare a range of priority options for allocating Federal funds among major expenditure areas in science, engineering, and technology, which pertain to the fiscal year immediately following the fiscal year in which such priorities are prepared.

(e) The Director shall furnish the options prepared under subsections (c) and (d) of this section, together with necessary supporting analyses and data, to the Office of Management and Budget for use in developing budget recommendations to the President.

POLICY PLANNING, ANALYSIS, AND ADVICE

SEC. 205. The Office shall serve as a source of scientific, engineering, and technological analysis and judgment for the President with respect to major policies, plans, and programs of the Federal Government. In carrying out this function, the Director shall—

(1) seek to define coherent approaches for applying science, engineering, and technology to critical and emerging national and international problems and for promoting coordination of the scientific, engineering, and technological responsibilities and programs of the Federal departments and agencies in the resolution of such problems;

(2) assist and advise the President in the preparation of the Science, Engineering, and Technology Report, in accordance with section 208 of this Act;

(3) gather timely and authoritative information concerning significant developments and trends in science, engineering, technology, and in national priorities, both current and prospective, to analyze and interpret such information for the purpose of determining whether such developments and trends are likely to affect achievement of the priority needs set forth in section 102(5) of this Act;

(4) encourage the development and maintenance of an adequate data base for human resources in science, engineering, and technology, including the development of appropriate models to forecast future manpower requirements, and assess the impact of major governmental and public programs on human resources and their utilization;

(5) initiate studies and analyses, including systems analyses and technology assessments, of alternatives available for the resolution of critical and emerging national and international problems amenable to the contributions of science, engineering, and technology and, insofar as possible, determine and compare probable costs, benefits, and impacts of such alternatives;

(6) advise the President on the extent to which the various scientific and technical programs, policies, and activities of the Federal Government are likely to affect the achievement of the priority needs of the Nation as set forth in section 102(5) of this Act;

(7) provide the President with periodic reviews of Federal statutes and administrative regulations of

the various departments and agencies which affect research and development activities, both internally and in relation to the private sector, or which may interfere with desirable technological innovation, together with recommendations for the elimination, reform, or updating, as appropriate, of such statutes and regulations;

(8) develop, review, revise, and recommend criteria for determining scientific, engineering, and technological activities warranting Federal support, and recommend Federal policies designed to advance (A) the development and maintenance of broadly based scientific, engineering, and technological capabilities, including human resources, at all levels of government, academia, and industry, and (B) the effective application of such capabilities to national needs;

(9) assess and advise on policies for international cooperation in science, engineering, and technology which will advance the national and international objectives of the United States;

(10) identify and assess emerging and future areas in which science, engineering, and technology can be used effectively in addressing national and international problems;

(11) report at least once each year to the President on the overall activities and accomplishments of the Office, pursuant to section 208 of this Act; and

(12) perform such other duties and functions and make and furnish such studies and reports thereon, and recommendations with respect to matters of policy and legislation as the President may request.

ADDITIONAL FUNCTIONS OF THE DIRECTOR

SEC. 206. (a) The Director shall, in addition to the other duties and functions set forth in this title—

(1) serve as Chairman of the Federal Coordinating Group for Science, Engineering, and Technology established under title IV;

(2) serve as a member of the Domestic Council; and

(3) serve as a member of the Intergovernmental Science, Engineering, and Technology Advisory Panel established under title V of this Act.

(b) For the purpose of assuring the optimum contribution of science, engineering, and technology to the national security, the Director, at the request of the National Security Council, shall advise the National Security Council in such matters concerning science, engineering, and technology as relate to national security.

(c) The Director, in order to fulfill his functions under this title, is authorized to—

(1) appoint, assign the duties, and fix the compensation of personnel without regard to the provisions of title

5, United States Code, governing appointments in the competitive service, and without regard to the provisions of chapter 51 and subchapter III of chapter 53 of such title, relating to classification and General Schedule pay rates, at rates not in excess of the rate prescribed for GS-18 of the General Schedule under section 5332 of such title; and

(2) enter into contracts and other arrangements for studies, analyses, and other services with public agencies and with private persons, organizations, or institutions, and make such payments as he deems necessary to carry out the provisions of this Act without legal consideration, without performance bonds, and without regard to section 3709 of the Revised Statutes (41 U.S.C. 5).

COORDINATION WITH OTHER ORGANIZATIONS

SEC. 207. (a) In exercising his functions under this title, the Director shall—

(1) work in close consultation and cooperation with the Domestic Council, the National Security Council, the Council on Environmental Quality, the Council of Economic Advisers, the Office of Management and Budget, and the Federal departments and agencies;

(2) utilize the services of consultants, establish such advisory panels, and, to the extent practicable, consult with State and local governmental agencies, with appropriate professional groups, and with such representatives of industry, the universities, agriculture, labor, consumers, conservation organizations, and such other public interest groups, organizations, and individuals as he deems advisable;

(3) hold such hearings in various parts of the Nation as he deems necessary, to determine the views of the agencies, groups, and organizations referred to in paragraph (2) of this subsection and of the general public, concerning national needs and trends in science, engineering, and technology; and

(4) utilize with their consent to the fullest extent possible the services, personnel, equipment, facilities, and information (including statistical information) of public and private agencies and organizations, and individuals, in order to avoid duplication of effort and expense, and may transfer funds made available pursuant to this act to other Federal agencies as reimbursement for the utilization of such personnel, services, facilities, equipment, and information.

(b) Each department, agency, and instrumentality of the Executive Branch of the Government, including any independent agency, is authorized to furnish the Director such information as the Director deems necessary to carry out his functions under this title.

(c) Upon request, the Administrator of the National Aeronautics and Space Administration is authorized to assist the Director with respect to carrying out his activities conducted under paragraph (5) of section 205 of this Act.

SCIENCE, ENGINEERING, AND TECHNOLOGY REPORT

SEC. 208. (a) The President shall transmit annually to the Congress, beginning February 15, 1977, a Science Engineering, and Technology Report (hereinafter referred to as the "Report") which shall be prepared by the Office, with appropriate assistance from the departments and agencies and such consultants and contractors as the Director deems necessary. The report shall include the estimates on Federal investment level and proposed priorities in science, engineering, and technology, prepared by the Director pursuant to section 204 of this Act, and to the extent practicable, within the limitations of available knowledge and resources, include such issues as—

(1) a review of developments of national significance in science, engineering, and technology;

(2) the significant effects of current and projected trends in science, engineering, and technology on the social, economic, and other requirements of the Nation;

(3) a review and appraisal of selected science-, engineering-, and technology-related programs, policies, and activities of the Federal Government;

(4) an inventory and forecast of critical and emerging national problems the resolution of which might be substantially assisted by the application of science, engineering, and technology;

(5) the identification and assessment of scientific, engineering, and technological measures that can contribute to the resolution of such problems, in light of the related social, economic, political, and institutional considerations;

(6) the existing and projected scientific, engineering, and technological resources, including specialized manpower, that could contribute to the resolution of such problems; and

(7) recommendations for legislation on science, engineering-, and technology-related programs and policies that will contribute to the resolution of such problems.

(b) In preparing the Report under subsection (a) of this section, the Office shall make maximum use of relevant data available from the National Science Foundation and other government departments and agencies.

(c) The Director shall insure that the Report, in the form approved by the President, is printed and made available as a public document.

TITLE III—PRESIDENT'S ADVISORY COMMITTEE ON SCIENCE, ENGINEERING, AND TECHNOLOGY

ESTABLISHMENT

SEC. 301. The President is authorized to establish within the Executive Office of the President a President's Advisory Committee on Science, Engineering, and Technology (hereinafter referred to as the "Committee").

MEMBERSHIP

SEC. 302. (a) The Committee shall consist of—

(1) the Director of the Office of Science, Engineering, and Technology Policy established under title II of this Act; and

(2) not less than eight nor more than fourteen other members appointed by the President.

(b) Members of the Committee appointed by the President pursuant to subsection (a) (1) of this section shall—

(1) be exceptionally qualified and distinguished in science, engineering, technology, information dissemination, education, management, labor, or public affairs;

(2) be highly capable of critically assessing the policies, priorities, programs, and activities of the Nation, with respect to the findings, policies, and purposes set forth in title I; and

(3) shall collectively constitute a balanced composition with respect to (A) fields of science and engineering, (B) academic, industrial, and government experience, and (C) business, labor, consumer, and public interest points of view.

(c) The President shall appoint one member of the Committee to serve as Chairman and another member to serve as Vice Chairman for such periods as the President may determine.

(d) Each member of the Committee who is not an officer of the Federal Government shall, while serving on business of the Committee, be entitled to receive compensation at a rate not to exceed the daily rate prescribed for GS-18 of the General Schedule under section 5332 of title 5, United States Code, including traveltime, and while so serving away from his home or regular place of business he may be allowed travel expenses, including per diem in lieu of subsistence, in the same manner as the expenses authorized by section 5703(b) of title 5, United States Code, for persons in Government service employed intermittently.

FEDERAL SCIENCE, ENGINEERING, AND TECHNOLOGY SURVEY

SEC. 303. (a) The Committee shall survey, examine, and analyze the overall context of the Federal science, engineering, and technology effort including missions, goals, personnel,

funding, organization, facilities, and activities in general, taking adequate account of the interests of individuals and groups that may be affected by Federal scientific, engineering, and technical programs, including, as appropriate, consultation with such individuals and groups. In carrying out its functions under this section, the Committee shall consider needs for—

(1) the establishment of such new departments, agencies, offices, or other organizations as may serve to strengthen the Nation's scientific, engineering, and technical capabilities and increase the effectiveness of their application to the solution of national problems;

(2) improvements in existing systems for handling scientific, engineering, and technical information on a Government-wide basis, including consideration of the appropriate role to be played by the private sector in the dissemination of such information;

(3) improved technology assessment in the executive branch of the Federal Government;

(4) improved methods for effecting technology innovation, transfer, and use;

(5) stimulating more effective Federal-State and Federal-industry liaison and cooperation in science, engineering, and technology;

(6) reduction and simplification of Federal regulations and administrative practices and procedures which may have the effect of retarding technological innovation or opportunities for its utilization;

(7) a broader base for support of basic research;

(8) ways of strengthening the Nation's academic institutions' capabilities for research and education in science, engineering, and technology;

(9) ways and means of effectively integrating scientific, engineering, and technical factors into our national and international policies;

(10) technology designed to meet community and individual needs;

(11) maintenance of adequate scientific, engineering, and technological manpower with regard to both quality and quantity;

(12) improved systems for planning and analysis of the Federal science, engineering, and technology programs; and

(13) long-range study, analysis, and planning in regard to the application of science, engineering, and technology to major national problems or concerns.

(b) (1) Within one year of the appointment of a majority of its members, the Committee shall submit a report to the President of its activities, findings, conclusions, and recommendations including such supporting data and material as may be necessary.

(2) After appropriate review of the report submitted under paragraph (1) of this subsection, the President shall transmit the report to the Congress, together with any recommendations he may wish to make concerning its findings.

CONTINUATION OF COMMITTEE

SEC. 304. (a) Ninety days after transmission of the report prepared under section 303, the Committee shall cease to exist unless the President, before the expiration of the ninety-day period, makes a determination that it is advantageous for the Committee to continue in being.

(b) If the President determines that it is advantageous for the Committee to continue in being, (1) the Committee shall continue in being and shall exercise such functions as are prescribed by the President; and (2) the members of the Committee shall serve at the pleasure of the President.

STAFF AND CONSULTANT SUPPORT

SEC. 305. (a) In the performance of its functions under sections 303 and 304, the Committee is authorized—

(1) to select, appoint, employ, and fix the compensation of such specialists and other experts as may be necessary for the carrying out of its functions under this Act, in accordance with section 3109 of title 5, United States Code (but without regard to the last sentence thereof);

(2) to appoint, assign the duties, and fix the compensation of personnel without regard to the provisions of title 5, United States Code, governing appointments in the competitive service, and without regard to the provisions of chapter 51 and subchapter III of chapter 53 of such title, relating to classification and General Schedule pay rates, at rates not in excess of the rate prescribed for GS-18 of the General Schedule under section 5332 of such title; and

(3) to provide for the participation of such civilian and military personnel as may be detailed to the Committee pursuant to subsection (b) of this section for carrying out the functions of the Committee.

(b) Upon request of the Committee, the head of any Federal department, agency, or instrumentality is authorized (1) to furnish to the Committee such information as may be necessary for carrying out its functions and as may be available to or procurable by such department, agency, or instrumentality, and (2) to detail to temporary duty with the Committee on a reimbursable basis such personnel within his administrative jurisdiction as it may need or believe to be useful for carrying out its functions. Each such detail shall be without loss of seniority, pay, or other employee status, to civilian employees so detailed, and without loss of status,

rank, office, or grade, or of any emolument, perquisite, right, privilege or benefit incident thereto to military personnel so detailed. Each such detail shall be made pursuant to an agreement between the Chairman and the head of the relevant department, agency, or instrumentality, and shall be in accordance with the provisions of subchapter III of chapter 33, title 5, United States Code.

TITLE IV—FEDERAL COORDINATING GROUP FOR SCIENCE, ENGINEERING, AND TECHNOLOGY

ESTABLISHMENT AND FUNCTIONS

SEC. 401. (a) There is established the Federal Coordinating Group for Science, Engineering, and Technology (hereinafter referred to as the "Group").

(b) The Group shall be composed of the Director of the Office of Science, Engineering, and Technology Policy and one representative of each of the following Federal agencies: Department of Agriculture, Department of Commerce, Department of Defense, Department of Health, Education, and Welfare, Department of Housing and Urban Development, Department of the Interior, Department of State, Department of Transportation, Veterans' Administration, Nuclear Regulatory Commission, National Aeronautics and Space Administration, National Oceanic and Atmospheric Administration, National Science Foundation, Environmental Protection Agency, and Energy Research and Development Administration. Each such representative shall be an official of policy rank designated by the head of the Federal agency concerned.

(c) The Director of the Office of Science, Engineering, and Technology Policy shall serve as Chairman of the Group. The Chairman may make provision for another member of the Group to act temporarily in the Chairman's absence as Chairman of the Group.

(d) The Chairman may (1) request the head of any Federal agency not named in subsection (b) of this section to designate a representative to participate in meetings or parts of meetings of the Group concerned with matters of substantial interest to such agency, and (2) invite other persons to attend meetings of the Group.

(e) The Group 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 of research requiring additional emphasis,

(3) achieve more effective utilization of the scientific, engineering, and technological resources and facilities of Federal agencies, including the elimination of unnecessary duplication, and

(4) further international cooperation in science, engineering, and technology.

(f) The Group shall perform such other related advisory duties as shall be assigned by the President or by the Chairman.

(g) For the purpose of carrying out the provisions of this section, each Federal agency represented on the Group shall furnish necessary assistance to the Group. Such assistance may include—

(1) detailing employees to the Group to perform such functions, consistent with the purposes of this section, as the Chairman may assign to them, and

(2) undertaking, upon request of the Chairman, such special studies for the Group as come within the functions herein assigned to the Group.

(h) For the purpose of conducting studies and making reports as directed by the Chairman, standing subcommittees and panels of the Group may be established.

ABOLITION OF FEDERAL COUNCIL FOR SCIENCE AND TECHNOLOGY

SEC. 402. The Federal Council for Science and Technology, established pursuant to Executive Order 10807, issued March 13, 1959, as amended by Executive Order 11381, issued November 8, 1967, is hereby abolished.

TITLE V—STATE AND REGIONAL SCIENCE AND TECHNOLOGY PROGRAM

ESTABLISHMENT OF INTERGOVERNMENTAL SCIENCE, ENGINEERING, AND TECHNOLOGY ADVISORY PANEL

SEC. 501. (a) There is established within the Office an Intergovernmental Science, Engineering, and Technology Advisory Panel (hereinafter referred to as the "Panel").

(b) The Panel shall be composed of members as follows:

(1) One member from each State, to be appointed by the Governor of that State.

(2) The Director of the National Science Foundation or his representative.

(3) The Director or his representative.

In making appointments under this subsection, the Governor of each State shall appoint individuals who are familiar with State and local needs, who would be effective in serving as a liaison between the State and the Federal Government, and, to the extent practicable, are familiar with science, engineering, and technology issues.

(c) Each appointed member of the Panel shall, while serving on business of the Panel, be entitled to receive com-

ensation at a rate not to exceed the daily rate prescribed for GS-18 of the General Schedule under section 5332 of title V, United States Code, including traveltime, and while so serving away from his home or regular place of business, he may be allowed travel expenses, including per diem in lieu of subsistence in the same manner as the expenses authorized by section 5703(b) of title V, United States Code, for persons in Government service employed intermittently.

(d) The Director, or his representative, shall serve as Chairman of the Panel.

(e) The Panel shall perform such functions as the Chairman may prescribe, and shall meet at the call of the Chairman.

FUNCTIONS OF THE PANEL

SEC. 502. (a) The Panel shall advise and assist the Director in—

(1) identifying and defining civilian problems at the State, regional, and local levels to whose solution or amelioration the application of science, engineering, and technology may contribute;

(2) establishing priorities for addressing the problems identified in paragraph (1); and

(3) identifying and fostering ways to facilitate the transfer and utilization of results of Federal research and development activities so as to maximize their application to civilian needs.

GRANTS FOR STATE SCIENCE, ENGINEERING, AND TECHNOLOGY ADVISORY PROGRAMS

SEC. 503. (a) From funds authorized under section 602 of this title, the Director of the National Science Foundation, after consultation with the Panel, is authorized to make grants of not to exceed \$200,000 to any State to pay a part of the costs of establishing or strengthening offices of State science, engineering, and technology within the executive and legislative branches of the State government.

(b) The purpose of any such office shall be to promote the wise application of science, engineering, and technology to meeting the needs of the State and its political subdivisions, by providing assistance and advice to the Governor or the legislature of such State, as appropriate.

(c) No grant authorized under this section for the establishment or strengthening of an office of State science, engineering, and technology may exceed \$100,000.

(d) No grant may be authorized under this section unless an application is submitted at such time, in such manner, and containing or accompanied by such information as the Director of the National Science Foundation shall require. Each such application shall contain provisions to assure that—

(1) the office for which assistance is sought under the application will (A) be headed by an official who, by rea-

son of education and experience, is qualified to advise the Governor or legislature of a State, as appropriate, on the application of science, engineering, and technology to meeting the needs of the State and its political subdivisions, and (B) have sufficient authority, consistent with State law, to carry out any functions assigned to that office pursuant to this title; and

(2) it is the applicant's stated intention that the State will assume the costs of any office established or strengthened pursuant to this title not later than two years after the year in which the grant is made.

(e) The Director of the National Science Foundation shall approve any application which meets requirements of subsection (d) of this section, and shall not disapprove any application without affording an opportunity for a hearing.

(f) (1) The Director of the National Science Foundation shall pay to each State having an application approved under subsection (e) of this section the Federal share of the cost of that application.

(2) For each fiscal year the Federal share shall be 80 per centum.

(3) Any application submitted pursuant to this section shall not be funded unless such application is submitted to the Director of the National Science Foundation prior to thirty-six months after the date of enactment of this Act.

TITLE VI—GENERAL PROVISIONS

DEFINITIONS

SEC. 601. As used in this Act:

(1) The term "Office" means the Office of Science, Engineering, and Technology Policy.

(2) The term "Director" means the Director of the Office of Science, Engineering, and Technology Policy.

(3) The term "Committee" means the President's Advisory Committee on Science, Engineering, and Technology.

(4) The term "Group" means the Federal Coordinating Group for Science, Engineering, and Technology.

(5) The term "Panel" means the Intergovernmental Science, Engineering, and Technology Advisory Panel.

(6) The term "Foundation" means the National Science Foundation.

(7) The term "State" means each of the several States, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, and the Trust Territory of the Pacific Islands.

AUTHORIZATION OF APPROPRIATIONS

SEC. 602. (a) There are authorized to be appropriated \$4,000,000 for the fiscal year 1976, of which \$1,000,000 shall

be available to carry out the provisions of title II, \$1,000,000 shall be available to carry out the provisions of title III, and \$2,000,000 shall be available to carry out the provisions of title V; \$1,500,000 for the period beginning July 1, 1976, and ending September 30, 1976, of which \$250,000 shall be available to carry out the provisions of title II, \$250,000 shall be available to carry out the provisions of title III, and \$1,000,000 shall be available to carry out the provisions of title V; and \$12,000,000 for the fiscal year 1977, of which \$3,000,000 shall be available to carry out the provisions of title II, \$1,000,000 shall be available to carry out the provisions of title III, and \$8,000,000 shall be available to carry out the provisions of title V.

(b) Funds appropriated pursuant to subsection (a) of this section shall remain available for obligation, for expenditure, or for obligation and expenditure, for such period or periods as may be specified in Acts making such appropriations.

REPEALER

SEC. 603. Sections 1, 2, 3, and 4 of Reorganization Plan Numbered 2 of 1962 (76 Stat. 1253) and section 2 of Reorganization Plan Numbered 1 of 1973 (87 Stat. 1089) are repealed.

SUMMARY OF BILL

GENERAL

This Act establishes a framework for the formulation of national policy and priorities for science and technology, including the establishment of an Office of Science, Engineering, and Technology Policy in the Executive Office of the President.

TITLE I

DECLARATION OF POLICY

Title I establishes as national policy that: (a) there must be a continuing investment in science and technology directed toward the priority needs of the nation; (b) the technical manpower pool is an invaluable national resource that should be fully utilized; and (c) capabilities for technology assessment, planning, and policy formulation must be strengthened at both Federal and State levels. Title I also sets forth fifteen priority areas for allocation of the Federal investment in science and technology.

TITLE II

OFFICE OF SCIENCE, ENGINEERING, AND TECHNOLOGY POLICY

Title II establishes an Office of Science, Engineering, and Technology Policy in the Executive Office of the President, administered by a Director (at Level II of the Executive Schedule), appointed by

and with the advice and consent of the Senate. The President is authorized to appoint up to four Associate Directors (at Level III of the Executive Schedule), also with Senate confirmation.

The Office shall: prepare and annually update a five-year forecast of Federal investment in science and technology, including estimates of the allocation of Federal funds among major expenditure areas; annually estimate a range of options for various levels of Federal investment in science and technology, including a range of priority options for allocating Federal funds among major expenditure areas; and furnish the options to the Office of Management and Budget for use in developing budget recommendations to the President.

The Office shall provide the President with a continuing source of policy planning, analysis, and advice with respect to major policies, plans, and programs of science and technology of the Federal government.

The Director of the Office shall chair the Federal Coordinating Group for Science, Engineering, and Technology (established under Title IV) and the Intergovernmental Science, Engineering, and Technology Advisory Panel (established under Title V); shall serve as a member of the Domestic Council; and as an adviser to the National Security Council. The Director shall coordinate the work of the Office with the Domestic Council, NSC, CEQ, CEA, OMB, and the departments and agencies.

The Office shall prepare an annual Report on Science, Engineering, and Technology which the President shall transmit to the Congress.

TITLE III

PRESIDENT'S ADVISORY COMMITTEE ON SCIENCE, ENGINEERING, AND TECHNOLOGY

Under Title III, the President shall appoint an Advisory Committee of between 9 and 15 members, including the Director of the Office. The Committee shall conduct a comprehensive survey of Federal science and technology, and submit a report thereon to the President within one year. After receipt of the report, the Committee shall expire unless the President deems it advantageous to continue the Committee as an ongoing Advisory Committee.

TITLE IV

FEDERAL COORDINATION GROUP FOR SCIENCE, ENGINEERING, AND TECHNOLOGY

Title IV redesignates the Federal Council for Science and Technology as the Federal Coordinating Committee for Science, Engineering, and Technology, and gives it the statutory authority to coordinate Federal plans and programs in science and technology. The Director of the Office is designated as Chairman of this Group.

TITLE V

STATE AND REGIONAL SCIENCE, ENGINEERING, AND TECHNOLOGY PROGRAM

Title V establishes an Intergovernmental Science, Engineering, and Technology Advisory Panel to advise the Director in establishing priorities for addressing civilian problems at State, regional, and local levels which science and technology can help resolve. This title also establishes a State Science, Engineering, and Technology Program within the National Science Foundation to make grants of up to \$200,000 to any State to enable it to establish or strengthen Offices of Science, Engineering, and Technology within the executive or legislative branches of State governments, provided that the State provides matching funding on an 80% Federal, 20% State basis.

TITLE VI

AUTHORIZATION OF APPROPRIATIONS

Title VI authorizes \$4,000,000 for fiscal year 1976; \$1,500,000 for the period from July 1 through September 30, 1976; and \$12,000,000 for fiscal year 1977.

SECTION-BY-SECTION ANALYSIS

TITLE I—NATIONAL SCIENCE, ENGINEERING, AND TECHNOLOGY POLICY AND PRIORITIES

FINDINGS

Section 101. This section states the findings of Congress that: Federal funding for science and technology is an investment in the nation's future; the technical manpower pool is an invaluable national resource which should be fully utilized; strong participation by State and local governments is essential; diversified technical capabilities in government, industry, and the universities are essential; and a systematic approach is needed, including long-range planning, as well as intermediate and short-range program development.

DECLARATION OF POLICIES AND PRIORITIES

Section 102. This section declares it to be national policy that: there be a continuing investment in science and technology adequate to national needs; that the Federal Government must promote the utilization in the national interest of the Nation's human resources in science, engineering, and technology; capabilities for technology assessment, planning, and policy formulation must be strengthened of both Federal and State levels; the Federal investment in science and technology must be addressed to the priority needs of the Nation, including (a) national strength in research and education, (b) dissemination of technical knowledge, (c) utilizing science and technol-

ogy in support of national goals, (d) promoting conservation and efficient utilization of natural and human resources, (e) protecting the oceans and coastal zones, (f) strengthening the economy and promoting full employment, (g) assuring adequate supplies of food, materials, and energy, (h) strengthening national security, (i) improving the quality of health care, (j) improving transportation and communication services, (k) increasing educational opportunities, (l) assuring effective public services, (m) developing high-quality, low-cost housing, (n) eliminating air and water pollution and unhealthful drugs and food additives, and (o) enhancing environmental quality.

DECLARATION OF PURPOSE

Section 103. This section declares the purpose of this Act to: (1) establish an Office of Science, Engineering, and Technology Policy in the Executive Office of the President; (2) establish a State and Regional Science, Engineering, and Technology Program; (3) establish an Interagency Federal Coordinating Group on Science, Engineering, and Technology; and (4) require the President to submit an annual Science, Engineering, and Technology Report to Congress.

TITLE II—OFFICE OF SCIENCE, ENGINEERING, AND TECHNOLOGY POLICY

ESTABLISHMENT

Section 201. This section establishes an Office of Science, Engineering, and Technology Policy in the Executive Office of the President.

DIRECTOR

Section 202. This section states that the Office shall be administered by a Director, appointed by President with the advice and consent of the Senate and compensated at the rate provided for level II of the Executive Schedule.

ASSOCIATE DIRECTORS

Section 203. This section authorizes the President to appoint with the advice and consent of the Senate, up to four Associate Directors, compensated at a rate not to exceed level III of the Executive Schedule.

FEDERAL INVESTMENT AND PRIORITIES

Section 204. This section states that the Office shall: prepare and annually update a five-year forecast of Federal investment in science, and technology, including estimates of the allocation of Federal funds among major expenditure areas; annually estimate a range of options for various levels of Federal investment in science and technology, including a range of priority options for allocating Federal

funds among major expenditure areas; and furnish the options to the Office of Management and Budget for use in developing budget recommendations to the President.

POLICY PLANNING, ANALYSIS, AND ADVICE

Section 205. This section states that the Office shall serve as a source of scientific, engineering, and technological analysis and judgment for the President with respect to major policies, plans, and programs of the Federal Government.

ADDITIONAL FUNCTIONS OF THE DIRECTOR

Section 206. This section states that the Director shall serve as Chairman of the Federal Coordinating Group for Science, Engineering, and Technology, as a member of the Domestic Council, as a member of the Intergovernmental Science, Engineering, and Technology Advisory Panel, and as a Statutory Adviser to the National Security Council in such matters concerning science, engineering, and technology as relate to national security; and that the Director is authorized to appoint and compensate personnel and enter into contracts and other arrangements for studies, analyses, and other services.

COORDINATION WITH OTHER ORGANIZATIONS

Section 207. This section states that the Director shall coordinate with the Domestic Council, the National Security Council, the Council on Environmental Quality, the Council of Economic Advisers, the Office of Management and Budget, and the Federal departments and agencies; utilize consultants and advisory panels and consult with individuals and groups throughout the society as he deems advisable; hold hearings; utilize with their consent the services of public and private agencies, organizations, and individuals, and transfer funds to other Federal agencies; that each agency of the executive branch is authorized to furnish the Director information necessary to carry out his functions; and that the Administrator of the National Aeronautics and Space Administration is authorized to assist the Director with respect to system analyses of alternative applications of science and technology.

SCIENCE, ENGINEERING, AND TECHNOLOGY REPORT

Section 208. This section states that the President shall transmit an annual Science, Engineering, and Technology Report to the Congress, individuals and groups throughout the society as he deems advisable; which shall be prepared by the Office, with appropriate assistance from other agencies, consultants, and contractors. The report shall include the Office's discussion of options on Federal investments and priorities in science and technology, and shall deal, to the extent practicable and within the limitations of available knowledge and resources, with a range of national policy issues involving science and technology.

TITLE III—PRESIDENT'S ADVISORY COMMITTEE ON SCIENCE, ENGINEERING, AND TECHNOLOGY

ESTABLISHMENT

Section 301. This section authorizes the President to establish a President's Advisory Committee on Science, Engineering, and Technology.

MEMBERSHIP

Section 302. This section states that the Committee shall consist of the Director and between eight and fourteen other members appointed by the President; that the President shall appoint a Chairman and Vice Chairman; and that the members are entitled to be reimbursed for their official expenses and to receive compensation for their services at a rate not to exceed the daily rate prescribed for GS-18 of the General Schedule.

FEDERAL SCIENCE, ENGINEERING, AND TECHNOLOGY SURVEY

Section 303. This section states that the Committee shall survey, examine, and analyze the overall context of the Federal science, engineering, and technology effort including missions, goals, personnel, funding, organization, facilities, and activities in general; that the Committee shall submit a report of its findings, conclusions, and recommendations to the President within one year of the appointment of a majority of its members; and that, after appropriate review, the President shall transmit the report to Congress, together with any recommendations he may wish to make concerning its findings.

CONTINUATION OF COMMITTEE

Section 304. This section states that the Committee will cease to exist ninety days after transmission of the report, unless the President makes a determination that it is advantageous for the Committee to continue in being, in which case the Committee shall exercise such functions as are prescribed by the President, with its members serving at the pleasure of the President.

STAFF AND CONSULTANT SUPPORT

Section 305. This section provides for appropriate staff and consultant support to the Committee.

TITLE IV—FEDERAL COORDINATING GROUP FOR SCIENCE, ENGINEERING, AND TECHNOLOGY

ESTABLISHMENT AND FUNCTIONS

Section 401. This section establishes the Federal Coordinating Group for Science, Engineering, and Technology, to be chaired by the Director, and to exercise the same functions as those heretofore exercised by the Federal Council for Science and Technology. These func-

tions are purely advisory in nature and involve no exercise of authority over the participating agencies, whose participation is governed by their applicable statutes.

ABOLITION OF FEDERAL COUNCIL FOR SCIENCE AND TECHNOLOGY

Section 402. This section abolishes the Federal Council for Science and Technology, which had been established by Executive Order in 1959.

TITLE V—STATE AND REGIONAL SCIENCE AND TECHNOLOGY PROGRAM

ESTABLISHMENT OF INTERGOVERNMENTAL SCIENCE, ENGINEERING, AND TECHNOLOGY ADVISORY PANEL

Section 501. This section establishes within the Office an Intergovernmental Science, Engineering, and Technology Advisory Panel, composed of the Director or his representative, the Director of the National Science Foundation or his representative, and one member from each State, to be appointed by the Governor of that State; provides for reimbursement for official expenses incurred by Panel members and for their compensation at a rate not to exceed the daily rate for GS-18 of the General Schedule; states that the Director or his representative shall serve as Chairman of the Panel; and states that the Panel shall meet at the call of the Chairman.

FUNCTIONS OF THE PANEL

Section 502. This section states that the Panel shall advise and assist the Director in identifying and defining civilian problems at the State, regional, and local levels susceptible to scientific and technical solution or amelioration; in establishing priorities for addressing such problems; and in fostering the utilization of the results of Federal research and development activities so as to maximize their application to civilian needs.

GRANTS FOR STATE SCIENCE, ENGINEERING, AND TECHNOLOGY ADVISORY PROGRAMS

Section 503. This section states: that the National Science Foundation is authorized to make grants to any State to pay a part of the costs of establishing or strengthening offices of State science, engineering, and technology within the executive and legislative branches of the State government; that the purpose of any such office shall be to promote the wise application of science and technology to the needs of the State; that no grant to a State's legislature or executive branch may exceed \$100,000; that the total amount granted to any State may not exceed \$200,000; that the Federal share of the cost of the office shall be 80% of the total annual cost; that the State will assume the cost of any such office not later than two years after award of the grant; that the Director of the National Science Foundation shall approve any grant application which meets the requirements of this Act and such regulations as he may establish.

TITLE VI—GENERAL PROVISIONS

DEFINITIONS

Section 601. This section defines terms used in this Act.

AUTHORIZATION OF APPROPRIATIONS

Section 602. This section authorizes appropriations to carry out the provisions of this Act of \$4,000,000 for fiscal year 1976; \$1,500,000 for the period from July 1, 1976 through September 30, 1976; and \$12,000,000 for fiscal year 1977.

REPEALER

Section 603. This section repeals sections 1, 2, 3, and 4 of Reorganization Plan Numbered 2 of 1962 and section 2 of Reorganization Plan Numbered 1 of 1973.

LEGISLATIVE HISTORY

The Committee on Labor and Public Welfare began serious consideration of national policies and priorities for science and technology in the course of committee examination of the problems of postwar economic conversion in the Ninety-first Congress. On December 1 and 2, 1969, the Committee held hearings on Postwar Economic Conversion. The Committee heard testimony from Professor Warren L. Smith, Department of Economics, University of Michigan and former member of the Council of Economic Advisers; Dr. Seymour Melman, economist and professor of industrial engineering at Columbia University; the late Walter P. Reuther, President of the United Auto Workers; Dr. Wilfred Lewis, Jr. of the National Planning Association; the Honorable Archibald S. Alexander, former Assistant Director for Economics of the U.S. Arms Control and Disarmament Agency; and Nathaniel Goldfinger, Director of Research, AFL-CIO.

Additional hearings on Postwar Economic Conversion were held before the Committee in Lexington, Massachusetts on March 23, 1970, and in Framingham, Massachusetts on April 3, 1970. At those hearings the Committee heard testimony from General James Gavin, Chairman of the Board, Arthur D. Little, Inc.; Dr. George Gols of Arthur D. Little; Carroll Sheehan, Commissioner of the Massachusetts Department of Commerce and Development; Bernard O'Keefe, President of E.G. & G. Corporation; D. Justin McCarthy, President of Framingham State College; Joseph Hyman, President of Hycor Corporation; Dr. Arthur S. Obermayer, President of Moleculon Corporation; Dr. Duncan MacDonald, business consultant; and William Alexander, President of the Research, Development, and Technical Employees Association, MIT Laboratories.

The testimony and statements for the record submitted at these hearings provided the Committee with a comprehensive background on the problems of economic conversion and a realization that national legislation was required to enable the country to build a strong base of civilian science and technology.

As Chairman of the Special Subcommittee on the National Science Foundation, Senator Edward M. Kennedy began developing legisla-

tion aimed at meeting needs in this area. On August 14, 1970, he introduced S. 4241, the Conversion Research and Education Act. Although it was not possible to hold hearings on the bill before the end of the Ninety-first Congress, the bill was subjected to close scrutiny by leading authorities in this field throughout the Nation.

After careful consideration of their comments and suggestions, the bill was revised and re-introduced by Senator Kennedy in the Ninety-second Congress on January 25, 1971, as S. 32, the Conversion, Research, Education, and Assistance Act. The bill was referred to the Committee on Labor and Public Welfare and assigned to the Subcommittee on the National Science Foundation.

The bill was circulated among leading authorities throughout the Nation who were expert in various of its aspects, and their comments and suggestions were carefully studied by the Subcommittee. At the same time a companion bill to S. 32 had been introduced in the House of Representatives as H.R. 34, by Congressmen John W. Davis and Robert N. Giaimo and one hundred and eleven cosponsors in January 1971. H.R. 34 was virtually identical to S. 32. Consequently the eight days of comprehensive hearings which the House Committee on Science and Astronautics held on H.R. 34 on June 22, 23, 24, July 13, 14, 15, and August 5 and 6, 1971 proved extremely helpful in the National Science Foundation Subcommittee's consideration of S. 32.

Based on the extensive comments and suggestions which were received over these months, from various experts and organizations throughout the country and through the House hearings, Senator Kennedy filed Amendment 469 to S. 32 on October 13, 1971. This amendment was designed to take account of many of the suggestions which the Subcommittee had received.

On October 26 and 27, 1971, the Subcommittee on the National Science Foundation held hearings on S. 32, including consideration of Amendment 469. (The hearings also considered S. 1261, the Economic Conversion Loan Authorization Act, which is still under study by the Subcommittee on the National Science Foundation.) Testimony was heard from the Administration spokesman, Dr. William D. McElroy, Director of the National Science Foundation; Paul Robbins, Executive Director of the National Society of Professional Engineers; Jack Golodner, Executive Secretary of the Council of AFL-CIO Unions for Scientific, Professional, and Cultural Employees; Sanford V. Lenz, Chairman, Professional, Technical, and Salaried Conference Board, IUE, AFL-CIO; Mrs. Betty Vetter, Executive Director, Scientific Manpower Commission; Professor Paul H. Thompson, Graduate School of Business Administration, Harvard University; and four unemployed engineers—Robert Fraser from Lincoln, Massachusetts, S. Robert Salow from Newton, Massachusetts, Charles Laible from Cherry Hill, New Jersey, and Nathan N. Budish from Seattle, Washington.

In addition to the testimony received at the hearings, the hearings record also included statements on the legislation from the Comptroller General and the Administration and from twenty-seven organizations and individuals with special competence in this area. Since the hearings record was published, scores of other statements had been received from interested organizations and individuals with respect to S.32.

Based on all of the information and the views which were received, the bill was further revised and considered by the Special Subcommittee on the National Science Foundation in an Executive Meeting on April 5, 1972. At that meeting, upon the suggestion of Senator Dominick, the Subcommittee agreed to submit the bill (in its revised form) to the Executive Agencies and the General Accounting Office for further comment. Letters were received from sixteen agencies and the GAO, and the specific comments were taken into careful account by the Subcommittee.

Based on those comments, the bill was further revised and considered again by the Subcommittee in Executive Meeting on May 30, 1972. At that meeting, the Subcommittee, without opposition, favorably reported the bill to the full Committee with an amendment in the nature of a substitute and with a title amendment.

The bill was considered by the full Committee on Labor and Public Welfare in Executive Meetings on June 21 and June 28, 1972. At the June 28 meeting, the Committee on Labor and Public Welfare ordered the bill, with a modified amendment in the nature of a substitute and with a title amendment, reported favorably to the Senate. On the roll call vote to report, all seventeen members of the Committee were recorded as voting to report the bill favorably.

On August 17, 1972, the bill was considered by the Senate, and passed by a vote of 70 to 8. It was then sent to the House of Representatives where it was referred to the Committee on Science and Astronautics. No action was taken by the House prior to the adjournment of the 92d Congress.

On January 4, 1973, Senator Kennedy reintroduced S. 32. On May 2, 1973, Senator Dominick introduced S. 1686, the Civilian Science and Technology Policy Act of 1973. Both bills were referred to the Senate Committee on Labor and Public Welfare.

S. 2495 was introduced on September 27, 1973 by Senator Magnuson, Senator Moss, and Senator Tunney. The bill was referred jointly to the Committee on Commerce and the Committee on Aeronautical and Space Sciences. On September 28, 1973 unanimous consent was given that when the two Committees report the bill, it would be re-referred to the Committee on Labor and Public Welfare.

On January 18, 1974 a working draft of a revised version of S. 2495 was prepared by the Commerce and Aeronautical and Space Sciences Committees and distributed for comments.

Joint hearings on S. 2495 and the working draft were held by the Commerce and Aeronautical and Space Sciences Committees on March 11 and March 21, 1974.

Subsequent to those hearings, the bill underwent further revisions, and Amendment No. 1537 to S. 2495 was introduced by Senators Magnuson, Moss, and Tunney on June 27, 1974. The Commerce and Aeronautical and Space Sciences Committee held a joint hearing on Amendment No. 1537 to S. 2495 on July 11, 1974. Witnesses at the July 11 hearing included four former Presidential Science Advisers: Dr. Edward E. David, Jr., Dr. Lee A. DuBridge, Dr. Donald F. Horning, and Dr. George B. Kistiakowsky.

The Commerce Committee met in Executive Session on July 31, 1974 and ordered S. 2495 reported, with an amendment in the nature

of a substitute. Identical action was taken by the Aeronautical and Space Sciences Committee at its Executive Session held September 18, 1974. On September 18, 1974, S. 2495 was referred to the Committee on Labor and Public Welfare for further consideration.

On October 8, 1974 the Special Subcommittee on the National Science Foundation held a hearing on S. 32, S. 1686 and S. 2495. Testimony was heard from the Administration spokesman, Dr. Guyford H. Stever, Director of the National Science Foundation and Science Adviser; Dr. Edward Wenk, Jr., Chairman of the Committee on Public Engineering Policy of the National Academy of Engineering; and Dr. Thomas G. Fox, Chairman of the Governor's Science Advisory Committee, State of Pennsylvania.

Based on the testimony which was presented at the hearing, the three bills were further revised and considered by the Subcommittee in an Executive Meeting on October 8, 1974. At that meeting, the Subcommittee unanimously favorably reported S. 32, to the full Committee with an amendment in the nature of a substitute and with a title amendment. All seven members of the Subcommittee were recorded as voting to report the bill to the full Committee.

The bill was considered by the full Committee on Labor and Public Welfare on October 8, 1974. The Committee ordered the bill, with an amendment in the nature of a substitute and with a title amendment, reported favorably to the Senate. All sixteen members of the Committee were recorded as voting to report the bill favorably.

The Senate passed the bill by unanimous voice vote on October 11, 1974. It was then sent to the House of Representatives where it was referred to the Committee on Science and Astronautics. No action was taken by the House prior to the adjournment of the 93rd Congress.

On January 15, 1975, Senator Kennedy reintroduced S. 32 (in a form identical to the bill that had passed the Senate in October, 1974) with the cosponsorship of Senators Moss and Tunney and 29 other Senators. This bill was referred jointly to the Committees on Labor and Public Welfare, Commerce, and Aeronautical and Space Sciences.

A significant break occurred on May 22, 1975, when President Gerald R. Ford met with Vice President Nelson A. Rockefeller, Senators Moss, Goldwater, Beall, and Laxalt, and Congressmen Teague, Mosher, Thornton, Conlan, and Symington, to announce his approval of a proposal prepared by the Vice President to re-establish the Science and Technology Office in the White House, and to do so by legislation. The President decided in favor of a single director with a small staff, rather than a council. This proposal was introduced in the Senate on June 20, 1975, as S. 1987, by Senator Moss (for himself and Senator Goldwater) (by request) and was also referred jointly to the Committees on Aeronautical and Space Sciences, Commerce, and Labor and Public Welfare. The provisions of S. 1987 were subsequently amended and incorporated in Titles II and VI of S. 32.

In the meantime, on June 6, 1975, Senator Kennedy presided at an historic White House Science Advisory Conference. At this Conference in the Dirksen Senate Office Building, the Vice President met with Senator Kennedy, as host, and Senators Moss, Tunney, Javits, Goldwater, Schweiker, Mathias, Beall, Stafford, Domenici, Laxalt, and Garn. This was the first time in modern American history that a Vice

President of the United States sat down with members of the United States Senate, in full public view, to participate in a free, informed, bipartisan discussion of national policy needs. The Conference was not a hearing and did not consider specific legislative proposals, but provided an opportunity for the Vice President and the Senators to discuss the national issues involved in the re-establishment of a White House Science Advisory Office. The Conference proved extremely useful in the subsequent development of the Senate legislation.

On October 28, November 4, and November 12, 1975, joint hearings on S. 32 were held before the Special Subcommittee on the National Science Foundation of the Committee on Labor and Public Welfare; the Special Subcommittee on Science, Technology, and Commerce of the Committee on Commerce; and the Committee on Aeronautical and Space Sciences. Senator Kennedy chaired the hearing on October 28th; Senator Tunney, the hearing on November 4th; and Senator Moss, the hearing on November 12th. During the period after the President's announcement of May 22, 1976, the House Committee on Science and Technology held extensive hearings on several science and technology policy bills, culminating in the passage of H.R. 10230 by the House on November 6, 1975. This bill was also referred jointly to the Committee on Aeronautical and Space Sciences, Commerce, and Labor and Public Welfare. Provisions of H.R. 10230 were particularly examined in the aforementioned hearing chaired by Senator Moss on November 12, 1975.

Testimony was provided by Dr. Philip Handler, President of the National Academy of Sciences; Dr. Emanuel R. Piore, Retired Vice President and Chief Scientist, IBM Corporation; Dr. Eugene B. Skolnikoff, Director of the Center for International Studies and Professor of Political Science at Massachusetts Institute of Technology; Dr. James R. Killian, Jr., author of the National Academy of Sciences "Report on Science and Technology in Presidential Policymaking"; Dr. Roger Revelle, Chairman of the Board, American Association for the Advancement of Science; Dr. Richard Scribner, Head of the Office of Special Programs of the American Association for the Advancement of Science; Dr. Thomas G. Fox, Science Adviser to the Governor of Pennsylvania; Dr. H. Guyford Stever, Director of the National Science Foundation and Science Adviser to the President; and Mr. Arthur P. Stern, President of the Institute of Electrical and Electronic Engineers.

Following the Conference with the Vice President and the hearings before the Senate Committees, the staffs of the three Committees made proposed revisions to S. 32. In developing these revisions, extensive discussions were held with representatives of the scientific and technical community and with responsible staff members of the Executive Office of the President, the National Science Foundation, and the House Committee on Science and Technology. A final version was prepared on January 19, 1976, for the consideration of the Committees.

On January 21, 1976, the Committee on Aeronautical and Space Sciences met in executive session and, without objection, ordered S. 32, with an amendment in the nature of a substitute, favorably reported to the Senate.

On January 27, 1976, the Special Subcommittee of the National Science Foundation met in executive session and voted unanimously that

S. 32, with an amendment in the nature of a substitute be reported to the full Committee on Labor and Public Welfare. On January 28, 1976, the Committee on Labor and Public Welfare met in executive session and unanimously voted favorably to report S. 32, with an amendment in the nature of a substitute, to the Senate. On January 29, 1976, the Committee on Commerce met in executive session and without objection, voted favorably to report S. 32, with an amendment in the nature of a substitute, to the Senate. The amendment in the nature of a substitute to S. 32 adopted by the Committee on Labor and Public Welfare, which in turn was identical to the one adopted by the Committee on Aeronautical and Space Sciences.

EXPLANATION OF NEED

Science and technology have become central to Western civilization. Throughout history, science and technology have had occasional, but significant impacts on military capabilities and economic development. However, only recently have we seen the importance of science and technology in dealing with civilian needs. Our military security depends on scientific research and development. Our economic development and productivity, along with our international competitive position, depend on increasing technical innovation to provide new products and services which meet changing needs. And the quality of life in our society—the adequacy of health care, the preservation of the environment, the adequacy of educational programs, the provision of food, housing, transportation and communication services, and the very sources of energy which make other services possible—all are interwoven with, and depend in part on, the efficacy of scientific and technical progress.

Since World War II the principal focus of the Nation's scientific programs has been on defense, and since Sputnik, on space. In these activities, the Federal Government has been the major supporter of research and development. The achievements of the Nation's scientists and engineers in these areas have been sweeping in scope, and staggering in their impact. The development of an overwhelming arsenal of nuclear weapons, ballistic missiles, travel to the Moon and probes to other planets are now commonplace facts to our children.

The application of science and technology to national security needs and space objectives have had some important spin-off effect on the civilian area of our economy and society. Computers, the vast expansion in electronics, and passenger jet aircraft are all derived from military and civilian space R. & D. programs. But many areas of the civilian sector have not yet been significantly affected by scientific research. Textile, shoe, and furniture manufacturing are three examples of civilian industries which are still dependent on traditional methods and which have not reaped the benefits which scientific advance can provide.

And in the public service sector of the economy, the extent to which modern technology has been applied is even less. Trash in our city streets is still collected in the same inefficient manner, and still disposed of in vast rubbish heaps that mar our countryside and pollute our air. Transportation in our metropolitan areas becomes more snarled and inconvenient all the time. And adequate health care for

all our citizens continues to become more costly, even when it is available.

In the civilian sector of our economy and in public services, the vast promise of science and technology has not been realized. A principal reason for this is that the Nation has lacked sound national policies and priorities for science and technology.

This has been especially true since 1973 when Reorganization Plan Number 1 abolished the White House Office of Science and Technology. Since that time the President has been without the top-level scientific assistance he needs to deal with the complex technical issues of our time.

Science for most of our citizens is a mysterious code that can only be deciphered by specialists. The policy issues faced by the President involve too many complex technological components for him not to have immediate access to the very best scientific advice our Nation has to offer.

No single scientist can provide such advice. But a first-rate science policy office with a capable staff can rapidly tap the top-flight technical talent throughout our society to provide the President with the best advice possible. This office can also provide a mechanism to anticipate future problems and needs, help coordinate the various Federal research and development activities, and interact with the States concerning their needs related to science and technology.

A White House Science Advisor, (a) with effective relationships with the President, within the Executive Office, and with the various agencies, (b) will access to the technical community, and (c) with adequate resources to do the job, will assure that the President and the Nation will be in a much better position to deal with complex issues involving science and technology.

CONFERENCE WITH THE VICE PRESIDENT

The Conference with the Vice President on June 6, 1975, provided valuable perspective in the development of the legislation. The following excerpt from that conference provides useful background in understanding the provisions of the bill as reported by the three Committees (pages 30-31, "Proceedings of the White House Science Advisory Conference, 1975, Special Subcommittee on the National Science Foundation of the Committee on Labor and Public Welfare, July, 1975):

Senator KENNEDY. If I can carry on a little bit further based on what Senator Javits was talking about. Mr. Vice President, do you expect in this annual report that one of the responsibilities of the advisory group would be to indicate what should be the national investment in the areas of science and research, whether we ought to establish some goals in those areas, and perhaps how we ought to be allocating the resources within those goals, so that we will be looking ahead to the allocations of resources in the area of science and technology over the period of, say 5 years?

Is this something you think should be included or would be useful in providing both the country and the Congress, with some guideposts as we consider this whole area?

Vice President ROCKEFELLER. I would have to say, Senator, I think that is the key to it. I think it is the heart, what you have gone right to. It is the conceptual approach to the role of science and technology in our whole society of life, its future, and our role in the world.

I think that is the heart of it. I think it has got to go further, in a sense. It has to go back—in the report, he has to go back and look at what the high schools are doing, the number of students coming into the field, what colleges are doing, and what has been done by government and by the private sector in these fields, so that, to me, I share completely that thought that this would be basic.

And this report prepared by Dr. Hans Mark is very much in that direction.

These things just do not happen. We have to plan and, as you say, we have to plan ahead of time, if you are going to get there. And we are beginning to fall behind in this whole field.

Senator JAVITS. That is most alarming.

Senator KENNEDY. One of the things that always strikes us in the National Science Foundation Subcommittee is the fact that, as you well know, military R. & D. is not considered within the scope of the Director of the National Science Foundation, who has been serving as the President's science adviser. And I think your comments have been very reassuring in indicating that that military research and development will certainly be within the scope of the science adviser as you see that function.

One of the things which many of us have been interested in is the very large amount of research that is being done for defense and space-related programs.

I do think we have seen, in terms of our competitive position in the world, that many of our friends, allies, and competitors in the free world, are devoting a good deal more resources to civilian science and technology, than we are.

Vice President ROCKEFELLER. That is right.

Senator KENNEDY. And we, as a country and as a society, ought to recognize that—which I am not sure that we do at the present time—and begin to move the country more in those directions.

Vice President ROCKEFELLER. May I just say on that, that again I agree.

WITNESSES TESTIMONY

All of the witnesses who appeared in the hearings strongly supported the re-establishment in the White House of a Science and Technology Advisory Office. The following excerpts from the testimony help clarify the need for, and intent of, various provisions in the bill as reported:

Dr. Philip Handler (President of the National Academy of Sciences):

A congressional statement of policy (for science and technology) could provide a perspective and sense of purpose

and direction to development of Federal programs and detailed policies. It would guide the many individual decisions that, collectively, determine how wisely and well we are able to realize the potential of science and technology in serving the public good.

Dr. Emanuel R. Piore (Retired Vice President and Chief Scientist, IBM Corporation):

Another function that should be stressed in a very important manner, is that the group or Science Adviser must take an active role in assuring the country the health of scientific and technical institutions, the Government labs, the universities, the nonprofit labs, the scientific and technologic health of our industry. This is not stressed. And I will return to the health of our laboratories in a moment.

Second, I think it is important that the legislation state whether they have a Council or single person, that "he" will be a member of the National Security Council, "he" will be a member of the Domestic Council, and not say "he" will coordinate or develop appropriate working relations. It is very important that a technical person sit when policy is debated, understand whether the policy needs technological backing, whether it is possible to get the technological answer in time to serve the national purpose. There are occasions where action is required based on inadequate knowledge.

Developing appropriate working relationships will not service the purpose. The Security Council may assign the wrong problem or irrelevant problem to the policy, and the same is true of the Domestic Council.

The Office of Science Adviser to the President was most effective when there was a complete open door to Killian, Kistiakowsky, Wiesner to the Security Council. We would never have been able to come up with the policy with regard to arms limitation without that open door. And, thus, I would hope that the language would be changed where it would be mandatory for the President to put these people on the Councils and not just hope that the adviser will have an open door.

It becomes a little more difficult to define the relation between the Science and Technology Council and the Bureau of Management and Budget. It is the Presidential budget and it is not the budget of the Council. And here the annual report can play a very important role. The drafts of the annual report will be seen by the Bureau of the Budget. Debate can take place. Disagreements resolved. This also will provide the best possible coupling with the other agencies. If they know annually that their R. & D. budget will be discussed by the Council or the Adviser and coupled directly to the Bureau of the Budget, there will be no problem of having coordination. I had partial coordinating responsibility for research in the Navy when I was younger. Once the budget is at stake, coordination becomes almost automatic.

This is also related to the annual report which should deal with the current situation. I have observed very important

and well presented documents on the future of various areas of science and technology in our society. Congress files them. To date I have not observed any hearings in Congress on these reports.

Congress ought to be aware when they vote the authorization and the appropriation what are the critical problems in science and technology covered in the executive department submissions. The other type of report is in its own right very important, necessary in that it is vital to understand what the future holds for us.

Therefore, I see the Council having two very fundamental functions. One is to look to the future. The other is to get word to Congress what budgetary items mean, as far as its impact on our daily life. Congress and its staff are well rounded, and thoroughly understanding of all the social issues and implications of various monetary and legislative action. We are trying to get a similar sensitivity in science and technology. That is why I would look to the annual report to address itself to Congress via the President, really pointing out what that budget means to the health of science, to the health of technology, to our foreign policy, and all these other items that science and technology is involved in.

Dr. Eugene B. Skolnikoff (Director of the Center for International Studies and professor of Political Science at Massachusetts Institute of Technology):

Given the fact that this legislation is designed to provide for the long term, I wonder if there should not be a reference to the possibility of creating once again a standing advisory committee for science and technology. This may be more important for an office headed by a single director than for a council of advisers.

. . . There are several parts to this international role. One is the integral relation of science and technology to many issues of foreign policy, or to domestic policy with international implications—it is a cliché to assert that it is increasingly difficult to separate foreign from domestic affairs; but it is also true—a good share of the advisory relationship with the President should and hopefully will be concerned with international issues in which science and technology play an important, sometimes crucial, role.

A second aspect of the international role is policy for international cooperation in science and technology, which is in fact referred to in the House bill. It is an important issue area, but one that to my mind is simply not as significant as are the broader international policy questions.

Third is an aspect often neglected that I believe should be an important concern of a White House science office. I refer to the fact that a substantial share of Federal R. & D. expenditures are motivated in large measure by international considerations (defense, space, some of atomic energy and others). And a good share of the remainder will affect our interna-

tional relations and foreign policy (e.g., energy, agriculture, geophysics) when the R. & D. comes to fruition. And, hardest of all to define, many R. & D. projects are not being done at all that could affect the world and our policies favorably.

Dr. James R. Killian, Jr. (author of the National Academy of Sciences "Report on Science and Technology in Presidential Policy-making") :

I have suggested the importance of the advisory mechanism's being closely related to other agencies in the Executive Office of the President. It would be my judgment that the head of this advisory mechanism should be a member of the Domestic Council and he should be, if not a member of the National Security Council, closely related to its work.

I found in a number of experiences when I was Science Adviser to the President, being present at a meeting of the National Security Council enabled me at that time to point out to the President certain policy questions that were under consideration where there was a component involving science and technology that would not be normally recognized. I found that to be, and I think the President found that to be an important way in which the Science Adviser could operate.

The advisory mechanism, working with the National Security Council and the Department of State, should also be able to contribute to those areas of foreign policy strongly affected by scientific and technological considerations. And finally, the advisory mechanism should cooperate closely with the Office of Management and Budget on significant budget and management issues involving science and technology.

. . . I do also feel that there should be an annual report of a very special kind prepared by the mechanism created in the White House. I know that it is difficult to contemplate any kind of comprehensive report on the state of science in the country. That is not what I am talking about. And that is not what the NAS Committee recommended.

Rather, it was urging that there be an opportunity for this Science Adviser in the White House annually to submit to the President or to the Congress a statement of what he thinks are some of the acute and current problems that they should be aware of and to give attention to. And what are some of the budgetary problems that we face and problems of technology assessment.

. . . I think, for example, of the importance of a reordering of priorities which will enable our Government to generate and encourage new technologies which can contribute to the strength of our economy. Prof. Robert Gilpin of Princeton, an economist, in his report for the use of the Joint Economic Committee of the Congress, has presented an eloquent argument for rejuvenating our technological vitality through thoughtful changes in the Nation's priorities in research and development funding. He has argued persuasively that priorities have been "too much set by the cold war and a drive for national prestige."

I share that kind of comment; and I think we have a pressing opportunity to deal with this aspect of the Government's policies as related to science and technology.

Next, the whole domain of national security, and I include in national security arms limitation, can benefit from objective scientific advice formulated at the level of the Presidency and outside of the Department of Defense and the Department of State.

I am deeply disturbed by the amount of complacency in our country today in regard to the hazards involved in the arms race and in the proliferation of nuclear weapons. Scientists and engineers have an essential role to play in the formulation of policies with respect to the control of nuclear weapons. I find deeply disturbing recent suggestions that we might find it desirable to use nuclear tactical weapons and that a nuclear exchange could in any way be handled in an acceptable way.

. . . More stress, particularly in dealing with a relationship with the National Security Council, would be useful because I think if I were to have a general criticism of the House bill, it would be that it is somewhat bland with respect to the relationship of the proposed science adviser and his associates with the Domestic Council and with the National Security Council.

And I think it is particularly important that the bill make clear that Congress expects a working relationship between those agencies as well as the OMB, or else this advisory mechanism can become isolated and is futile.

So that is a very important point.

We have had periods recently where I think this relationship with the National Security Council has become inoperative and ineffective in terms of the science advisory arrangement that then existed.

Dr. Roger Revelle (Chairman of the Board, American Association for the Advancement of Science) :

In the "Statement of Findings and Declaration of Policy," of S. 32, Federal funding for science and technology is referred to as an investment in the future which must be a "continuing investment" because it is "indispensable to sustained national progress."

The same idea is expressed differently in that "the manpower pool of scientists and engineers constitutes an invaluable national resource which should be utilized to the maximum extent possible at all times."

This view of Federal funding for science and technology as an investment instead of simply a component of current operating expenditures recognizes both the necessity of maintaining as much stability as possible in our national research effort and the hard truth that the benefits of research, though very great, will almost never be short-term ones.

I do not want to imply that the budget for research and development should be sacred and unchanged from year to year.

Much short-term development work can be postponed or put on the shelf when warranted by economic conditions. But long-term research and education which produce the intellectual capital for the future are investments that should be protected and sustained.

. . . The difficulty could be resolved if the Council of Advisers or the Office of Science and Technology had responsibility for recommending a long-term—say 5 years—investment program for science and technology, subject to the year-to-year fluctuations imposed by economic exigencies as reflected in the budget prepared by the Office of Management and Budget.

The preparation of an investment program for science and technology would give genuine substance to the planning function envisioned in both H.R. 10230 and S. 32.

. . . A statement in the bill passed by Congress emphasizing that the scope of the Science Adviser's responsibilities should include the scientific and technological aspects of policies for national security and international relations and oversight of programs supporting these policies could be useful.

Dr. Thomas G. Fox (Science Adviser to the Governor of Pennsylvania):

I think the key factor is that these bills provide at the Federal level the kind of input from State and local government we need. I refer to provisions like the one in S. 32 to provide an Intergovernmental Policy Council and to provide to the States some financial support from the Federal level to implement this program. If such provisions would be instituted, we indeed could move ahead very far and rapidly in establishing intergovernmental partnerships in managing the use of technology that are absolutely required.

. . . There are many States that are deeply into this with 10 years of positive experience. And there are a number of States that have studied what to do. For example, here is an excellent study by Puerto Rico on what they need to do, one by the State of California and one by Hawaii. I would say there are at least 20 or 30 States that have had good experience or have comprehensive and sophisticated studies of this question. I think we should move ahead and not wait.

Mr. Arthur P. Stern (President of the Institute of Electrical and Electronic Engineers):

. . . while it would be wrong to force on the President anything that he does not readily accept, it seems to me difficult to imagine that a science and technology policy adviser could be effective unless he sits on the Domestic Council and on the National Security Council, and unless he has a great say in

international matters, because all these areas are permeated today by science and technology considerations—or they should be, if they are not—and science and technology are either there in the foreground, or certainly should be there in the background, of almost any important policy decision.

. . . Next, in comparing S. 32 with H.R. 10230, we found numerous differences. One of them was particularly striking.

S. 32 mentions that "the pool of scientists and engineers is an invaluable national resource." It goes on at another point to state that "scientists and engineers must have continuing opportunities for socially useful employment in positions commensurate with their professional and technical capabilities."

H.R. 10230 does not do any of this. Not only it doesn't do that, but a reference which was in the original text of H.R. 8058 and which was directed toward insuring the "full utilization of the technical manpower" of this country was stricken from the final text.

We feel that it is inconceivable to make a major step toward recognizing science and technology and its central role in this country without looking out for the practitioners of science and technology. It is vital for this country, so that we maintain the leadership of which I talked before, that we attract the brightest, that we teach them well, that we give them appropriate rewards, and that we insure that they age in dignity.

It is also important, in order to be able to do a good job in this area, that we establish an adequate data base to know where we stand and where we go with our scientific and engineering manpower.

. . . If the Science Adviser has no substantial influence on the budget process, then he becomes the decoration that I referred to before.

The general intent of the Federal Government in science and technology is well and nice, but what really matters is what is getting done, and that which is being done is expressed in one way only—besides speeches—and that is money that is being spent.

So I think the answer to that question must be strongly affirmative. The Science Adviser must have a role in budget preparation or else he will not be effective.

AGENCY COMMENTS

Comments on S. 32, S. 1987, or H.R. 10230 were requested by the Committee on Labor and Public Welfare, the Committee on Commerce, or the Committee on Aeronautical and Space Sciences from a number of agencies, including: Department of Health, Education, and Welfare; National Science Foundation, National Aeronautics and Space Administration; Energy Research and Development Administration; Environmental Protection Agency; Council of Economic Advisers; Council on Environmental Quality; Office of Management and

Budget; and General Accounting Office. The following comments were received in response to those requests:

THE CHAIRMAN OF THE
COUNCIL OF ECONOMIC ADVISERS,
Washington, March 11, 1975.

HON. HARRISON A. WILLIAMS, JR.,
*U.S. Senate,
Committee on Labor and Public Welfare,
Washington, D.C.*

DEAR SENATOR WILLIAMS: This is in response to your request for the views of the Council of Economic Advisers on S. 32, the proposed "National Policy and Priorities for Science and Technology Act of 1975."

It is important that science and technology make as free a contribution to public policy formulation as possible. Many important and serious problems cannot be solved efficiently without an adequate understanding of the scientific and technological parameters that they entail. The proposed bill, however, would attempt to facilitate the contribution of the scientific community to the public policy-making process in an inefficient and contradictory manner.

The Council of Advisers on Science and Technology is assigned the task of providing confidential policy advice to the President on public policy issues that involve scientific and technological considerations. Yet, simultaneously, the Act directs this same Council, after consulting with the Council of Economic Advisers about the "state of the economy," to publicly recommend to both the President and the Congress priorities and funding levels to guide Federal expenditures for scientific and technological research and development—independently of the normal process of formulating the President's budget. Then in each of those instances that the President's *Budget* differs from its own recommendation the Council is directed to append to its annual *Science and Technology Report* the justification for its own recommendation along with the President's reason for rejecting them. Although I am puzzled about the reasons for proposing this procedure, I am quite certain it would not result in a greater contribution by the scientific community to the public policy process. At best, either the proposed Council's role as the President's scientific counselor or the Council's role as the President's public critic would be served poorly.

The bill would also assign to the Council many functions that are now performed by the Office of Management and Budget. These functions are part of a comprehensive budgeting process. The existence of an independent Council within the Executive Office of the President might enable a President to evaluate how well OMB was performing these functions but, they would have to continue to be performed within OMB even if S. 32 were to be enacted. Thus these provisions of the bill would create an unnecessary, and perhaps even counter-productive, duplication of effort.

The bill also would direct the Director of the National Science Foundation to give two-year starter grants to each state that wished to organize an "Office of State Science and Technology." Neither the necessity nor rationale for such grants are apparent. NSF could make

such grants now, perhaps on a demonstration basis, if it considered such grants to be a prudent use of their funds. I would assume that their failure to do so implies that they believe that alternative uses of their funds will enable the scientific and technical community to make a more significant contribution to the public interest.

In summary I do not believe that S. 32 would be an efficient method of enhancing the Federal Government's ability to utilize the resources of the scientific and technical community to solve economic and social problems. The Office of Management and Budget has advised me that this report is consistent with the President's program.

Sincerely,

ALAN GREENSPAN.

COMPTROLLER GENERAL OF THE UNITED STATES,
Washington, D.C., May 5, 1975.

B-58911

HON. HARRISON A. WILLIAMS, JR.,
*Chairman, Committee on Labor and Public Welfare,
U.S. Senate*

DEAR MR. CHAIRMAN: Reference is made to your communication of January 24, 1975, requesting our comments on S. 32, 94th Congress. The bill would establish a framework for the formulation of national policy and priorities for science and technology and, if enacted, would be cited as the "National Policy and Priorities for Science and Technology Act of 1975."

This measure would change the existing Federal science policy apparatus. It creates a framework and technology which are very similar to that of the former Office of Science and Technology. It would create a Council of Advisors on Science and Technology in the Executive Office who would advise the President on major policy, plans, and programs of science and technology of the Federal Government. As part of this framework, it also creates a Federal Coordinating Committee for Science and Technology with various responsibilities related to problems and developments in the fields of science and technology and related activities affecting more than one Federal agency.

Under the present the Director, National Science Foundation, acts as both Director of the Foundation and as the President's Science Advisor. The Director also chairs the Federal Council on Science and Technology which would be abolished by the bill.

A proposal to change the national science advisory mechanism is a national issue with great impact. The Comptroller General previously discussed the Federal Organization for Science and Technology including some of the changes that are proposed in S. 32 in his testimony before the House Committee on Science and Astronautics on July 9, 1974. A copy of this testimony is enclosed.

Many of the policy statements included in section 2, and the specific purpose of the act, stated in item (c) on page 4, indicate a strong emphasis on the application of science and technology to the furtherance of national goals. However, titles I, II, and III deal primarily with the Presidential advisory function, planning, strategy and priorities for Federal investments in science and technology, and Federal oversight and coordination. Title IV provides for a limited co-

ordinating network with the "standard regions" representing State and local government interests and needs.

Although the Federal Government sponsors the major portion of the public investment in research and development, the ultimate application and utilization of science and technology for civilian needs requires implementation by States and local governments, with help from the private sector. This involves a very complex process to overcome the barriers and provide the necessary incentives for technological innovation. The bill does not appear to be fully developed with respect to establishing improved mechanisms for delivery of technology into the public and private domain. Its primary emphasis is concerned with the generation of technological options resulting from research.

We suggest, therefore, that the intergovernmental advisory program proposed in title IV be examined in the light of experience gained from various civil agency programs, including the R&D Assessment Program and the Intergovernmental Science Program sponsored by the National Science Foundation through the last several years. In these programs a number of studies, experiments and demonstration efforts have been performed to identify institutional relationships between and among Federal, State, and local governments, and the private sector, and to catalyze efforts to stimulate technology innovation and the transfer and utilization of technology.

In title I, section 102(a) the Council is directed to perform an annual appraisal of progress in science and technology in relation to national needs, taking into account the state of the economy through consultation with the Council of Economic Advisors, and to determine the desired level of Federal investment in science and technology for the next succeeding fiscal year. We believe that in performing this appraisal and determining the desired level of Federal investment other factors besides the economy should also be considered. We therefore suggest that the wording of this section be revised to include consultation with the National Security Council, the Domestic Council and the Council on Environmental Quality.

As a step toward identifying means for strengthening the delivery mechanisms for the application and utilization of science and technology we suggest that consideration be given to expanding the scope of the study described in title I, section 107 for assignment to the National Academy of Sciences. In addition to examining Federal organization for science and technology, the study might include an examination of the institutional relationships between the Federal, State and local governments, and other factors that affect the innovative process, especially with respect to the improvement of public services.

Section 201(b), title II, provides for the membership of the Federal Coordinating Committee for Science and Technology. Included in the prescribed membership is a representative of the Atomic Energy Commission and the Energy Research and Development Administration. The Atomic Energy Commission was abolished by section 104(a), title I, of the Energy Reorganization Act of 1974, Pub. L. No. 93-438 approved October 11, 1974. The Act split the responsibilities of the former Atomic Energy Commission. Responsibilities relating to the research and development of nuclear energy were transferred to

the Energy Research and Development Administration. Licensing and related regulatory responsibilities were transferred to an independent commission—the Nuclear Regulatory Commission. Since the prescribed membership includes a representative of the Energy Research and Development Administration, the Committee may wish to consider deleting the Atomic Energy Commission as a member and substituting the Nuclear Regulatory Commission.

Section 301, title III would amend section 3(d) of the National Science Foundation Act of 1950 to read "The foundation shall recommend and encourage the pursuit of national policies designed to foster *research* and education in science and engineering, and the application of scientific and technical knowledge to the solution of national problems." (Underscoring supplied.)

Section 3(d) now reads "The Board and the Director shall recommend and encourage the pursuit of national policies for the promotion of *basic research* and education in the sciences." (Italic supplied.) The proposed amendment would therefore substitute "research" for "basic research."

As stated in section 3(a)(1) of the National Science Foundation Act of 1950, as amended, one of the primary functions of the Foundation is to " * * * initiate and support basic scientific research and programs to strengthen scientific research potential and science education programs at all levels in the mathematical, physical, medical, biological, engineering, social, and other sciences, * * *." Section 3(c) provides the Foundation with authority to initiate and support applied research.

Over the years the scientific community and the Congress have expressed concern that the Foundation would lessen its emphasis on basic research by providing increased support for applied research. The Foundation recently stated that of its proposed fiscal year 1976 budget dealing directly with research, about 83 percent is earmarked for basic research. The remaining 17 percent of the research budget is aimed at applied research areas focusing primarily on major national problems.

The Committee may wish to revise the wording of the proposed amendment of section 3(d) to identify the emphasis the Foundation should place on basic research and applied research.

Section 304(d)(2), title III provides that the National Science Foundation shall allocate fellowships under this subsection in such manner, insofar as practicable, as will—

(A) attract highly qualified applicants; and

now is the time for all good men to come to the aid of their country

(B) provide an equitable distribution of such fellowships throughout the United States.

The Committee may wish to include a provision that the Foundation should also consider the scientific manpower needs in awarding continuing education fellowships to assure that the most needed types of scientific manpower receive financial aid in updating their skills.

Sections 105(3), title I, and 403(a), title IV, contain authority for the Chairman of the Council and the Charman of the Intergovernmental Science and Technology Advisory Committee to appoint and fix the compensation of certain personnel without regard to the provisions of title 5, United States Code. We are not aware of the need

to exempt such personnel from these provisions. Generally, it should be possible to obtain qualified personnel within the structure of the General Schedule.

Section 404(a) authorizes grants of up to \$100,000 to any State to pay a part of the cost of establishing an Office of State Science and Technology. Further, Section 404(b)(2) provides that a State receiving such grant funds will, after two years, assume the cost of operating such an organization. This methodology for encouraging the establishment and maintenance of a program or organization is quite common, often referred to as "seed-money" grants. However, it is also common practice when using this method of financing to require the recipient not only to assume the cost of a previously supported activity, but also to maintain a reasonably consistent level of effort. The maintenance of effort requirement is not contained in the subject bill, nor does the bill stipulate how large a "part of the cost" the grant may constitute.

To illustrate the effect of these provisions, the following example is offered. A State could establish an organization costing \$200,000 annually—\$100,000 provided by National Science Foundation and \$100,000 provided by the State. After two years, Federal assistance would end and the State, required to assume the cost of operating the organization, could decide to fund it at a level of \$100,000. Thus, the State would be complying with the bill, but would also be reducing considerably the total level of effort. There is nothing inherently wrong with permitting such consequences to occur, but the issue is whether the Congress desires to proceed in this fashion.

Further, the bill contains no penalties or other sanctions to be applied in the event a State fails to assume the cost of an organization as required by section 404(b)(2).

We note that the bill does not specifically provide for an evaluation of the program. It is our view that program evaluation is a fundamental part of effective program administration and that the responsibility for evaluations should rest initially upon the responsible agency. In line with this concept, we believe the Congress should attempt to specify the kinds of information and tests which will enable it to better assess how well programs are working and whether alternative approaches may offer greater promise. We will be happy to work with the Committee in developing specific language if you wish.

Also, the bill does not provide for access by the General Accounting Office to the records of recipients of assistance thereunder for purposes of audit and examination. While section 202 of the Intergovernmental Cooperation Act of 1968, Pub. L. No. 90-577, October 16, 1968, 82 Stat. 1101, 42 U.S.C. § 4212, would provide such authority with regard to the grants to States authorized by section 404 of the bill, it would not apply to the contracts or arrangements which sections 101(c) and 107 authorize the Council of Advisers on Science and Technology to enter into, or to the grants or contracts which section 304(c) authorizes the National Science Foundation to make or enter into. We recommend that such a provision be added to the bill. This could be accomplished by adding a new section 503 to the bill as follows:

"Sec. (a) Each recipient of Federal assistance under this Act, pursuant to grants, subgrants, contracts, subcontracts, loans or other ar-

rangements, entered into under other than by formal advertising, and which are otherwise authorized by this Act, shall keep such records as the Council or the Foundation shall prescribe, including records which fully disclose the amount and disposition by such recipient of the proceeds of such assistance, the total cost of the project or undertaking in connection with which such assistance is given or used, the amount of that portion of the cost of the project or undertaking supplied by other sources, and such other records as will facilitate an effective audit.

"(b) The Council and the Foundation and the Comptroller General of the United States, or any of their duly authorized representatives, shall, until the expiration of three years after completion of the project or undertaking referred to in subsection (a) of this section, have access for the purpose of audit and examination to any books, documents, papers and records of such recipients which in the opinion of the Council or the Foundation or the Comptroller General may be related or pertinent to the grants, contracts, subcontracts, subgrants, loans or other arrangements referred to in subsection (a)."

Enclosed are several suggested editorial changes to the bill.

Sincerely yours,

ELMER B. STAATS,
*Comptroller General
of the United States.*

Enclosures.

SUGGESTED TECHNICAL AND EDITORIAL CHANGES TO S. 32

- (1) Page 1, line 6, sec. 2(2) should be sec. 2(a).
- (2) Page 4, line 23, and page 15, the title of the Committee should be consistent in the bill (page 4 has "Interagency" in the title, page 15 does not).
- (3) Page 15, line 18, Agency in Energy Research and Development Agency should be Administration.
- (4) Page 18, line 7, foundation should be Foundation.
- (5) Page 22, line 24 Cities/United States should be Cities, United States.

ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION,
Washington, D.C. September 4, 1975.

HON. WARREN G. MAGNUSON,
*Chairman, Committee on Commerce,
U.S. Senate, Washington, D.C.*

DEAR MR. CHAIRMAN: This is in response to your letter of July 1, 1975, requesting the comments of the Energy Research and Development Administration on S. 1987, the "Presidential Science and Technology Advisory Organization Act of 1975." This bill would establish in the Executive Office of the President the Office of Science and Technology Policy for the purpose of providing advice and assistance to the President with respect to scientific and technological considerations affecting national policies and programs.

The Energy Research and Development Administration strongly supports enactment of S. 1987. Since 1973 the functions of a Presidential Science Adviser have been placed under the Director of the

National Science Foundation. The Energy Research and Development Administration endorses the concept of a science and technology presence which responds to and serves the President's needs. S. 1987 strengthens this concept by making the position of Science Adviser a full-time undertaking.

The Office of Management and Budget has advised us that there is no objection to the presentation of this report, and enactment of S. 1987 would be in accordance with the program of the President.

Sincerely,

R. TENNEY JOHNSON,
General Counsel.

NATIONAL SCIENCE FOUNDATION,
OFFICE OF THE DIRECTOR,
Washington, D.C., August 28, 1975.

HON. WARREN G. MAGNUSON,
*Chairman, Committee on Commerce, U.S. Senate,
Washington, D.C.*

DEAR MR. CHAIRMAN: This is in response to your letter of July 1, 1975, requesting the comments of the National Science Foundation on S. 1987, the "Presidential Science and Technology Advisory Organization Act of 1975."

The Foundation strongly supports enactment of S. 1987. As you know, the proposed legislation is the result of a decision by President Ford to establish a new Office of Science and Technology Policy in the Executive Office of the President in order to continue and strengthen the role of science and technology in his Administration. In his letters of June 9, 1975 to the Speaker and the Vice President transmitting the proposed legislation, the President noted the vital contribution of science and technology to the continued progress of the nation. He expressed his intent that the Director of the new Office provide advice to him and his top assistants in policy areas where scientific or technological considerations were involved. The President also expressed his intent to appoint the Director as his Science and Technology Adviser and as the Chairman of the Federal Council on Science and Technology.

I fully agree with the President's actions in this matter. I believe that these decisions, as expressed in the President's letter on June 9, 1975, and as reflected in the provisions of S. 1987, will bring science and technology into a closer and more effective relationship to Federal policy matters and the operation of Federal programs. Critical to such a process is provision for advice and counsel to the President and top level staff on the scientific and technological aspects of policy questions. I have consistently supported the concept of a science and technology presence which responds to and serves the President's needs. S. 1987 will do this by establishing within the Executive Office of the President a new Office at a level commensurate with the important functions assigned to the Director as the President's chief policy adviser with respect to scientific and technological matters (Sections 3 and 4 of the bill). The Office established by the bill will create a compact but highly competent professional staff within the White House (Section 5) with authority provided by Section 6 and 7 to tap not only outside expert consultant and other services, but also the capability of

the other Federal agencies, which possess great scientific and technological resources.

The Foundation urges the prompt consideration of S. 1987 by the Congress and its swift enactment.

The Office of Management and Budget has advised us that there is no objection to the submission of this report, and that enactment of S. 1987 would be in accord with the program of the President.

Sincerely yours,

H. GUYFORD STEVER,
Director.

NATIONAL SCIENCE FOUNDATION,
Washington, D.C., November 25, 1975.

HON. FRANK E. MOSS,
*Chairman, Committee on Aeronautical and Space Sciences,
U.S. Senate, Washington, D.C.*

DEAR MR. CHAIRMAN: Thank you for the opportunity extended to me at the hearing to comment or suggest any improvements that should be made in H.R. 10230, the Science and Technology Policy Act recently passed by the House of Representatives. The bill has been reviewed very carefully within the Administration. While we could conceivably suggest a few minor perfecting changes in the bill, I do not believe any changes are sufficiently important to warrant a delay in the passage of the bill.

As the President has indicated, H.R. 10230 is acceptable to the Administration and we recommend its passage by the Senate at the earliest practicable date.

Sincerely yours,

H. GUYFORD STEVER,
Science Adviser.

COST ESTIMATES

In accordance with section 252(a) of the Legislative Reorganization Act of 1970, the Committees estimate that costs which would be received in carrying out this bill for fiscal year 1976, the period from July 1, 1976 through September 30, 1976, and fiscal year 1977, would be as follows:

Fiscal year 1976:	
Title II.....	\$1,000,000
Title III.....	1,000,000
Title V.....	2,000,000
Total	4,000,000
July 1-September 30, 1976:	
Title II.....	250,000
Title III.....	250,000
Title V.....	1,000,000
Total	1,500,000
Fiscal year 1977:	
Title II.....	3,000,000
Title III.....	1,000,000
Title V.....	8,000,000
Total	12,000,000

TABULATION OF VOTES CAST IN COMMITTEE

Pursuant to section 133 (b) of the Legislative Reorganization Act of 1946, as amended, the following is the tabulation of votes on S. 32 in the three committees:

The Committee on Aeronautical and Space Sciences, without objection, ordered the bill, as amended, reported favorably.

The Committee on Commerce, without objection, ordered the bill, as amended, reported favorably.

The Committee on Labor and Public Welfare unanimously ordered the bill, as amended, reported favorably.

CHANGES IN EXISTING LAW

In compliance with subsection (4) of rule XXIX of the Standing Rules of the Senate, changes in existing law made by the bill, as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new matter is printed in *italic*, existing law in which no change is proposed is shown in roman):

REORGANIZATION PLAN NO. 2 OF 1962

Prepared by the President and transmitted to the Senate and the House of Representatives in Congress assembled, March 29, 1962, pursuant to the provisions of the Reorganization Act of 1949, 63 Stat. 203, as amended.

CERTAIN SCIENCE AGENCIES AND FUNCTIONS

PART I—OFFICE OF SCIENCE AND TECHNOLOGY

[SECTION 1. Office of Science and Technology. There is hereby established in the Executive Office of the President the Office of Science and Technology, hereafter in this Part referred to as the Office.

[SEC. 2. Director and deputy. (a) There shall be at the head of the Office the Director of the Office of Science and Technology, hereafter in this Part referred to as the Director. The Director shall be appointed by the President by and with the advice and consent of the Senate and shall receive compensation at the rate of \$22,500 per annum.

[(b) There shall be in the Office a Deputy Director of the Office of Science and Technology, who shall be appointed by the President by and with the advice and consent of the Senate and receive compensation at the rate of \$20,500 per annum. The Deputy Director shall perform such functions as the Director may from time to time prescribe and shall act as Director during the absence or disability of the Director or in the event of vacancy in the office of Director.

[(c) No person shall while holding office as Director or Deputy Director engage in any other business, vocation, or employment.

[SEC. 3. Transfer and performance of functions. (a) There are hereby transferred from the National Science Foundation to the Director:

[(1) So much of the functions conferred upon the Foundation by the provisions of section 3(a)(1) of the National Science Foundation Act of 1950 (42 U.S.C. 1862(a)(1)) as will enable the Director to advise and assist the President in achieving coordinated Federal policies for the promotion of basic research and education in the sciences.

[(2) The functions conferred upon the Foundation by that part of section 3(a)(6) of the National Science Foundation Act of 1950 (42 U.S.C. 1862(a)(6)) which reads as follows: "to evaluate scientific research programs undertaken by agencies of the Federal Government."

[(b) In carrying out the functions transferred by the provisions of section 3(a) of this reorganization plan, the Director shall assist the President as he may request with respect to the coordination of Federal scientific and technological functions and agencies.

[(c) The Director may from time to time make such provisions as he deems appropriate authorizing the performance of any of his functions by any other officer, or by any employee or agency, of the Office.

[SEC. 4. Personnel. The Director may appoint employees necessary for the work of the Office under the classified civil service and fix their compensation in accordance with the classification laws.]

* * * * *

SECTION 2 OF REORGANIZATION PLAN NO. 1 OF 1973

[SEC. 2. Transfer of functions to the Director, National Science Foundation.—There are hereby transferred to the Director of the National Science Foundation all functions vested by law in the Office of Science and Technology or the Director or Deputy Director of the Office of Science and Technology.]

○

NATIONAL SCIENCE AND TECHNOLOGY POLICY AND
ORGANIZATION ACT OF 1975

OCTOBER 29, 1975.—Committed to the Committee of the Whole House on the
State of the Union and ordered to be printed

Mr. TEAGUE, from the Committee on Science and Technology,
submitted the following

REPORT

together with
ADDITIONAL VIEWS

[To accompany H.R. 10230]

The Committee on Science and Technology, to whom was referred the bill (H.R. 10230) to establish a science and technology policy for the United States, to provide for scientific and technological advice and assistance to the President, to provide a comprehensive survey of way and means for improving the Federal effort in scientific research and information handling, and in the use thereof, to amend the National Science Foundation Act of 1950, and for other purposes, having considered the same, report favorably thereon without amendment and recommend that the bill do pass.

PURPOSE OF THE BILL

The purpose of the bill is to establish a science and technology policy for the United States, to provide for scientific and technological advise and assistance to the President, and to provide a comprehensive survey of ways and means for improving scientific research and information handling, and the uses thereof.

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(2)

EXPLANATION OF THE BILL

TITLE I

Sets forth a National Science and Technology Policy which includes:

(1) Findings by the Congress of a number of cause-and-effect relationships engendered by, and certain fundamental needs for, Science and Technology.

(2) A Declaration of Policy which includes: (a) basic principles to be followed in the utilization of Science and Technology; (b) methods of implementing the declared policy; and (c) procedures which can be expected to enhance the implementation.

TITLE II

Establishes Office of Science & Technology Policy in the Executive Office of the President.

(1) Provides for a Director, to be appointed by the President with Senate confirmation, who also serves as the President's personal science adviser.

(2) Provides up to four Assistant Directors to be determined at the President's option.

(3) Sets forth eleven specific functions of the Director as head of the Office.

(4) Incorporates a reorganization feature to permit the President, or his successor, to reorganize the Office—with Congressional approval and within certain time limits.

TITLE III

Establishes a Federal Science and Technology Survey Committee, with a lifetime of 24 months, within the Executive Office of the President:

(1) The Committee consists of from 5 to 12 exceptionally qualified members, appointed by the President, and is chaired by the Director of the Office of Science and Technology Policy.

(2) The function of the Committee is to "survey, examine and analyze the overall context of the Federal science and technology effort, including missions, goals, personnel, funding, organization, facilities and activities in general." Eleven areas of investigation are set forth, although these are not exclusive.

(3) The Committee submits its final report, including findings, conclusions and recommendations, to the President—who then has 60 days to review the report and transmit it to Congress with such recommendations for action as he believes to be warranted.

(3)

TITLE IV

Miscellaneous provisions, which include:

- (1) Authorization of funds.
- (2) Conforming amendments.

HISTORY OF THE LEGISLATION

A. BACKGROUND—THE 1960'S AND 1970'S

The past decade has been one of unusual importance for the Federal role in science and technology. It is also one of considerable fluctuation in Federal support and, while strongly influenced by space and security needs, has included marked advances in virtually all R&D areas.

This period saw the formation of a number of congressional committees designed to deal with the scientific upsurge. Among these was the Science, Research and Development (SRD) Subcommittee of this committee, established in 1963. Others included the House Select Committee on Government Research [known as the Elliott Committee], the House Subcommittee on Research and Technical Programs of the Government Operations Committee, the Senate Government Operations Study of Executive Reorganization for Science, the Senate Subcommittee on Government Research (the latter two under the Government Operations Committee), and the Senate Small Business Subcommittee on Science and Technology.

During the same period significant developments, both programmatic and organizational, were taking place within the Executive Office of the President and throughout the various departments and agencies. One of the most important of these was the establishment of the Office of Science and Technology within the Executive Office—initiated in 1962 but not fully operative until several years thereafter. OST was set up to assist the President in coordinating and evaluating science activities across the broad spectrum of the government.

During the mid-1960's Federal support for R&D reached a relative peak of about \$16 billion, a little more than 12½ percent of the total Federal budget outlay. (In 1950 total Federal R&D support was \$1.1 billion, or 2.5 percent of the Federal budget.) By 1967, however, national attention was focusing elsewhere; dissension existed throughout the country for a variety of reasons; some were saying an anti-technology trend had set in. Whatever the cause, the Federal effort in support of science and technology began to drop, at least relatively, and has been dropping ever since. The nearly \$16 billion obligations for R&D in 1965 has increased to \$20.7 billion in 1975, expenditures from \$15 billion to about \$20 billion. But this is a loss in relative effort from 12.6 percent of the Federal budget to 6.5 percent in expenditures, and from about 2 percent of the G.N.P. to about 1.1 percent. That trend has been consistent since 1965 and represents a fall-off of effort in absolute as well as relative terms when inflation is taken into account.

This shifting situation caused the SRD, Subcommittee to hold a series of hearings on national science policy in 1970. Subsequently, a report was issued in October of that year which contained both a ra-

tionale for the development of a national science policy and specific recommendations for carrying out such a policy. Consistency of support was a key theme.

In March 1972, the President sent Congress a special message urging renewed emphasis on science and technology, with particular attention to applications. The message indicated that something over \$700 million in new money was being requested for civilian R&D programs. Only two programs totalling about \$40 million subsequently came into being; these were the so-called Technology Innovation Programs of the National Science Foundation and the National Bureau of Standards, designed to accelerate new technology into industrial and consumer use. Such programs, initially slowed by impoundment action of OMB, have never become substantial.

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A major shake-up in the Federal science establishment occurred in January 1973 with the announcement of the President's Reorganization Plan No. 1, to become effective July 1. Under that plan the Office of Science and Technology was abolished and many of its functions transferred to the Director of the National Science Foundation. At the same time, the President did away with the Office of the President's Science Adviser as a separate top-level entity and the President's Science Advisory Committee; the remnant functions of these offices (national security excepted) also were lodged with the NSF director, who subsequently was named the President's "science adviser" by letter dated July 1, 1973. Another coordinating institution, the Federal Council for Science and Technology, was retained but with the Director of the Foundation designated as its chairman. NSF itself has been providing the funding and personnel to handle these added tasks.

The Reorganization Plan was reviewed briefly by the Government Operations Committees of both houses. No other action was taken, which was tantamount to congressional approval of the plan.

Meanwhile, during the late '60s and the early '70s virtually all the special congressional committees involved with science and technology disappeared. While several new ones have emerged, they are primarily concerned with specific missions such as enhancement of the environment, energy or commerce. Hence, the Science and Technology Committee, in addition to being charged specifically with oversight of the National Science Foundation (which, together with its director, is now the repository of the major science advisory functions in the executive branch), is the only congressional committee with broad authority over science and technology per se.

In light of the foregoing, the Committee undertook the first part of an extensive review of Federal planning, policy and organization for Science and Technology through status and posture hearings. These described the basic Federal science and technology format and the objectives and modes of operation contemplated by the Executive.

The hearings were held in July, 1973, and included most officials who had succeeded to the stewardship of the overall Federal science effort. Witnesses were as follows:

Dr. H. Guyford Stever, science adviser to the President and Director, National Science Foundation; accompanied by Dr. Russell

C. Drew, Director, Office of Science and Technology Policy, Dr. Lloyd Cooke, Chairman, Planning-Policy Committee, National Science Board, and director of urban affairs, Union Carbide Corp., New York; Dr. Raymond L. Bisplinghoff, Deputy Director of National Science Foundation and Dr. Paul F. Donovan, Head of the National Science Foundation Energy Task Force.

Dr. William O. Baker, president, Bell Telephone Laboratories, and ad hoc adviser to the Administration on technological matters.

Dr. John C. Sawhill, at that time Associate Director for Natural Resources, Energy and Science, Office of Management and Budget.

Dr. Edward E. David, executive vice president, research and development and planning, Gould, Inc., former Science Adviser to the President.

Mr. William D. Carey, vice president, Arthur D. Little, Inc., formerly chief of Science and Technology for the Bureau of the Budget.

Hon. George P. Shultz, then Secretary of the Treasury and special assistant to the President on economic and domestic affairs (written response to questions only).

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Following the hearings and subsequent to review of them by the staff, the Committee requested a critique of the information and plans disclosed by the hearings from three different organizations:

(1) The Committee on Science and Public Policy of the American Association for the Advancement of Science.

(2) The Federal Science and Technology Committee of the Industrial Research Institute.

(3) The Science Policy Research Division of the Congressional Research Service, Library of Congress.

The work of these groups in response to the request was completed, and the three reports carried in full in the Committee's Interim Report in 1974. Each described a variety of issues and problems which the respective groups felt should be explored.

Among those most frequently mentioned were the following:

Coordination and evaluation of Federal science activities.

The role of the Science Adviser in military R&D.

The functioning of the NSF's Office of Science and Technology Policy.

The multiple assignments of the Science Adviser together with possible consequent conflicts of interest.

Access to the President.

Advice for science policy.

Advisory bodies for science policy.

An annual report on science policy.

Budgeting for science and technology.

Decisionmaking and priorities re science policy.

Functions of the Federal Council for Science and Technology.

Implementation of Reorganization Plan No. 1.

The OMB and science policy.

The role of the Committee on Science and Technology.

Stability of funding for science and technology.

A strategy for science policy and programs.

Following the completion and issuance of the Committee's Interim Report on Federal Policy, Plans and Organization for Science and Technology (House Rept. 93-1184) which identified a broad range of issues which needed further probing, the Committee undertook its second series of hearings. These were held throughout June and July of 1974 and were devoted almost exclusively to the views of non-government authorities in the field of science policy and its interface with and between government, the academic world, industry and foreign affairs.

Twenty-six witnesses appeared before the Committee, including all 6 of the former Presidential Science Advisers. In addition, the Committee received a variety of related papers and commentaries on the subject, plus a special comparative study requested of the National Science Foundation on science advisory approaches used among other scientifically advanced nations.

Witnesses who appeared at this set of hearings were:

Senator Edward M. Kennedy, Chairman, Technology Assessment Board; chairman, Subcommittee on National Science Foundation; Senate Committee on Labor and Public Welfare.

Dr. Robert C. Seamans, Jr., president, National Academy of Engineering.

Dr. Chauncey Starr, president, Electric Power Research Institute.

Dr. Philip Handler, President, National Academy of Sciences.

Dr. James R. Killian, Jr., Chairman of the ad hoc Committee on Science and Technology, National Academy of Sciences, and Honorary Chairman of the Corporation, MIT; accompanied by Dr. Kenneth Pitzer, vice chairman of the NAS ad hoc committee and professor of chemistry, University of California, Berkeley, and Dr. Emanuel R. Piore, vice chairman of the NAS ad hoc committee and retired vice president and chief scientist, IBM Corp.; Dr. Ivan L. Bennett, Jr., member of the NAS ad hoc committee and director, New York University Medical Center.

Prof. Jurgen Schmandt, LBJ School of Public Affairs, University of Texas, accompanied by Dr. Richard Scribner, director, Office of Science and Society Programs, AAAS.

Dr. Edward E. David, Jr., vice president for research, development, and planning, Gould, Inc.

Elmer B. Staats, Comptroller General, accompanied by Phillip S. Hughes, Assistant Comptroller General; Harold H. Rubin, Deputy Director, Procurement and Systems Acquisition Division.

Don Price, dean of the Kennedy School of Government, Harvard University.

Dr. George B. Kistiakowsky, Department of Chemistry, Harvard University; Dr. Jerome B. Wiesner, president, MIT, Dr. Donald F. Hornig, president, Brown University and Dr. Lee A. DuBridge, former president, California Institute of Technology.

Dr. Patrick E. Haggerty, chairman of the board, Texas Instruments, Inc.

Dr. Philip Morrison, chairman of the board, Federation of American Scientists.

Dr. Lewis M. Branscomb, vice president for research, IBM Corp.

Dr. N. Bruce Hannay, vice president, Research and Patents, Bell Laboratories, president, Industrial Research Institute; and Dr. Her-

bert I. Fufeld, director of research, Kennecott Copper Corp. chairman, Federal Science and Technology Committee, Industrial Research Institute.

Dr. William D. McElroy, chancellor, University of California, San Diego, Calif., former director, National Science Foundation.

Dr. Brewster Denny, dean, Graduate School of Public Affairs, University of Washington.

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Upon completion of these hearings and the receipt of requested materials, the Committee staff, in conjunction with the Science Policy Division of the Congressional Research Service and the Office of the House Legislative Counsel, spent the next 6 months in reviewing the testimony and materials which the Committee had obtained and in making further informal investigations to fill some of the remaining informational gaps.

A bill was then drafted which attempted to incorporate most of the major policy and organizational features which had been recommended to the Committee and which appeared to have substantial support in one form or another. It was the intent, in drafting the bill, to address all the major issues or recommendations which had been received, and to put them together in a reasonable format that would promote further serious thought and discussion.

This bill, H.R. 4461, was introduced on March 6, 1975, by Mr. Teague and Mr. Mosher. Simultaneously, Mr. Teague issued an explanatory statement on the proposed "National Science Policy and Organization Act of 1975." The statement sought to describe the rationale behind the bill and put it into perspective for the legislative hearings scheduled for early summer.

From the time of the introduction of the bill until the hearings began in June, the bill's sponsors and the Committee staff were frequently in touch with the Administration and the Executive Office of the President, seeking to elicit such preferences as the Administration might have and looking toward securing its views on H.R. 4461.

On June 10, 1975, the full Committee met in conference with the Vice President, who relayed some of the Administration's preferences and also transmitted a proposed bill which the White House indicated it would be willing to support. Mr. Teague introduced the latter bill, H.R. 7830, on June 11 so that the formal hearings might cover both bills.

The hearings on these bills were held June 10-23, 1975, and included the following witnesses.

Dr. H. Guyford Stever, Science Adviser to the President and Director, National Science Foundation.

N. Bruce Hannay, vice president, research and patents, Bell Laboratories.

Congressman Mike McCormack, from the State of Washington.

Dr. Philip Handler, President, National Academy of Sciences.

Hon. Elmer B. Staats, Comptroller General of the United States.

Dr. Roger Revelle, chairman of the board, American Association for the Advancement of Science, and director, Center for Population Studies, Harvard University.

Dr. Edward E. David, vice president for research, development and planning, Gould, Inc.

Dr. John C. Calhoun, National Association of State Universities and Land-Grant Colleges, American Association of Universities and American Council on Education; vice president for academic affairs, Texas A. & M. University.

Dr. Nathan T. Wolkomir, president, National Federation of Federal Employees, presented by Mr. George Tilton, associate general counsel, National Federation of Federal Employees.

Dr. Arthur M. Bueche, vice president, research and development, General Electric Co., and president, Industrial Research Institute.

Dr. George K. Davis, professor of nutrition and director of sponsored research, University of Florida and chairman, Public Affairs Committee, Federation of American Societies of Experimental Biology.

Dr. Conyers Herring, former Chairman, Advisory Science Information Council, National Science Foundation and former head, Theoretical Physics Research Department, Bell Laboratories.

Dr. Lewis M. Branscomb, vice president and chief scientist, IBM Corp.

Dr. Bowen C. Dees, president, the Franklin Institute.

Dr. Ernest R. Gilmont, chairman, Committee of Scientific Society Presidents.

Dr. Eugene B. Skolnikoff, director, Center for International Studies, Massachusetts Institute of Technology.

The following submitted statements for the record:

American Society for Public Administration.

Michael J. Moravesik, Institute of Theoretical Science, University of Oregon.

A. Michael Noll, past assistant to the Director of the Office of Science and Technology.

Federation of American Scientists.

Drs. Richard Trumbull and Robert W. Krauss, for the American Institute of Biological Sciences.

Institute of Electrical and Electronics Engineers, Inc.

Russell E. Train, Administrator, Environmental Protection Agency.

Statement of the presidents of certain engineering societies.

Coordinating Committee of Engineering Society Presidents.

Paul G. Zurkowski, president, the Information Industry Association.

National Federation of Abstracting & Indexing Services.

Courtland D. Perkins, president, National Academy of Engineering.

Jurgen Schmandt, LBJ School of Public Affairs, the University of Texas at Austin.

Upon the completion of the hearings and a further period of examination and study of materials received by the Committee, Mr. Teague and Mr. Mosher co-sponsored a new bill, H.R. 9058, which was introduced July 30, 1975. The new bill constituted a compromise version between H.R. 4461 and H.R. 7830; the major features of that legislation, as well as H.R. 10230, follow in the next section of this report.

The Committee held markup sessions in October and ordered reported H.R. 10230, which is only slightly revised from H.R. 9058.

The remainder of this section presents a summary of the major topics addressed by the witnesses, according to the four major subject areas of H.R. 4461. These are:

- A. A National science policy for the United States;
- B. Scientific and technological advice in the Executive Office of the President;
- C. Federal administrative organization for certain key instrumentalities whose primary mission is scientific or technical research and development; and
- D. Consolidation of Federal information dissemination and utilization activities.

A. NATIONAL SCIENCE POLICY FOR THE UNITED STATES (TITLE I OF H.R. 4461)

There was marked support for the enunciation of a national science policy for the United States and almost all witnesses approved the inclusion of such a policy in the bill. The findings and declaration of principles and procedures for implementation of H.R. 4461 were considered sufficiently definitive and yet broad enough to provide guidance without providing undue constraints. Such a policy was characterized as long overdue. Among the proponents, no one suggested deleting any concepts, but several witnesses offered suggestions for amplification of the policy statement. Among these were recommendations to amplify the findings and principles to reflect the importance of basic scientific research and the need for various Federal departments and agencies to support such research; to emphasize the Federal responsibility to encourage beneficial technological innovation; to foster privately-funded research and development; to recognize a Federal responsibility in supporting research and development in areas which by their nature only government can be expected to support; to stress international cooperation and costsharing in scientific research and development and the sharing of scientific knowledge with other nations in the interests of international peace and progress; to include a national goal to develop and utilize professional and technical manpower, including their training and education; to promote interaction between Government and academic institutions and to provide for stability of support for the latter.

Those witnesses who were not in favor of enunciating a national science policy at this time argued on the basis of doubts that such a model policy statement could be formulated, that a statutory policy would probably lack flexibility to meet changing requirements, that to draft a policy acceptable to the Administration might delay approval of legislation, and that in any event the new Presidential science adviser should be permitted to have an input into the content of policy.

B. SCIENTIFIC AND TECHNOLOGICAL ADVICE IN THE EXECUTIVE OFFICE OF THE PRESIDENT (H.R. 7830 AND TITLE II OF H.R. 4461)

This subject received major emphasis during the hearings since it represented a basic component of the Committee bill and was the sole content of the Administration bill. Many aspects of the subject re-

ceived detailed examination. Among these were: The form of the new organizational entity in the Executive Office of the President—whether it should be an office headed by a Director or a Council; whether to require Senate confirmation; duties of the new Office (budget review; annual reporting requirement; long-range planning functions); relationships of the new Office to existing Executive Office of the President units—OMB, the National Security Council, the Domestic Council; relationships of the new office to Executive Branch departments and agencies (role of science adviser as advocate, and support of the Office by Executive departments and agencies); coordination and evaluation of Federal R. & D. programs; and authority of the President to reorganize his science advisory unit.

Office (single director) vs. Council (multiple head) type office.—There appeared to be more support among the witnesses for the establishment of a Council-type advisory office, similar to other existing councils in the Executive Office. But many of the witnesses believed a compromise could be worked out whereby an Office might be established headed by a Director as proposed in the Administration bill, but provide for the appointment of at least two assistant directors, thus creating an organization which could act as a Council and form the basis for the creation of a Council form in a subsequent Administration.

When he met with the Committee on June 9, 1975, Vice President Rockefeller commented that the group which studied the question of return of science advice to the Executive Office had originally proposed that the Office be headed by a Director with up to five Assistant Directors in particular areas of concern.

The opinion was expressed that regardless of the form established, the President would look to a single individual for science advice.

Senate confirmation of Director and Deputies.—Whether the Director or Deputy of the new Executive Office science advisory entity should be subject to Senate confirmation was known to be an issue within the Executive Office. The Administration bill was silent on this point. All the witnesses who addressed this subject supported Senate confirmation, apparently on the premise that Congress should have access to the Science Adviser. One witness while approving Senate confirmation, recognized the President's prerogative to exert executive privilege on occasion.

Requirement for an annual report.—There was mixed reaction to the requirement for an annual report in the Committee bill and in earlier proposals. A number of witnesses recognized that the time and resources required to prepare such a report might not be available in an office of the limited size proposed in the Administration bill. Some recommended that this provision should not be included; others that the report might be prepared outside the Executive Office. One witness who did not support the inclusion of Title I, suggested that a substitute for it might be a requirement for an annual statement on science and technology similar to the President's statement of March 1972.

The Administration bill was silent on this requirement but the Vice President indicated that in all probability the Science Adviser would

make an annual estimate, appraisal, and recommendation to the President and Congress.

Budget review functions of the science advisory office.—The Committee bill assigned a budget review function to the Secretary of the Department of Research and Technology Operations but provided that recommendations were to be made to OMB only after consultation with the Council of Advisers on Science and Technology. The Administration bill did not mention this specific function among those of the proposed OSTP.

A number of witnesses expressed the opinion that the R & D budget review function belonged properly within the science advisory office in the Executive Office of the President. Some believed that more important than a requirement to make a comprehensive review of all budget proposals, which might be beyond the capability of a small staff, was the granting of a general budget responsibility which might be exercised selectively to permit concentrating on major issues and programs. Such authority it was argued, might enhance the ability of the office to become genuinely effective. Two witnesses supported the creation of a new Office of R & D Management within the Executive Office of the President, with the budget review function a primary role. One expressed the view that the budget review function was OMB's and thus should not be made a statutory responsibility of another office. The consensus was that the science advisory office should participate in the budget review process with OMB.

Long-range planning a function of the science advisory office.—Several witnesses viewed long-range planning as a necessary function of the science advisory office. NAS President Handler discussed the necessity to carry on long-range planning in conjunction with current program and decision-making, despite the tendency of the latter to dominate the former.

The current Presidential Science Adviser made two important points concerning long-range or "horizon scanning" function: First, the Administration proposal contemplated the utilization of outside sources for this function, which would presumably have more time to devote to it. The second point was that while an adviser may be aware of an emerging problem, he has to have "listeners—in the President and also in the Congress." Still another witness expressed the view that long-range planning should be part of better multi-agency science and technology policy planning.

Relationships of the new science and technology advisory office to existing Executive Office of the President.—The witnesses recognized the necessity for intra-Executive Office relationships of any new science advisory office. The OMB interface was commonly mentioned and a few supported the specification of close working relationships with the National Security Council including possible membership on the Council for the head of the science advisory office. The Administration viewpoint, as expressed by Dr. Stever, was that the adviser on science and technology would participate in deliberations of any of the units within the Executive Office of the President—National Security Council, Domestic Council, or others—and be fully involved whenever such activity might be important to the successful performance of his role.

Science advisory-Executive Branch departments and agencies relationships.—One main aspect of this very broad subject relates to whether the science adviser should also be an advocate for science per se and for the scientific activities of the departments and agencies. On the other side of the relationship is the extent of support for its own activities which the new office can expect from Executive Branch departments and agencies.

Science Adviser as a science advocate.—The prevailing sentiment on this question was that the science adviser cannot also be an advocate for science. The proper advocates for science were thought to be the various Executive departments and agencies with respect to their own programs, and the National Science Foundation and National Science Board for science in general. Under these circumstances, the Science Adviser's comments on programs in the R. & D. budget should represent "selected judgments from the broadest possible national-interest perspective, as free as possible from ties to any particular program or constituency" in the words of one witness.

A differing view on separating science advice from science advocacy was offered by one witness who believed that a strong case could be made that the head of any Executive science advisory office could not do his job "unless he becomes and remains the advocate within EOP of science and technology."

This view is based on a definition of science advocacy which extends beyond merely pushing the support of science for its own sake. This view considers a major reason for such an office to be that of demonstrating how science and technology can aid in the solution of broader national problems. In response to the charge that no scientist can be trusted to be objective and unbiased, and that advocacy then equates with "special pleading," the view was expressed that experience has shown this need not be the case. In this witness's view, ". . . we have already had adequate evidence that men of ability and integrity can be found for such an advisory role, and that their own 'self-regulating mechanisms' plus the feed-back they receive from their colleagues regarding White House decisions on science and technology can be relied on to assure a balanced approach to the various components of the scientific enterprise. . . ."

Still another witness recognized the problem of separating "advice" from "advocacy" as a generic problem at all levels of government and particularly in the White House. To counter the danger of supporting a particular position, it was suggested that the science advisory office must concentrate on "analysis rather than advocacy with a view to weighing the costs and benefits of alternatives and presenting options. . . ." It was suggested further that if the scientific and technical staffs of other units of the Executive Office—the OMB, NSC, Domestic Council—were strengthened, they would then be in a better position to evaluate the studies and recommendations of the Science Adviser.

Support for the science advisory office.—It was suggested that the small size of the staff contemplated for the science advisory office will not be able to provide necessary support to the science adviser on the vast Federal scientific and technical involvement without the active support of the departments and agencies. Their support and the estab-

lishment of good working relationships are crucial to the success of the office. In particular it was expected that the policy offices of the National Science Foundation could be called on for ad hoc support.

Later information provided by Dr. Stever confirmed this expectation. He said that when and if the new science advisory office is established, many of the functions now performed by the Science and Technology Policy Office and Office of Energy R. & D. Policy in the Foundation could be transferred to the staff of the new office. He said, however, that there will still be an "important role" for the Foundation's remaining policy offices in the policy sciences and he expected that the science advisory office would continue to use analyses carried out in the offices of the Foundation's Directorate of Scientific, Technological and International Affairs as inputs to its policy role.

Ad hoc science advice to support the science advisory office.—There was no discussion in the hearings about the re-establishment of a PSAC-type advisory body. The Administration has relied on the ad hoc mode for soliciting advice from the scientific community. Dr. Stever's opinion was "It is an effective way, and I think this may have been one of the things that has impressed the White House so that they are going to try to use this technique in the new bill."

Coordination and evaluation of Federal R&D programs.—Both functions are recognized as responsibilities of a science advisory office at the Executive Office level. Dr. Stever noted that the President's science adviser had traditionally served as chairman of the Federal Council for Science and Technology and said "it is intended that the new Director of OSTP would also be appointed to this position." He anticipated that continued efforts would be made to make the Federal Council a more effective interagency coordinating body.

Opinion was divided as to whether government-wide evaluation of Federal R&D programs should be a responsibility of a science advisory office. Evaluation undertaken by the science advisory office should, according to some witnesses, be on a limited selective basis to accommodate priority needs, rather than on a fixed schedule and comprehensive scope, which might exceed the capabilities of the office.

Authority for the President to reorganize his science advisory mechanism.—The limited authority which the Committee bill provides to the present or future Presidents to make changes in the organization and duties of the science advisory office, subject to Congressional approval, was viewed as a necessary provision. It provides the means for achieving flexibility to suit the needs of individual Presidents, an essential aspect of the advisory function.

C. ADMINISTRATIVE ORGANIZATION FOR CERTAIN AGENCIES WHOSE PRIMARY MISSION IS RESEARCH AND DEVELOPMENT (TITLE III OF H.R. 4461)

Department of Research and Technology Operations.—The Committee's proposal to create a Department of Research and Technology Operations as a centralized administrative source to certain Federal agencies (NASA, ERDA, NBS, NSF, NOAA) and the Science and Technology Information and Utilization Corporation (proposed in Title IV) was met with both enthusiasm and reservation. Most wit-

nesses felt that the proposal should be further studied and, to avoid delaying action on Title II, this title should be separated from the bill.

Dr. Stever, speaking for the Administration, said that he was not convinced that the proposed department was either necessary or desirable at the present time. He pointed to the likelihood of difficult management and coordination problems in dealing with constituent units of such disparate size and functions as those proposed for the new department.

Points raised by other witnesses included the following:

While a number questioned whether ERDA should be included in such a department, at least one witness advocated expanding the coverage considerably, to comprise a Department of Science, Technology, Energy and Materials which would include all units proposed for the department and several other energy and materials-related components as well.

Other witnesses suggested that the imposition of a departmental superstructure over independent agencies would result in a downgrading of these agencies in the Federal hierarchy. Another called attention to Congress' need to maintain direct access to various agencies. Some skepticism was expressed as to how much power and influence a secretary of such a department would have when he did not have control of the budgets of the constituent agencies under him—although this stemmed from a misunderstanding of the bill. Some questioned whether certain functions proposed for the department, e.g., both the budget review and statutory review functions, belonged there. One witness did not see how the proposed consolidation would remedy the present operating deficiencies of the constituent units.

A major advantage of the creation of a Department of Research and Technology Operations which a number of witnesses mentioned was that it would provide a focal point for an advocacy role for science and technology.

Further study of Federal science and technology organization and management.—Several witnesses who expressed favorable reactions to the concept of further centralization of certain Federal activities, still advocated additional study. The President of the National Academy of Sciences offered the assistance of the Academy in conducting a broad study of Federal science and technology organization and management.

D. CONSOLIDATION OF FEDERAL INFORMATION DISSEMINATION AND UTILIZATION ACTIVITIES (TITLE IV OF H.R. 4461)

The Committee's proposal to establish a Science and Technology Information and Utilization Corporation met with varied response from most of the witnesses. The Administration's opposition to the proposal was clear from the response of Dr. Stever to a series of supplemental questions which amplified his earlier testimony.

Dr. Stever viewed pluralism as one of the strengths of the present information dissemination system. This view was shared by other witnesses. He supported his position by expressing the opinion that information gathering and dissemination by the various departments and agencies which was tied into their particular needs and missions was more effective than it would be if performed by a separate cor-

poration which would probably concentrate on sales. He doubted that a corporate information conglomerate would improve the dissemination of scientific and technical information, since three of the functions to be carried out by the proposed corporation—policy-setting, interagency coordination and national research—are not profitable operations and are normally not carried on by commercial firms.

He testified that there was no detailed long-range planning for scientific and technical information, nor should there be; he felt the information enterprise was too decentralized to be under a single master plan.

Nonetheless, Dr. Stever's conclusion that current Federal handling of scientific and technologic information was working reasonably well was not documented by any other testimony.

Points made by other witnesses, who generally felt that the proposal of title IV should receive further study, and that this could be done in conjunction with a more comprehensive study of Federal organization, included the following. One witness felt that the Committee bill model was too limited and concerned with passive information services while he believed the Government needs to increase its role in public technology innovation. He recommended that a more aggressive and dynamic model be established. Another witness expressed the belief that the Nation needs a focal center for scientific and technical information but the Corporation as proposed combined Federal services with stimulation of non-Governmental services; he felt both might suffer as a result.

He stated that a real need exists for an information policy board which might be associated with the new science advisory office. But he recommended deferral of action on unification of information services until policy and coordinating mechanisms are established. A number of witnesses advocated an increased role for the Federal Council for Science and Technology. Several witnesses advocated an expanded role for the NSF Office of Science Information Services and a clarification of its statutory base.

On a final note, it appears that scientific and technical information issues are as much policy issues as organizational ones. There was strong consensus by almost all witnesses on both the importance and need for further study of this whole question.

RATIONALE FOR THE BILL

TITLE I

Title I is a statement of national science policy—but is not an invention of the Committee. It represents an analysis of much testimony and research on the subject. The main issue has not been the Title's substance but whether or not Congress should attempt such a policy statement. Some people have thought it feasible; others have not.

The government has gone through decades of ad hoc situations, arrangements regarding science and technology which have not been based on any firm policy but have responded merely to the current crisis. The result has been a marked inconsistency in utility and effect. In some cases things have worked well; at other times they have

worked poorly. This goes all the way back to World War II when the unleashing of nuclear energy forced political leaders to think seriously about science and technology and how to handle it. The tempo was speeded up, of course, with the advent of Sputnik. As a result of these two spurs, the Congress and the country did begin to get a feeling of the need for basic research and the desirability of some consistent way of handling and supporting both it and applied research and development.

But where the advent of the A-Bomb and of the space adventure clearly demonstrated the need for fundamental research and the training of adequate people to do it, presently our society is being pushed forcefully into the applied area. We are asking science and technology to help us in our big major crises—primarily those of the environment, energy and economy.

H.R. 10230 offers a set of science and technology policies for consideration and proposes to relate these to the still broader goals of our society in line with the Committee's 1970 report "Towards a National Science Policy." The principle proposed is that the expenditure of public funds should be for definable and accepted public purposes, understood and agreed. Various individuals—in hearings and for publication—have addressed the policy issue. The weight of the testimony was in favor of setting forth a national science policy, using arguments such as these:

(1) More careful planning and coordination are required at or near the highest government decision-making level.

(2) We are faced with the difficult task of interweaving science policy with national social, economic and political policies—which would seem to call for a unified coherent strategy.

(3) The preamble of any legislation prepared by the Committee should include the basic tenets of a national science policy as basic building blocks.

(4) Structured policy involves an explicit delineation of goals, strategies and priorities which can provide a longer term frame of reference for planning than annual budget decisions—which tend to be largely incremental.

(5) There is a need for a national science policy, but this is a continuing problem, to be worked out by the executive and legislative branches. No single brief policy statement can be good for all time, unless expressed in the very broadest terms. Policy must be specific and evolve as time goes by.

(6) If Federal science policy is to deal with the contribution that science has made and can make to our economic well being, the concept of science policy must embrace not only public investments in science but also the national environment for using scientific and engineering capabilities for economic purposes.

(7) Lacking a national science policy statement, we tend to operate under a set of independent and occasionally contradictory policies. Such a statement, even if incomplete could serve a useful purpose by providing a sense of direction for federal actions relating to science.

(8) The role of science and technology in our society and the role of the federal and state governments in their support are changing so rapidly that it may not be possible to spell out a

science policy in detail. However, it is important for both the Congress and the President to enunciate a general statement indicating the responsibility of the federal government to support science and technology for the good of the people and the advancement of the nation.

(9) In public policy terms, we have no across-the-board approach to leveraging science and technology; we go at it in a disassembled way, in a reactive manner rather than a strategic manner.

The minority view was represented essentially by the following arguments:

(1) There is no particular advantage in the establishment of national science policy, per se. We should have a national science policy, which at any one time will be that sum total of many individual policies.

(2) There is no need for a statement of policy. Science policy is a rather fuzzy term, limited to a general declaration of faith in benefits of technological progress. The policy itself consists of a great many specific decisions of widely differing content.

TITLE II

Title II would make available to the President a new organizational entity to assist in using science and technology in national decision-making—an Office of Science and Technology Policy, whose Director also serves as science adviser. The basic premise is not to insist upon a particular style of scientific support for the President, but to provide a way of mobilizing expertise in the President's behalf. The President can use the Director of the Office, and such Assistant Directors as are appointed, in whatever manner he chooses. In any case, the Office would speak for the best public use and understanding of science and technology and not as an advocate for science and technology per se.

Numerous witnesses have contended that as the Federal role and support structure for R&D has grown, so has grown the need for better awareness and attention at the highest levels of government. Increasingly complex scientific and technological issues confront the President. Off and on since the beginning of World War II, the nation has been debating the issue of how best to incorporate science and technology into national decision-making.

World War II led to widespread use of science and technology by our allies, our enemies and ourselves. For the first time, a President had what amounted to a "science adviser"—Dr. Vannevar Bush, who marshalled the U.S. scientific and technological effort and worked closely with President Roosevelt.

Dr. John Steelman was designated by President Truman to head a Scientific Research Board in the Executive Office of the President. Close personally to the President, Steelman also acted as the President's liaison with the scientific community.

From 1952 until late 1957, science advice for President Eisenhower was provided by a Science Advisory Committee through the Director of the Office of Defense Mobilization. With the launch of Sputnik in October 1957, science and technology came once again to center stage and President Eisenhower created the position of Special Assist-

ant to the President for Science and Technology. Dr. James R. Killian, Jr. was appointed to the post. Also, ODM's Science Advisory Committee was reconstituted as the President's Science Advisory Committee (PSAC).

In time, Congress became dissatisfied with these steps and pushed for a more formal arrangement. In mid-1962 President Kennedy established an Office of Science and Technology (OST) and his Science Adviser then wore several "hats," including Science Adviser to the President and Director of OST in the Executive Office of the President.

Most agree that the role of presidential science adviser was strong and influential from Roosevelt through Kennedy. Beginning with President Johnson and continuing with President Nixon, it was "downhill" to January 1973.

At that time President Nixon announced Reorganization Plan No. 1 of 1973 which abolished OST and PSAC, and transferred the function of Science Adviser to the Director of the National Science Foundation as an additional duty. Hearings were held by the Government Operations Committees, but the prevailing mood seemed different from that of 1961-1962 when President Kennedy was more or less persuaded to establish OST. The view in 1973 seemed to be, "If the President doesn't want a science advisory capability in the Executive Office, there is no point in making him keep one."

This Committee's inquiries have produced very few outside the Administration (in '73) who really approved the present setup. Virtually all of the Committee's other testimony indicated a conviction that the dual role of the Science Adviser and the Director of the National Science Foundation was not tenable. It is particularly noteworthy that Dr. McElroy, who had preceded Dr. Stever in the post of Director of the Science Foundation, was quite emphatic on this point. Since Dr. McElroy is the only former Director to have held that post during NSF's modern history, his views carried quite a bit of weight.

Almost no one has wanted to reestablish OST in its former format. But there have been many organizational suggestions. These include, for example, the one-man personal adviser to the President; the Council of Advisers with no one Presidential Science Adviser; a Council of Advisers whose chairman also serves as the President's Science Adviser; ad hoc advisory panels, and so on. Undoubtedly one of the suggestions which has had the biggest impact is that of the National Academy of Sciences' Killian Committee to which all of the former Presidential Science Advisers appeared to subscribe, with the exception of Dr. David. He proposed an Office of Research and Engineering Management within the Executive Office, not at the level of a department, but at a level of protocol equal to that of OMB.

It was about this point in the 1974 hearings that it became clear the Committee was really dealing with several different issues. It was not just dealing with advice, it was also dealing with research and development management including the handling and use of science and technology information. It further became apparent that while these were part of the same picture they probably warranted separate consideration and treatment. The original Teague-Mosher bill (H.R. 4461) did this.

It was also a critical recognition so far as the structure of H.R. 10230 is concerned.

Hence the substance of Title II. That Title encompasses the duties and functions of the proposed Office of Science and Technology Policy and its Director. The number of statutory Assistants may run from 0 to 4 depending on the President's desire.

Among the important features of this Title are (1) evaluating the quality and effectiveness of the Federal R&D effort; (2) advising the President with regard to scientific and technological considerations in all major fields including national security; (3) advising and assisting in the development of Federal R&D budgets; (4) developing criteria for optimum levels of Federal R&D support in accordance with the principles established in Title I.

It is also important to note the reorganization feature which would permit the President to reorganize the advisory setup within his own Executive Office, unless vetoed by both houses of Congress. However, the President could not simply abolish the advisory setup and replace it with nothing. He could alter it, but he would be obliged to establish something in the place of whatever advisory arrangements were in existence.

TITLE III

This Title establishes a 24-month Federal Science and Technology Survey Committee within the Executive Office of the President which is charged with the duty of examining the total Federal science and technology effort "including missions, goals, personnel, funding, organization, facilities and activities in general."

When completed, the Survey Committee's final report must be transmitted to the Congress by the President, together with his recommendations based thereon.

There are three cardinal reasons for this Title in its present form.

First, a comprehensive survey of the Federal science and technology establishment, its functions and needs, has not been made by any duly chartered group since the Steelman Report of 1947—as previously noted. The events of the intervening 30 years assuredly warrant such a study.

Second, at this point in time the Congress does not have sufficient information or an adequate data base on which to model such further reforms of scientific policies, plans or organization as may be needed. The Survey Committee's findings should provide major assistance—although they will in no way preclude the conduct of similar Congressional studies nor obviate the need for them.

Third, it is essential that the issues, questions and problems which the original Teague-Mosher bill (H.R. 4461) sought to address in its Titles III and IV remain a focus of active study. Hence, this Title of H.R. 10230 provides for the continuation and enlargement of such study on the part of the Executive branch. This Committee and, doubtless, other committees of the House and Senate, will assure appropriate legislative input to the overall study, also on a continuing basis.

Among the issues seriously considered in H.R. 4461, and which need further in-depth evaluation are (a) a new departmental institution for Science and Technology, and (b) an improved entity for handling Federally sponsored scientific and technological information.

A New Department?

If at all, why a new cabinet-level department?

This is where the managerial part of the legislative equation seemed to come in—and where the role of advocate for science and technology is encountered.

All witnesses who appeared before the Committee, in general, advised against combining the role of science advice with advocacy for science and technology per se. Everyone seemed to feel that these roles were incompatible and should be separate. The original Teague-Mosher bill undertook the separation through a Department of Research and Technology Operations where those Federal agencies whose missions are mainly the performance of research and development would receive some coordination and also be provided with a champion possessing political clout exceeding that which any of them has independently. It was also there that major new scientific and technological endeavors which came along in the future could find a home without the necessity for Congress to create a new agency on a crash basis—such as occurred in the case of both environment and energy within the past few years. When such needs arose, the activity could be assigned to the new Department until such time as it was clearly demonstrated that a need for an independent agency or department existed. Finally, it was through this device that the number of agencies clamoring for the President's ear could be somewhat reduced with a consequent reduction of the demands on his time and attention.

Aside from the foregoing, the Department's operations would primarily have been those of a staff nature where Federal research and development statutes, regulations and budgets would be reviewed across the board. Here, too, the main technology assessment function in the Executive branch would be performed. Here, for the first time, one entity would be charged with an overview of the entire Federal Research and Development budget and with making recommendations concerning it to OMB.

The Department was not intended to disturb existing organizational structures of any of the agencies to be placed within it. It would not disturb the so-called pluralistic system of research support. It would not change the existing direct line of contact or communication between other departments and agencies and OMB. It was not a Department of Science and Technology in the traditional sense of such proposals made in the past.

But why bother with this area (which has been in-and-out of favor for several decades) in the first place?

For one thing, the Presidential Science Adviser, Dr. Hornig, in his remarks to the 1968 annual meeting of the American Association for the Advancement of Science, specifically suggested that a departmental arrangement of the type in the original Teague-Mosher bill deserved a close scrutiny. In 1970 the then existing Subcommittee on Science, Research and Development made a specific recommendation for a National Institutes of Research and Advanced Studies. While this was directed primarily to research and education in their pure forms, it was a step in the direction of H.R. 4461.

In the full Committee's 1974 hearings, recommendations for this sort of an organization were made by the former Director of the

Bureau of Standards and present chief scientist of IBM, Dr. Branscomb. It was also recommended by Dr. Brewster Denny of the University of Washington, who, as much as anyone, was responsible for the creation of OST through his staff work with the Senate Interior Committee in the early '60's. Also at those hearings, Dr. Patrick Haggerty, former PSAC member and head of Texas Instruments, delineated the "staff" function idea at Cabinet level. While Dr. Haggerty personally preferred a Council of National Development whose chairman would serve as technological adviser to the President, and while he questioned the wisdom of mixing staff functions with line functions, he did endorse the concept of a Cabinet-level staff operation in this area.

One function which the Department would have had, the overview of the total Federal Research and Development budget, is similar to what Dr. David proposed for his Office of Research and Engineering Management. Actually, Dr. David would have gone further than the Teague-Mosher bill in that his proposal would have been binding on OMB whereas the recommendations from the Secretary of RTO in the Teague-Mosher bill were not. It is of some interest that during the past several years, in Canada, the Ministry of State for Science and Technology has been drastically upgraded and has been given this same function of budget review vis-a-vis the Canadian Treasury Board (the equivalent of OMB). It also seems significant that science policy authorities Harvey Brooks (Harvard) and Eugene Skolnikoff (M.I.T.) have emphasized the need for some Executive agency to be charged with technology assessment functions—and also that they approve the idea of an agency or department where other agencies or departments could go to have research and development done for them when needed—as many now do on a limited basis in conjunction with the National Bureau of Standards. These were specifically designated functions of the Department as envisioned in H.R. 4461.

Precedents for the sort of amalgamation of agencies contained in that bill are not difficult to find. Probably the most obvious one is the Department of Defense which absorbed the Army, the Navy and the Air Force without changing their mission or their administrative structure. Operationally, the three services, each of which retains its own Secretary, function pretty much independently—though they are, of course, subject to decisions at the Defense level with regard to differences over mission, budget, etc. More specifically, however, the relatively loose language employed in the Teague-Mosher bill was patterned after the consolidation which took place in 1947 when the Housing and Home Finance Agency was formed. At that time more than 15 existing agencies were brought together under one roof, most of which continued to operate in an independent manner for nearly 20 years before being absorbed by HUD.

Scientific and Technological Information

Along with possible organizational reform, information systems are considered to be extremely important. The Committee began giving serious attention to the matter in 1967 and '68 when a series of meetings was held between senior members of the Committee and key representatives of major institutions around the country which had a par-

ticular interest in and experience with the handling of science information.

Those representatives came from such institutions as the Smithsonian, COSATI (see below), the Ford Foundation, the State Department, the Federal Communications Commission, Bell Telephone Laboratories, McGraw Hill, the Bureau of the Budget, the Academy of Sciences, and the President's Science Adviser. Out of this came a proposal to the Committee from the Smithsonian Institution for an 18-month Council on Communications, designed to report to the Committee at the end of that time with recommendations for legislation to coordinate, unify and promulgate science information regulations for all the Federal government's activities in that area.

The proposal fell through for lack of funding, but in 1970, following extensive science policy hearings, the SRD Subcommittee issued a report with specific recommendations including those for an improved system of science information exchange. Among other things, the report recommended that the Federal government formulate "a real-time management information system" which should be "inaugurated and utilized by all Federal agencies engaged in research." It was also recommended that with regard to science information systems and techniques "central responsibility be assigned to the Smithsonian Institution with essential backup from OST's Committee on Scientific and Technical Information." (COSATI)

In 1972, this Committee's concern was rekindled by a report of the Comptroller General that effectiveness of the Smithsonian's Science Information Exchange was hampered by a lack of complete, current research information. It was explicitly pointed out in the GAO report that the various departments and agencies of the Federal government most involved with Research and Development were not in agreement and were, in fact, frequently at odds over methods of handling and utilizing scientific and technological information.

While this issue was not a major one discussed during the full Committee's hearings in 1973-74, its shadow was nonetheless present. Staff inquiry indicated that a lack of rapport between the agencies and between the three basic Federal science information systems—the Smithsonian's Science Information Exchange (SIE), the Commerce Department's National Technical Information Service (NTIS) and the Foundation's Office of Science Information Service (OSIS)—continued to exist.

The philosophy of the original Teague-Mosher bill was essentially simple: without the means of getting scientific and technological information available, known and used, the government's entire Research and Development effort could not help but be badly attenuated.

It was felt that the system set up in that bill to deal with scientific and technological information, or something akin to it, would help. The bill would have merged the three key agencies into a new Science Information & Utilization Corporation with a single executive head and a governing Board. The Corporation, in turn, would have become a part of the proposed new Department of Research and Technology Operations for administrative purposes.

The corporate form was suggested on grounds that that: (1) at some point it may be desirable to make such an effort self-sustaining or par-

tially so—or possibly a joint government-industry endeavor; and (2) scientific and technological information is now conceded to be one of the nation's leading commodities—bought, traded and bargained for—and may thus appropriately be handled by a corporate structure.

The foregoing are factors which, the Committee believes, should be carefully considered by the Survey Committee as established in Title III of H.R. 10230.

SECTIONAL ANALYSIS OF THE BILL

(A) PROVISIONS IN BRIEF

TITLE I—NATIONAL SCIENCE AND TECHNOLOGY POLICY

Findings

SEC. 101. (a) Findings of Congress that (1) national goals (economic, security, resource use, functioning of Government and society) require employment of science and technology; and (2) knowledge about the relationship of science and technology to national and international events is essential to national decisionmaking and long-range national planning.

(b) Goals for science and technology include:

1. Support of U.S. diplomatic goals;
2. Efficient use of resources for economic opportunity, stability, and appropriate growth;
3. National security;
4. Improved health and medical care;
5. Improved environment, housing, and urban and rural systems.

Declaration of Policy

SEC. 102. (a) Principles of a national science policy include:

1. Continuing formulation and implementation of national strategies;
2. Economic growth balanced against preservation of benign environment and frugal use of resources;
3. Balancing U.S. domestic and diplomatic objectives in an interdependent world;
4. Education and training in science and technology;
5. Establishment of a sound national base for science and technology including cooperation among all sectors, strengthening of institutional capabilities, elimination of barriers to initiative and innovation, improved management of information, establishment of technical standards, and wider public understanding;
6. Periodic review and adjustment in the national policy for science and technology.

(b) Implementation of Declared Policy requires:

1. Central policy planning elements, including one available to the President as an executive office staff, to help Federal agencies identify tasks, mobilize scientific and technological resources, secure funding, anticipate future problems, and review national science and technology policy;

2. Government to ensure transfer of technology information to users, and facilitate close coupling of industry with academia in the application of scientific findings;

3. Useful but non-commercial technologies to be encouraged;

4. Cooperative scientific and technological relationships with States, local governments, and the private sectors;

5. Determination of proper level of effort in science and technology;

6. Frequent and systematic information to the Congress about the condition of the national scientific and technological effort and its resources.

(c) Procedures for affecting the Declared Policy require—

1. The functional use of Federal procurement policy;

2. Explicit criteria for projects in science and technology warranting Federal support;

3. Such criteria to include quality of research, stability of institutions, timeliness of results, educational encouragement, and cultural advances;

4. Federal patent policies based on uniform principles stressing incentives for innovation and procedures to assure full beneficial use to serve the public;

5. A balance between cooperation and competition in research and development by private industry under antitrust regulation;

6. Closer relationships among scientific disciplines;

7. Efficiency in the management of Federal laboratories;

8. The use of science and technology to support State and local government goals;

9. Formal recognition of important scientific and technological contributions to public welfare;

10. Support for useful science and avoidance of injurious consequences of technological applications;

11. Procedures for full exchange of technological data and findings among Federal agencies.

TITLE II—OFFICE OF SCIENCE AND TECHNOLOGY POLICY

Short Title

SEC. 201. Citation as "Presidential Science and Technology Advisory Organization Act of 1975."

Establishment of Office

SEC. 202. Establishes Office of Science and Technology Policy in the Executive Office of the President.

Director; Assistant Directors

SEC. 203. Director of the Office, presidential appointee, with advice and consent of the Senate; not more than four Assistant Directors, presidential appointees, responsible to the Director.

Functions

SEC. 204. (a) Director to be the President's chief policy adviser and assistant on scientific and technological matters.

(b) Director, in addition to such other duties as the President prescribes, shall: (1) advise on scientific and technological aspects of the economy, national security, health, foreign relations, the environment,

and resource management; (2) advise on Federal effort in science and technology; (3) participate fully in the process of formulating the Federal budget for science and technology; (4) provide leadership in and coordination of Federal research and development; (5) advise the President on statutes and regulations affecting research and development; (6) provide criteria for Federal support for scientific and technological activities to enhance the national capability to achieve pertinent objectives; (7) advise on international cooperation in science and technology; (8) identify future national goals for science and technology; (9) report on significant trends in science and technology; (10) review changing needs for national science policy; (11) maintain liaison with National Science Board, and executive agencies, and develop appropriate working relationships with National Security Council and Domestic Council.

Personnel

SEC. 205. Director to appoint and fix compensation for required personnel.

Consultant and Other Services

SEC. 206. Director authorized to engage consultants and contract for studies.

Other Federal Agencies

SEC. 207. Authorization of support for Office from other Federal agencies.

Reorganization

SEC. 208. (a) President may submit plans to reorganize the Office as appropriate until Jan. 3, 1982; (b) plan to become effective unless rejected by both Houses of Congress within 60 days; (c) and (d) technical provisions.

TITLE III—THE FEDERAL SCIENCE AND TECHNOLOGY SURVEY COMMITTEE

Organization

SEC. 301. (a) (1) Establishes said Committee of five to twelve members appointed by the President, with Director of Office serving as chairman; (2) to have high professional qualifications, analytical expertise, and balanced representation; (3) standard remuneration of committee members.

(b) Staffing arrangements.

(c) Federal agencies may supply information and loan personnel to the Committee.

Duties and functions

SEC. 302. (a) Committee to survey total Federal science and technology effort to determine needs for (1) organization including institutional realignment, (2) improvement of information systems, (3) technology assessment, (4) technology innovation, transfer, and use, (5) Federal-State, and Federal-industry cooperation, (6) Federal regulations and procedures retarding innovation, (7) broader base for support of basic research, (8) integrating scientific and technological factors into national policy, (9) technical manpower, (10) scientific

and technological budget planning, and (11) long range planning for application of science and technology to major national problems.

(b) (1) The Committee to report on these matters to the President; (2) The President to transmit the report to Congress within 60 days, including his recommendations as appropriate.

Termination

SEC. 303. Life of Committee 24 months from date of first meeting; final report to be made during this period.

TITLE IV—MISCELLANEOUS

Authorization—Repeal—Amendment

SEC. 401. Appropriations Authorized.

SEC. 402. Conforming organizational provision.

SEC. 403. Conforming amendment.

(B) EXPLANATORY NOTES

TITLE I—NATIONAL SCIENCE AND TECHNOLOGY POLICY

The logic of this title encompasses, *first*, an assertion of the importance of science and technology to advance and support the national welfare; *second*, a definition of the national goals for which science and technology are relevant; *third*, a declaration of policy principles for science and technology supportive of the national goals; *fourth*, an enumeration of implementing principles; and *fifth*, a somewhat more detailed catalog of implementing procedures.

Throughout the development of this title, it was often noted by Members of the Committee that the achievement of a completely satisfactory and permanent policy for science and technology was not feasible. But it was recognized that out of experience with a first policy statement it should be possible to refine and perfect the policy by successive amendment as the need became evident. Moreover, changes in the national condition in the course of time can be expected to generate a need for responsive future changes in the national policy for science and technology.

What is presented in Title I is, accordingly, more than a provisional statement of national policy.

It is to be followed as a matter of law, subject to change by the processes of law. But the intention is to make clear that some degree of flexibility should be maintained, and that as the need for change is recommended by those responsible, Congress will need to be responsive to such needs.

The Committee has made an effort to assure that the policy embodied in this title is as comprehensive, effective, and durable as possible. The text has been subjected to extensive scrutiny by the scientific and technological communities, by representatives of public and business groups, as well as by Members of Congress and the Office of the President. Changes have been made in response to suggestions from all these sources. It is the belief of the Committee that a substantial consensus has been achieved.

Sec. 101. Findings of Congress

This section has two parts. The first part identifies ways in which the national welfare is dependent upon the products of science and technology; the second part identifies six broad national goals to which science and technology should contribute.

In calling upon science and technology to support the general welfare, security, resource utilization, and other social functions, it is recognized that programs need to be vigorous and selective.

At the same time, the impacts of science and technology upon national and international events and trends require assessment and long-range future planning. Participation of those technically knowledgeable, as well as those politically and diplomatically sensitive, is necessary to shape the consequences of science upon national and international events and trends.

The six broad national goals to which science and technology are called upon to contribute are (1) those of foreign policy, (2) a healthy national economy, (3) the special needs of food and energy, (4) the national security in its broadest sense, (5) the national health, and (6) a satisfying total environment, natural and man-made, urban and rural.

The first of these goals implies the purposeful use of basic science as a bridge to the rest of the world through the shared satisfaction in scientific discovery. It also takes account of the growing role of technology in shaping the ways in which nations and their peoples interact with others in an increasingly interdependent world.

The goal of a healthy national economy is coupled with the requirement that resources be frugally used, that essential industrial materials be managed to balance present needs against future needs, and that the controversy over growth versus non-growth be resolved through the achievement of a consensus on the extent and directions of growth most acceptable to American society as a whole.

The goals of adequate food and energy, national security, and health and medical care require no special elaboration. They are long-standing and non-controversial. Moreover, the roles of science and technology have long been paramount in their support.

With respect to the environmental goal, it is recognized that science and technology have much to contribute, and that their contributions have not yet reached a level of parity with efforts in other directions. Housing and urban and rural systems call for new definitions of national problems requiring for their solution systems not yet conceived. The statement of this national goal in the context of science and technology is a planned incentive to encourage initiatives in these directions.

Sec. 102. Declaration of Policy

Subsection (a) of this section is the core of the proposed national policy for science and technology. It is a declaration calling for adherence to these principles: a comprehensive set of strategies for science and technology, fostering the national economy, balancing U.S. domestic and foreign policy needs, maintaining the requisite technical manpower, sustaining a solid scientific and technological infrastruc-

ture, and keeping the policy (as well as the strategy) responsive to changing U.S. needs. An elaboration of the six principles follows:

1. National efforts are to be directed to the formulation and implementation of a set of strategies for the use of science and technology to achieve national goals. The process is to take into account the views of States, municipalities and representative public groups.

The plural of "strategy" is intended to convey the concept that no one grand strategy is appropriate, but that different strategies are required for different objectives; these concurrent strategies need to be harmonized in their planning and execution. In addition, each strategy requires its own comprehensive planning with respect to scope, level, direction, and extent of scientific and technological effort. Finally, the conduct of each strategy requires the continuous appraisal of the role of science and technology for its support.

2. Science and technology are to be purposefully employed in a systematic effort to enhance and strengthen the national economy. But it is recognized that economic growth carries with it possible liabilities that science and technology should also be mobilized to minimize: i.e., the unnecessary or wasteful use of resources and the despoliation of the environment. Economic growth, frugal resource use, and environmental quality are thus related as goals which science and technology should be employed to reach.

3. Science and technology are to be used to support both domestic and foreign policy needs of the United States. In particular, the export of U.S. technology is to be recognized as beneficial to developing countries, but a proper subject for exchange with other developed countries. Moreover, as the rest of the world advances technologically, U.S. exports can be expected to encounter increasing competition in world trade. Thus, a complex balance needs to be struck that involves export and import of technology by the United States and the management of science and technology on a selective basis to enhance U.S. industrial productivity in industries most compatible with the long-range economic health of the United States as well as world economic stability.

4. Support is required for the institutions which train U.S. scientists and engineers. Opportunity for trained scientists and engineers to contribute to national goals is recognized as an incentive to their recruitment for training. Also recognized is the need to provide means by which scientists and engineers in overcrowded or obsolescent disciplines or fields can adjust their careers to changed national needs by further education or retraining.

5. It is necessary to develop a strong national foundation for science and technology. There are five essential components of this: *first*, the cooperation and participation of Federal, State, and local governments and of the public and private sectors; *second*, the encouragement of pluralism in science and technology—in terms of diversity of interests and directions of creativity, as well as of institutions participating in the process of innovation; *third*, the effective management and use of scientific and technological information; *fourth*, in the fields of science and technology, standards and methods of testing

are indispensable, and are a legitimate part of the total enterprise; and *fifth*, public awareness, understanding, appreciation, and acceptance of the constructive role of science and technology are basic to the stability and soundness of total national activity in areas of science and technology.

6. It is necessary to recognize that world and national conditions that shape U.S. goals and needs will change in the course of time. It is also necessary to recognize that the structure, directions of competence, and degrees of relevance of parts of the scientific and technological resources of the United States are subject to change over the years. Accordingly, the national policy for science and technology will require periodic review and adjustment to assure its continued appropriateness in dealing with the needs of the future. This review and adjustment are an explicit charge upon the Federal Government.

Subsection (b) establishes six modes of implementation. They involve: central planning and coordination; information management; publicly supported science and technology; division of responsibility with the States, local governments, and private entities; allocation of public effort to science and technology in relation to other competing activities; and the assurance of information to Congress about the totality of the science and technology effort.

An elaboration of these provisions follows:

1. It is recognized that in at least five functional areas the implementation of the national policy for science and technology requires central planning, coordination, direction, and representation—(a) the identification of public problems and objectives to which the contributions or impacts of science and technology are relevant; (b) the unified mobilization of scientific and technological resources in support of essential national programs; (c) participation in the budgetary and appropriation process to secure funding support for programs for which scientific and technological resources are to be mobilized; (d) identifying future program directions requiring such mobilization, and preparing for them; and (e) review of the adequacy and effectiveness of national policy for science and technology, in order to recommend to the Congress any needed changes in Title I of this Act.

2. Particular attention is directed to the vital role of the information function as the underpinning of science and technology, and to facilitate the effective use of their products. The specifications of a sound national program of technical information management are that (a) those who need technical information should be able to secure it promptly; (b) the information itself needs to be systematically collected, reviewed for reliability, stored, assessed for modernity, and suitably “packaged” or prepared for delivery to the user. Many different arrangements currently are available for carrying out these functions or parts of them. The particular thrust of this clause is to recognize the importance of the entire arrangement as a national technical information system, to define its goals and purposes, and to acknowledge the Federal Government’s responsibility for participating in it. Such participation is defined as including: the generation and supply of information from Federal programs of science and technology, the funding or support of various parts of the total national system, and

the encouragement of cooperative working relations among these different parts of the system. Characteristically, the kind of information addressed here is reviewed or “refereed” to certify its technical soundness and accuracy.

3. Among the categories of science and technology that the Federal Government should deem “appropriate” for its support are those involving large costs, high risks, long times from initiation to results, and very large mobilization of technical resources. Some but not necessarily all of these criteria need to be satisfied. The one overriding consideration is that such efforts, to merit this support, should be “expected to provide results beneficial to the public.” It is also important that there be evidence that the private sector is unable or unwilling to support such efforts.

4. The intent of this clause is not to set up jurisdictional barriers in the allocation of science and technology programs to various levels of government. Instead it prescribes a requirement that the locus of control be appropriate to the primary interest, while calling for cooperative relationships among Federal, State, and local governments and between the public and private sectors.

5. Science and technology contribute importantly to many different national goals and programs. Basic science underlies much of the national capability in industrial technology. It is in the national interest to assure that an adequate national effort is sustained in science and technology, balanced against other important and competing requirements for available resources to meet national needs. The intent of this paragraph is to call for orderly means of analysis and assessment by which these competing programs are funded and supported to meet public needs.

6. The roles of the Congress in the formulation of national science and technology policy, in the appropriation of funds to support specific programs and activities, and in the monitoring of these policies, programs, and activities, require that Congress be regularly informed of them. Initially it was the thought of the Committee that an annual report on the national condition of science and technology should be mandatory. However, it was concluded that reporting should not be determined by the calendar but rather by the conditions that warranted the informing of the Congress on the need for action. In the interest of avoiding unnecessary reports and manpower drain, the term “regularly” is interpreted here to mean “as required, but with reasonable frequency.”

Subsection (c) delineates procedures to help implement the policy. These deal with Federal procurement policy, program criteria, institutional criteria, patent policy, antitrust policy, interdiscipline approach; Federal laboratory management, goals of State and local governments, recognition of scientific and technological achievement, technology assessment, and data exchange among Federal agencies.

The rationale behind these procedures is:

1. It is to be recognized that the Federal Government is a major purchaser of goods and services. In this role, the Government can exert a positive and constructive influence on the market place and on U.S. suppliers. It is proposed that this influence be extended to the encouragement of good conservation practice (of materials, energy,

and dollars), to good environmental practice, and to enhance product performance.

2. The criteria on which action is based to determine the direction and extent of Federal support for research and development have raised persistent questions. The intent of this clause is to seek further effort to refine the criteria. Among the suggestions offered are: making the criteria explicit, the use of cost-effective principles and defining the nature of the problems being attacked. Problem criteria would include: time to fulfillment, geographic spread, and economic diffusion.

3. A related question is that of the institutional criteria to be applied. In this area it is proposed that, for science and technology generally, the criteria should be: quality of research, stability of funding, and timeliness of results. In the particular area of basic research, three criteria to be applied are the meeting of specialized educational needs, the generation of a base of scientific knowledge for use in future needed technological development, and the creation of cultural values.

4. The management of the U.S. patent system to encourage the progress of science and useful arts has been the subject of repeated study and analysis. The policy proposed in this paragraph is to move toward uniformity in the principles of patent management. The scope of the paragraph encompasses two areas of invention: patentable ideas in general and those developed under Federally funded programs. For both areas it is proposed that a balance be sought between (a) the preservation of incentives for technological innovation, and (b) assured use of beneficial technology to serve the public.

5. The national concern over competition versus monopoly has led to the creation of a considerable body of administrative law in the field of antitrust enforcement. Monopolies are sometimes charged with restraining not only trade but also innovation. On the other hand, the enforcement of competition when it is extended to the field of industrial research and development, may serve not only to reduce competition but also to retard innovation. In particular, some fields of inquiry (pollution abatement, metallurgical testing and alloy development, recovery of value from industrial wastes, and the like) can be beneficial to an entire industry and to the public as well. It is proposed in this clause that within the sphere of antitrust rationale there should be room for competing firms to cooperate in certain kinds of industrial research and development. One desirable outcome could be the establishment of ground rules for acceptable kinds and procedures of such cooperation by competing firms.

6. The intent of the "interdisciplinary" clause is to encourage a closer and more constructive relationship among the various scientific disciplines. It is sometimes alleged that in academic institutions there is a tendency for the practitioners of different disciplines to remain apart, while in mission-oriented agencies of government, and in industrial organizations that serve such agencies, it is recognized that the practitioners of many disciplines need to work together to solve complex problems of modern technological systems. Encouragement in academic institutions of closer relationships among the disciplines not only contributes to problem solving abilities, but provides a valuable source of cross-fertilization useful to the disciplines themselves.

7. The clause on management of laboratory equipment and facilities is to call attention not only to the opportunities for economy but also to the possibilities for stimulating research in valuable directions.

8. The provision that science and technology be used to support State and local government goals is to generate program activities in the Federal Government to maintain contact with technical people at other levels of government, to encourage joint planning and information exchanges, and to help define explicit goals which science and technology might further.

9. Recognition of outstanding achievements of science and technology has always been an element of national and international practice. This clause, however, is to distinguish those whose contributions particularly serve the public interest. The execution of this function requires not only the identification of outstanding achievements in science and technology but also their assessment in terms of public utility.

10. This clause proposes the test of social merit as a gauge of Federal support for particular programs of science and technology. Moreover, in assessing the probable value of any particular program it is also essential that possible injurious consequences also be assessed since—to the extent that injurious consequences cannot be diminished—they detract from the social merit of the program.

11. The generation of scientific and technological information by the mission-oriented agencies of the Federal Government tend to flow readily to their constituents or clients among the public but less readily to other potential users in other Federal agencies. This clause requires that each Federal agency generating such information make a positive effort to get it to other appropriate agencies, and that each agency needing such information make a positive effort to secure it from agencies possessing it.

TITLE II—OFFICE OF SCIENCE AND TECHNOLOGY POLICY

Sec. 201. Short Title.

Sec. 202. Establishment of Office.

The establishment of the Office of Science and Technology Policy represents a compromise between the Committee's original Proposal in H.R. 4461 for a Council of Advisers on Science and Technology and the Administration's proposal in H.R. 7830 for an Office as designated above. It is intended that the Office would function much the same, whether the new organization is called an "Office" or a "Council."

Sec. 203. Director-Assistant Directors.

The Administration's Bill H.R. 7830 called for a Director of the Office and a Deputy Director—appointed by the President, but not requiring confirmation by the Senate. The Committee devised an arrangement which calls for the appointment of a Director of the Office to be appointed by the President, by and with the advice and consent of the Senate. Provision is made for the appointment by the President of up to four Assistant Directors. The intent is to allow maximum flexibility to the President in organizing the Office, but to insure that Congress plays a significant role in the selection of the Director.

Further, it is intended that the Director and such Assistant Directors as may be appointed will be available to Congress from time to time as witnesses to provide advice and counsel on matters of concern to the Congress and which are related to the functions assigned in Title II.

Sec. 204. Functions

In setting forth the functions of the Director, substantial responsibilities were added to those proposed in the Administration's bill, H.R. 7830. The overall intent is for the Director to be the President's chief policy adviser and assistant with respect to scientific and technological matters affecting national decisions and the national interest. A broad range of responsibilities have been incorporated in the legislation as a means of taking into account the profound impact of science and technology on society, and the interrelations of scientific, technological, economic, social, political, and institutional factors.

It is expected that the Office be involved on a continuing basis with a broad range of domestic, foreign, and national security problems, both near-term and long range, and that it will work closely with other organizations of the Executive Office of the President. The Office is intended to give particular attention to a function which has not always had high national priority: the identification and assessment of emerging and future areas where science and technology can be used effectively in achieving national goals and objectives. While a broad range of responsibilities has been assigned to the Office, it is designed in a way to permit maximum flexibility for using its capabilities to meet the needs of the President in carrying out his responsibilities.

Sec. 205. Personnel

The intent of this section is to give the Director a wide range of choice in the selection and appointment of personnel to carry out the functions assigned to the Office.

Sec. 206. Services

It is not expected that the Office will necessarily be staffed to handle all of its functions internally; therefore, provision is made in this section for the Director to enter into contracts and other arrangements for studies, analyses, and other assistance through public agencies and with private persons, organizations or institutions which would aid in the performance of those duties prescribed in Section 204 or others which may be directed by the President.

Sec. 207. Agency Assistance

Again, as in Section 206, it is not intended that the Office be staffed permanently to carry out all of its responsibilities, including those involving temporary undertakings; therefore, provision is made for the Director to call upon Federal agencies for necessary assistance, with the consent of the agencies involved.

Sec. 208. Reorganization

The purpose of this section is to provide the President with continuing flexibility to modify the Office as times and circumstances may change; yet, Congress is given a strong voice in any such recommended changes. The reason for requiring each House to act in disfavor of any reorganization plans submitted is to provide for thorough debate and Congressional consensus. The 1982 date is designed to allow

time for the Administration which takes office in 1981 to assess the Office of Science and Technology Policy, along with other components of the Executive Office, before the authority to reorganize expires or is renewed.

TITLE III—THE FEDERAL SCIENCE AND TECHNOLOGY SURVEY COMMITTEE

Secs. 301 and 302. Organization and Functions

Titles III and IV of the Committee's original Bill, H.R. 4461, proposed the establishment, respectively, of a new Department of Research and Technology Operations and a Science and Technology Information and Utilization Corporation. A consensus did not develop on these proposed organizations, and it became clear that more study was required on many important issues in such areas as organizational reform, scientific and technological information, use and analysis of science and technology, and Federal-State as well as Federal-industry liaison and cooperation in science and technology.

To conduct studies on such subjects and others, Title III provides for a Federal Science and Technology Survey Committee to be established as part of the Office of Science and Technology Policy, or in such other manner as the President may direct. Alternatives considered and discarded included a Presidential Commission, a Joint Presidential-Congressional Commission, a Congressional Commission, and a Survey Committee established separate and apart from the Office of Science and Technology Policy.

Essentially, the alternatives not selected were dropped for such reasons as expense, logistics complexity, high demands on the time of over-extended Members of Congress, possible conflict with the new Office of Science and Technology Policy, and probable redundancy with some of the functions assigned to the new Policy Office.

The intent of the specific construction of Title III is to provide for a thorough examination and extended study of a number of issues using a relatively simple, streamlined organization structure. Congressional influence will be evident as follows:

The legislation calls for the selection of Survey Committee members who are exceptionally qualified, distinguished individuals and who come from a variety of fields; a broad variety of subjects are assigned for the Survey Committee to study, examine, and analyze in the overall context of Federal science and technology effort; and the Survey Committee's report is to be transmitted to the Congress as written, together with such comments, observations and recommendations as the President deems appropriate. To the objection raised by some that the report may reflect only what the President wants it to say, the response lies (a) in the selection of the individuals referred to earlier, and (b) in the fact that the Congress is not precluded from nor expected to refrain from its own parallel inquiries in developing a base of information for further action.

Sec. 303.—Termination

The purpose of allowing 24 months for the life of the Survey Committee from its first organizational meeting is to permit adequate time to accomplish its broad mandate under the bill.

COMMITTEE ACTIONS

TITLE I

SEC. 101(a)(2).—This paragraph deals with the influence of large and complex scientific factors upon the course of national and international events which requires appropriate provision for incorporating scientific and technological knowledge in the national decision-making process. The paragraph was amended to emphasize the intent that long-range inclusive planning as well as more immediate program development should be part of the national decision-making process.

SEC. 102(c)(4).—This paragraph deals with Federal patent policies. It was amended slightly so as to bring the language into conformance with the existing body of patent law.

SEC. 102(c)(5).—This paragraph deals with antitrust regulation. It was amended slightly so as to bring the language into conformance with the existing body of antitrust law.

TITLE II

SEC. 204(b)(5).—The subject of this paragraph is periodic reviews of Federal statutes and administrative regulations affecting research and development activities. It was amended to clarify the intent which is to minimize interference with desirable technological innovation.

SEC. 204(b)(6).—The subject of this paragraph is criteria for determining scientific and technological activities warranting Federal support. It was re-worded to achieve editorial clarity.

SEC. 208(b).—This paragraph permitted action by the President and the Congress on any plan to reorganize the new Office submitted before January 3, 1980. The paragraph was amended to change the date to 1982 so that the reorganization authority would not expire at the beginning of a new Administration.

TITLE III

SEC. 301(a)(1).—This paragraph provides for the establishment of a Federal Science and Technology Survey Committee as part of the Office of Science and Technology Policy. It called for appointment of the Committee members by the President not more than 90 days after the confirmation of the Director of the Office of Science and Technology Policy. The paragraph was amended to allow the appointment period to begin from the time the Director of the Office of Science and Technology Policy actually assumed office since often there is a gap between confirmation and assumption of office.

SEC. 302.—This section provides for the duties and functions of the Federal Science and Technology Survey Committee and specifies certain areas to be examined.

SEC. 302(a)(1).—Identifies the subject of "organizational reform." The paragraph was amended to include more direct guidelines as to the possible types of institutional realignment which should be considered as part of the Survey Committee's activities. Specifically, the Survey Committee is asked to consider several possibilities as follows: placing Federal agencies whose missions are primarily or solely devoted to scientific and technological research and development within

a single cabinet-level department; placing those agencies primarily or solely concerned with fuels, energy and materials, within a single cabinet-level department; or a combination of the two.

An important reason for this is that the two most specific and thoroughly prepared plans for an R&D department to surface in modern times have been an outgrowth of this legislation. One was the title in the original Teague-Mosher bill (H.R. 4461) establishing a Department of Research and Technology Operations; the other was the plan offered to the committee during hearings by Rep. McCormack of Washington for a Department of Science, Technology, Energy and Materials.

SEC. 302(b)(1).—This paragraph calls for the submission of a report by the Federal Science and Technology Survey Committee to the President upon completion of its assignment. The paragraph was amended slightly to insure that the Committee report would include recommendations as well as findings and conclusions.

COMMITTEE VIEWS

Scientific and Technological Information Dissemination and Utilization

Sec. 302 of Title III sets forth the duties and functions of the Federal Science and Technology Survey Committee. As discussed in the Explanatory Notes section for Title III, a consensus did not develop on a proposed Science and Technology Information and Utilization Corporation. However, the Committee expressed its view that the subject of scientific and technological information dissemination and utilization should have a high priority in the activities of the Federal Science and Technology Survey Committee.

Survey Committee Reports

Although Sections 302 and 303 of Title III specify the procedures for submitting a final report to the Congress of the Federal Science and Technology Survey Committee, it is urged that appropriate interim reports be considered. The Committee believes that interim reports on certain subjects may prove timely and useful to the Congress as well as to the Administration.

Membership of the Survey Committee

The conviction was expressed by the Committee that membership on the Federal Science and Technology Survey Committee should include working scientists and engineers along with individuals more closely linked with administration and general public affairs. The Committee believes that the Survey Committee should not be dominated by any one group, and that careful attention should be devoted to achieving a proper balance among persons chosen to serve.

Further illustration may be found in the necessity to consider issues of science information policy along with more general policy issues—and thus the parallel desirability of having the expertise of the science-information industry represented on the Committee.

Staffing and Priorities for the OSTP

At the time the Administration submitted its Bill (H.R. 7830), a staffing requirement of about 15 was estimated for the Office of

Science and Technology Policy. The legislation now recommended by the Committee includes a number of additional functions under Title II. Therefore, concern has been expressed that the original staffing estimate will be inadequate to cope with the broad range of important functions assigned to the Office of Science and Technology Policy.

It is recognized that provision is made for the Office to draw upon outside consultants, other Federal agencies and especially the National Science Foundation and the Domestic Council. However, the Committee requests that a report be made to the Congress on the entire personnel-functions relationship at the end of the first year of operations by the Office.

Relationship of OSTP With Office of Telecommunications Policy

The Committee notes that other committees of the Congress have been examining the role of telecommunications as an industry in the United States. It has been concluded that telecommunications has become a very important element in the economic sector and will become increasingly so in the future.

Therefore, while Section 204 (b) (11) under Title II does not specify that the Office of Science and Technology Policy will maintain liaison with the Office of Telecommunications Policy, maintaining such liaison is the intent of that part of the clause which reads "all councils and offices of the Executive Office of the President". Clearly, research and development matters related to telecommunications should be an important concern of the Office of Science and Technology Policy, as well as the reverse situation.

Dual Congressional Responsibility

It is recognized that several sections of H.R. 10230 involve matters that are of appropriate jurisdictional interest and concern to the Committee on Government Operations. These are Section 208, which provides limited authority for the President to reorganize the new Office of Science and Technology Policy subject to Congressional approval, and Section 402, which repeals parts of Reorganization Plan No. 2 of 1962 and of Reorganization Plan No. 1 of 1973.

The Committee wishes to make clear that it understands that any reorganization plans which may be forwarded to Congress under Section 208 in the future will come under the jurisdiction of the Committee on Government Operations in accordance with the Rules of the House of Representatives. It is further understood that such general oversight responsibilities relative to the Office of Science and Technology Policy as reside in the House also fall within the purview of the Committee on Government Operations.

With regard to Section 402, the repeals involved refer only to parts of former reorganization plans which have already been superseded by subsequent plans or made obsolete by this Act. The section was included in the bill at the request of the Administration and is solely for purposes of legislative conformance and clarity.

It is the Committee's intent to bring this bill to the House floor under an open rule; it is not the intent of the Committee to object to appropriate amendments regarding the foregoing provisions if offered by the leadership of the Committee on Government Operations.

ESTIMATE AND COMPARISON BY THE CONGRESSIONAL BUDGET OFFICE

Pursuant to section 403 of the Congressional Budget Act of 1974, the following estimate and comparison prepared by the Director of the Congressional Budget Office has been received:

No report from the Office had been received as of the date of this report.

OVERSIGHT ACTIVITIES

The requirements of Rule XI, Clause 2(1) (3), and Rule X, Clause 2(b) (1), of the Rules of the House of Representatives would not appear to be directly applicable in connection with this bill since it does not deal with existing agencies or programs. However, it should be noted that the Committee has worked on the matter contained in this bill since early 1973. It has held two sets of background and investigative hearings, in 1973 and 1974, and another set of hearings on the legislation here proposed, on June 10, 11, 17, 19 and 23 of 1975.

OVERSIGHT FINDINGS AND RECOMMENDATIONS BY THE COMMITTEE ON GOVERNMENT OPERATIONS

Pursuant to Rule X, Clause 2(b) (2) of the Rules of the House of Representatives, the following findings and recommendations made by the Committee on Government Operations have been received:

No statement of findings and recommendations was received as of the date of this report.

EFFECT OF LEGISLATION ON INFLATION

In accordance with Rule XI, Clause 2(1) (4), of the Rules of the House of Representatives this legislation is assessed as having no inflationary effects on prices and costs in the national economy.

Neither the new Office of Science and Technology Policy nor the temporary Survey Committee, of themselves, are of a magnitude to exert any economic influence. Meanwhile, it is hoped and expected that their operations will eventually result in improved and more efficient utilization of technology with a consequent improvement in national economic stability.

FEDERAL ADVISORY COMMITTEE ACT

Section 5(b) of the Federal Advisory Committee Act (P.L. 92-463) requires that Congressional committees indicate if legislation they are sponsoring creates a new "advisory committee" and, if so, whether the operations of such committee could be performed by one or more agencies or by an advisory committee already in existence, or by enlarging the mandate of an existing advisory committee. Legislation involving any such new committee must meet certain requirements defined in that section.

This Committee does not consider the Federal Science and Technology Survey Committee established in Title III to come within the meaning of the aforementioned statute. The Survey Committee's pri-

mary function is one of fact-finding and delineation of possible needs and operational options rather than advice. However, it is also this Committee's view that all of the requirements of section 5(b) of that Act have been met with respect to the Survey Committee.

COST AND BUDGET DATA

The bill authorizes such sums as may be necessary to carry out its provisions. On the basis of information provided by the Administration as to the expected level of operation of the new Office, as well as data developed independently by the Committee, it is estimated that annual costs will be approximately \$2.1 million for the Office of Science and Technology Policy (Title II) and \$1 million for the two-year activities of the Federal Science and Technology Survey Committee (Title III).

The original personnel estimate of the Administration for the Office was from 10 to 15 professionals. With the additional functions added by the committee, however, it is estimated that the personnel figure is likely to reach from 20 to 30 eventually, with supporting staff of 10 to 15.

In accordance with Sec. 252(b) of the Legislative Reorganization Act of 1970, the Committee notes that longer range operations of the Office will depend largely upon Executive initiatives as modified by the determinations of the Appropriations Committees of both Houses. If planned programs remain unchanged and a constant level of effort is expended, there should be no change in costs other than those occasioned by inflation or pay increases.

COMMITTEE RECOMMENDATIONS

A quorum being present, the Committee unanimously ordered the bill favorably reported.

ADMINISTRATION VIEWS

The following communication from the President sets out the Administration's views on H.R. 9058, which is substantially the same as H.R. 10230.

THE WHITE HOUSE,
Washington, October 8, 1975.

HON. OLIN E. TEAGUE,
Chairman, Committee on Science and Technology, House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: Thank you for the prompt attention you have given to my proposal for creating an Office of Science and Technology Policy in the Executive Office of the President.

Members of my staff and I have reviewed the September 16th version of the substitute bill, H.R. 9058, developed by you and Congressman Mosher. This bill, while somewhat different from the one I submitted on June 6, is acceptable and I will support it if your Committee and the full House approve it essentially as it now stands. I also want to thank you and Congressman Mosher for your leadership on this matter and for the cooperative manner in which our staffs have been able to work on the bill.

Creation of an Office of Science and Technology Policy will provide an important new source of advice on scientific and technical aspects of issues requiring attention at the highest levels of Government. I look forward to early final approval of this bill by the House of Representatives and the Senate.

Sincerely,

GERALD R. FORD.

CHANGES IN EXISTING LAW MADE BY THE BILL, AS REPORTED

In compliance with clause 3 of Rule XIII of the Rules of the House of Representatives, changes in existing law made by the bill, as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new matter is printed in italics, existing law in which no change is proposed is shown in roman) :

REORGANIZATION PLAN NO. 2 OF 1962

Prepared by the President and transmitted to the Senate and the House of Representatives in Congress assembled, March 29, 1962, pursuant to the provisions of the Reorganization Act of 1949, 63 Stat. 203, as amended.

CERTAIN SCIENCE AGENCIES AND FUNCTIONS

PART I—OFFICE OF SCIENCE AND TECHNOLOGY

SECTION 1. Office of Science and Technology. There is hereby established in the Executive Office of the President the Office of Science and Technology, hereafter in this Part referred to as the Office.

SEC. 2. Director and deputy. (a) There shall be at the head of the Office the Director of the Office of Science and Technology, hereafter in this Part referred to as the Director. The Director shall be appointed by the President by and with the advice and consent of the Senate and shall receive compensation at the rate of \$22,500 per annum.

(b) There shall be in the Office a Deputy Director of the Office of Science and Technology, who shall be appointed by the President by and with the advice and consent of the Senate and receive compensation at the rate of \$20,500 per annum. The Deputy Director shall perform such functions as the Director may from time to time prescribe and shall act as Director during the absence or disability of the Director or in the event of vacancy in the office of Director.

(c) No person shall while holding office as Director or Deputy Director engage in any other business, vocation, or employment.

SEC. 3. Transfer and performance of functions. (a) There are hereby transferred from the National Science Foundation to the Director:

(1) So much of the functions conferred upon the Foundation by the provisions of section 3(a)(1) of the National Science Foundation Act of 1950 (42 U.S.C. 1862(a)(1)) as will enable the Director to advise and assist the President in achieving coordinated Federal

policies for the promotion of basic research and education in the sciences.

[(2) The functions conferred upon the Foundation by that part of section 3(a)(6) of the National Science Foundation Act of 1950 (42 U.S.C. 1862(a)(6)) which reads as follows: "to evaluate scientific research programs undertaken by agencies of the Federal Government."

[(b) In carrying out the functions transferred by the provisions of section 3(a) of this reorganization plan, the Director shall assist the President as he may request with respect to the coordination of Federal scientific and technological functions and agencies.

[(c) The Director may from time to time make such provisions as he deems appropriate authorizing the performance of any of his functions by any other officer, or by any employee or agency, of the Office.

[SEC. 4. Personnel. The Director may appoint employees necessary for the work of the Office under the classified civil service and fix their compensation in accordance with the classification laws.]

* * * * *

SECTION 2 OF REORGANIZATION PLAN NO. 1 OF 1973

[SEC. 2. Transfer of functions to the Director, National Science Foundation.—There are hereby transferred to the Director of the National Science Foundation all functions vested by law in the Office of Science and Technology or the Director or Deputy Director of the Office of Science and Technology.]

SECTION 4 OF THE NATIONAL SCIENCE FOUNDATION ACT OF 1950

NATIONAL SCIENCE BOARD

SEC. 4. (a) * * *

* * * * *

[(g) The Board shall render an annual report to the President, for submission on or before the 31st day of January of each year to the Congress, on the status and health of science and its various disciplines. Such report shall include an assessment of such matters as national scientific resources and trained manpower, progress in selected areas of basic scientific research, and an indication of those aspects of such progress which might be applied to the needs of American society. The report may include such recommendations as the Board may deem timely and appropriate.]

[(h) (g) The Board may, with the concurrence of a majority of its members, permit the appointment of a staff consisting of not more than five professional staff members and such clerical staff members as may be necessary. Such staff shall be appointed by the Director and assigned at the direction of the Board. The professional members of such staff may be appointed without regard to the provisions of title 5, United States Code, governing appointments in the competitive service, and the provisions of chapter 51 of such title relating to classification, and compensated at a rate not exceeding the appropriate rate

provided for individuals in grade GS-15 of the General Schedule under section 5332 of such title, as may be necessary to provide for the performance of such duties as may be prescribed by the Board in connection with the exercise of its powers and functions under this Act. Each appointment under this subsection shall be subject to the same security requirements as those required for personnel of the Foundation appointed under section 15(a).

[(i) (h) The Board is authorized to establish such special commissions as it may from time to time deem necessary for the purposes of this Act.

[(j) (i) The Board is also authorized to appoint from among its members such committees as it deems necessary, and to assign to committees so appointed such survey and advisory functions as the Board deems appropriate to assist it in exercising its powers and functions under this Act.

ADDITIONAL VIEWS OF HON. GEORGE E. BROWN, JR.

The "National Science and Technology Policy and Organization Act of 1975" is an important step in the evolution of science and technology in the United States. The history of this Act serves to underscore the importance of this legislation, and those who have been involved with the drafting, hearings, briefings and negotiations on this Act deserve praise for their diligent efforts. The purpose of these additional views is not to detract from this accomplishment, nor disagree with the thrust of this legislation. Rather, I wish to emphasize one aspect of the "National Science and Technology Policy and Organization Act of 1975" to eliminate any ambiguity about the Congressional intent. That aspect is the implicit planning function of the newly-created Office of Science and Technology Policy.

Section 101 (a) of this Act states:

The Congress, recognizing the profound impact of science and technology on society, and the interrelations of scientific, technological, economic, social, political, and institutional factors, hereby finds and declares:

(1) That the general welfare, the security, the economic growth and stability of the Nation, the conservation and efficient utilization of its natural and human resources, and the effective functioning of government and society require vigorous, perceptive support and employment of science and technology in achieving national objectives; and

(2) That the many large and complex scientific factors which increasingly influence the course of national and international events require appropriate provision, involving long-range, inclusive planning as well as more immediate program development, to incorporate scientific and technological knowledge in the national decision-making process.

In addition, Section 102(b)(1) states: "The Federal Government should maintain central policy planning elements in the executive branch . . ."

What is not explicitly assigned is the responsibility to do these planning functions. This omission was noted by the Committee, and is the main reason for adding to the duties and functions of the Federal Science and Technology Survey Committee, which is created by this Act, the requirement to survey, examine and analyze such areas as "organizational reform" (Section 302(a)(1)), "improved systems for planning and analysis of the overall Federal science and technology budget" (Section 302(a)(10)); and "the conduct of long-range study, analysis and planning in regard to the application of science and technology to major national problems or concerns" (Section 302(a)(11)).

This legislation clearly addresses the need for improving the Federal planning and analysis function for both immediate and long-term problems. What may not be as obvious to the casual reader of this Act is that failure by the Federal government in these areas could comprise its "Achilles' heel." Thus the development of the planning function may well be crucial to the entire process by which national goals are supposed to be achieved.

The report of the National Academy of Science's *ad hoc* Committee on Science and Technology: "Science and Technology in Presidential Policymaking" stated that:

The committee has been especially struck by the lack of capability for long-range policy research and analysis, which would examine continuously the longer run implications of current budget decisions and other policies and would seek to anticipate problems that will face the President and the Congress in future years.—Only within the National Security Council is the potential of policy research and analysis systematically exploited; elsewhere it is to be found at the level of the mission departments and agencies. Its value at that level should not be discounted, but neither should its potential at higher levels be ignored.

Similarly, the American Association for the Advancement of Science's "White Paper," "Organization for Science and Technology in the Executive Branch" emphasized that:

The strategic planning dimension requires deliberate attempts to develop assessments of the quality and productivity of science and technology and to develop long-range goals for them in relation to the position of the United States at home and in the world. The importance of this role is obvious if science and technology are to be approached in investment terms rather than simply as year-to-year work programs.

These important Academy and AAAS documents on needs in science policy represented a consensus which included some of the most experienced and thoughtful members of the academic, industrial and governmental technological communities. Moreover, from within the administration, Russell Train has written about the need for long-range planning related to problems of energy, food, resources supply, population and uncontrolled growth:

To begin to deal with these problems—indeed, even to begin to ask the right questions, we should develop an effective institution in the federal government for long-range analysis of the problems—we [are]—almost totally lacking such a capability—an appalling lack in the nation with as big a stake in the future as the United States. What is important and urgent is that they [offices of long-range analysis] be established as competent and continuing institutions whose cumulative efforts will enable us, as a nation, to come to grips with the kinds of problems that will increasingly confront us in a new age of scarcity and interdependence.

Though this kind of long-range strategic policy planning may seem perfectly obvious, it is perhaps a mistake not to mandate this function

to the Office of Science and Technology Policy, which is created by this Act, instead of waiting for the Federal Science and Technology Survey Committee to report back on this subject. Indeed, the AAAS "White Paper" warned that "the danger to be guarded against is that long-range policy planning may be driven out by demands for quick response staff work for the White House." In our budget authorization process this spring, we saw this problem over and over again. The ERDA budget was presented as a fragmented set of programs without true priorities, and only the *Congressionally required* plan submitted in June has given us any chance of assessing the whole program. Similarly, as my own Subcommittee on Environment and the Atmosphere exercised our Committee's new authorization jurisdiction of the EPA research and development budget for the first time, we discovered not only that there was little planning which would help us assess the relative needs and responsibilities of EPA and ERDA with respect to energy related environmental R&D, but that there was also almost no long-range assessment of a research strategy within EPA itself, or a division of labor between EPA and the many other agencies active in environmental R&D. (The Subcommittee did put an annual plan requirement into the authorization bill as finally passed by the House.) The annual reviews of NASA and NSF programs also grapple continuously with the problems of under-utilized facilities and disjointed programs, whose importance is almost impossible to judge budgetarily in the absence of a unifying long-term framework.

Because of this experience with other agencies, and the hopes of all of us who have worked on H.R. 10230 that through it we will succeed in solving these problems, I would like to suggest some language that the Survey Committee might consider as an addition to the functions of the Office of Science and Technology Policy.

Suggested Addition to Section 204, "Functions of the Director of the Office of Science and Technology Policy"

Section 204(c)

The Director shall further advise and assist the President in the preparation of a Long-Range Science and Technology Planning Report (hereinafter referred to as the "Planning Report") which shall be submitted by the President to the Congress on the first January 1st which occurs more than 12 months after the enactment of this Act, with an annual update of the Planning Report to be submitted on January 1st of subsequent years. The Planning Report shall make use of the information developed as a result of actions specified in paragraphs 6, 8, 9, and 10 of subsection (b) of this section, and be an extension of the actions required in those paragraphs. The Planning Report shall include:

- (1) an assessment of the most probable technological problems of the following 5, 10, 25 and 50 years, as judged from plausible scenarios of economic, demographic, social, resource supply, and environmental developments in those time interests. The Planning Report shall be prepared consistently and in coordination with long-range planning and projections of the Council of Economic Advisors, the Council on Environmental Quality, the Domestic Council, the National Security Council, the Office of Management

and Budget, and other components of the Executive Office, and shall make maximum feasible use of the forecasting and other resources of those offices. The Planning Report shall be prepared in consultation with regional, state and local government planning authorities, and in coordination with plans and projections of the private economic sector.

(2) a determination of priorities in research and development efforts consistent with the assessment of technological problems of paragraph (1) of this subsection.

(3) a suggested division of labor within the federal research and development establishment, and between it and state, local and private research institutions, aimed at most effectively dealing with the problems and priorities of paragraphs (1) and (2) of this subsection.

(4) an assessment of the levels of effort needed to deal with the problems, priorities, and division of labor determined in paragraphs (1), (2) and (3) of this subsection. These levels should be suggested in detail for the various components of the federal research and development program, but their relationship to projected levels of effort in state and local government and private sector programs shall also be indicated.

(5) an assessment, prepared cooperatively with regional, state, and local jurisdictions, of technological needs on a local level, along with plans to promote local efforts to mobilize technological effort for a few distinct but conceivable alternative scenarios to those considered most likely in reaching the assessment of paragraph (1) of this subsection.

GEORGE E. BROWN, JR.

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SCIENCE AND TECHNOLOGY POLICY

APRIL 26, 1976.—Ordered to be printed

Mr. KENNEDY, from the committee of conference,
submitted the following

CONFERENCE REPORT

[To accompany H.R. 10230]

The committee of conference on the disagreeing votes of the two Houses on the amendment of the Senate to the bill (H.R. 10230) to establish a science and technology policy for the United States, to provide for scientific and technological advice and assistance to the President, to provide a comprehensive survey of ways and means for improving the Federal effort in scientific research and information handling, and in the use thereof, to amend the National Science Foundation Act of 1950, and for other purposes, having met, after full and free conference, have agreed to recommend and do recommend to their respective Houses as follows:

That the House recede from its disagreement to the amendment of the Senate and agree to the same with an amendment as follows:

In lieu of the matter proposed to be inserted by the Senate amendment insert the following:

That this Act may be cited as the "National Science and Technology Policy, Organization, and Priorities Act of 1976".

TITLE I—NATIONAL SCIENCE, ENGINEERING, AND TECHNOLOGY POLICY AND PRIORITIES

FINDINGS

SEC. 101. (a) The Congress, recognizing the profound impact of science and technology on society, and the interrelations of scientific, technological, economic, social, political, and institutional factors, hereby finds and declares that—

(1) the general welfare, the security, the economic health and stability of the Nation, the conservation and efficient utilization of its natural and human resources, and the effective functioning of government and society require vigorous, perceptive support

and employment of science and technology in achieving national objectives;

(2) the many large and complex scientific and technological factors which increasingly influence the course of national and international events require appropriate provision, involving long-range, inclusive planning as well as more immediate program development, to incorporate scientific and technological knowledge in the national decisionmaking process;

(3) the scientific and technological capabilities of the United States, when properly fostered, applied, and directed, can effectively assist in improving the quality of life, in anticipating and resolving critical and emerging international, national, and local problems, in strengthening the Nation's international economic position, and in furthering its foreign policy objectives;

(4) Federal funding for science and technology represents an investment in the future which is indispensable to sustained national progress and human betterment, and there should be a continuing national investment in science, engineering, and technology which is commensurate with national needs and opportunities and the prevalent economic situation;

(5) the manpower pool of scientists, engineers, and technicians, constitutes an invaluable national resource which should be utilized to the fullest extent possible; and

(6) the Nation's capabilities for technology assessment and for technological planning and policy formulation must be strengthened at both Federal and State levels.

(b) As a consequence, the Congress finds and declares that science and technology should contribute to the following priority goals without being limited thereto:

(1) fostering leadership in the quest for international peace and progress toward human freedom, dignity, and well-being by enlarging the contributions of American scientists and engineers to the knowledge of man and his universe, by making discoveries of basic science widely available at home and abroad, and by utilizing technology in support of United States national and foreign policy goals;

(2) increasing the efficient use of essential materials and products, and generally contributing to economic opportunity, stability, and appropriate growth;

(3) assuring an adequate supply of food, materials, and energy for the Nation's needs;

(4) contributing to the national security;

(5) improving the quality of health care available to all residents of the United States;

(6) preserving, fostering, and restoring a healthful and esthetic natural environment;

(7) providing for the protection of the oceans and coastal zones, and the polar regions, and the efficient utilization of their resources;

(8) strengthening the economy and promoting full employment through useful scientific and technological innovations;

(9) increasing the quality of educational opportunities available to all residents of the United States;

(10) promoting the conservation and efficient utilization of the Nation's natural and human resources;

(11) improving the Nation's housing, transportation, and communication systems, and assuring the provision of effective public services throughout urban, suburban, and rural areas;

(12) eliminating air and water pollution, and unnecessary, unhealthy, or ineffective drugs and food additives; and

(13) advancing the exploration and peaceful uses of outer space.

DECLARATION OF POLICY

SEC. 102. (a) PRINCIPLES.—In view of the foregoing, the Congress declares that the United States shall adhere to a national policy for science and technology which includes the following principles:

(1) The continuing development and implementation of strategies for determining and achieving the appropriate scope, level, direction, and extent of scientific and technological efforts based upon a continuous appraisal of the role of science and technology in achieving goals and formulating policies of the United States, and reflecting the views of State and local governments and representative public groups.

(2) The enlistment of science and technology to foster a healthy economy in which the directions of growth and innovation are compatible with the prudent and frugal use of resources and with the preservation of a benign environment.

(3) The conduct of science and technology operations so as to serve domestic needs while promoting foreign policy objectives.

(4) The recruitment, education, training, retraining, and beneficial use of adequate numbers of scientists, engineers, and technologists, and the promotion by the Federal Government of the effective and efficient utilization in the national interest of the Nation's human resources in science, engineering, and technology.

(5) The development and maintenance of a solid base for science and technology in the United States, including: (A) strong participation of and cooperative relationships with State and local governments and the private sector; (B) the maintenance and strengthening of diversified scientific and technological capabilities in government, industry, and the universities, and the encouragement of independent initiatives based on such capabilities, together with elimination of needless barriers to scientific and technological innovation; (C) effective management and dissemination of scientific and technological information; (D) establishment of essential scientific, technical and industrial standards and measurement and test methods; and (E) promotion of increased public understanding of science and technology.

(6) The recognition that, as changing circumstances require periodic revision and adaptation of title I of this Act, the Federal Government is responsible for identifying and interpreting the changes in those circumstances as they occur, and for effecting subsequent changes in title I as appropriate.

(b) IMPLEMENTATION.—To implement the policy enunciated in subsection (a) of this section, the Congress declares that:

(1) The Federal Government should maintain central policy planning elements in the executive branch which assist Federal

agencies in (A) identifying public problems and objectives, (B) mobilizing scientific and technological resources for essential national programs, (C) securing appropriate funding for programs so identified, (D) anticipating future concerns to which science and technology can contribute and devising strategies for the conduct of science and technology for such purposes, (E) reviewing systematically Federal science policy and programs and recommending legislative amendment thereof when needed. Such elements should include an advisory mechanism within the Executive Office of the President so that the Chief Executive may have available independent, expert judgment and assistance on policy matters which require accurate assessments of the complex scientific and technological features involved.

(2) It is a responsibility of the Federal Government to promote prompt, effective, reliable, and systematic transfer of scientific and technological information by such appropriate methods as programs conducted by nongovernmental organizations, including industrial groups and technical societies. In particular, it is recognized as a responsibility of the Federal Government not only to coordinate and unify its own science and technology information systems, but to facilitate the close coupling of institutional scientific research with commercial application of the useful findings of science.

(3) It is further an appropriate Federal function to support scientific and technological efforts which are expected to provide results beneficial to the public but which the private sector may be unwilling or unable to support.

(4) Scientific and technological activities which may be properly supported exclusively by the Federal Government should be distinguished from those in which interests are shared with State and local governments and the private sector. Among these entities, cooperative relationships should be established which encourage the appropriate sharing of science and technology decisionmaking, funding support, and program planning and execution.

(5) The Federal Government should support and utilize engineering and its various disciplines and make maximum use of the engineering community, whenever appropriate, as an essential element in the Federal policymaking process.

(6) Comprehensive legislative support for the national science and technology effort requires that the Congress be regularly informed of the condition, health and vitality, and funding requirements of science and technology, the relation of science and technology to changing national goals, and the need for legislative modification of the Federal endeavor and structure at all levels as it relates to science and technology.

(c) PROCEDURES.—The Congress declares that, in order to expedite and facilitate the implementation of the policy enunciated in subsection (a) of this section, the following coordinate procedures are of paramount importance:

(1) Federal procurement policy should encourage the use of science and technology to foster frugal use of materials, energy,

and appropriated funds; to assure quality environment; and to enhance product performance.

(2) Explicit criteria, including cost-benefit principles where practicable, should be developed to identify the kinds of applied research and technology programs that are appropriate for Federal funding support and to determine the extent of such support. Particular attention should be given to scientific and technological problems and opportunities offering promise of social advantage that are so long range, geographically widespread, or economically diffused that the Federal Government constitutes the appropriate source for undertaking their support.

(3) Federal promotion of science and technology should emphasize quality of research, recognize the singular importance of stability in scientific and technological institutions, and for urgent tasks, seek to assure timeliness of results. With particular reference to Federal support for basic research, funds should be allocated to encourage education in needed disciplines, to provide a base of scientific knowledge from which future essential technological development can be launched, and to add to the cultural heritage of the Nation.

(4) Federal patent policies should be developed, based on uniform principles, which have as their objective the preservation of incentives for technological innovation and the application of procedures which will continue to assure the full use of beneficial technology to serve the public.

(5) Closer relationships should be encouraged among practitioners of different scientific and technological disciplines, including the physical, social, and biomedical fields.

(6) Federal departments, agencies, and instrumentalities should assure efficient management of laboratory facilities and equipment in their custody, including acquisition of effective equipment, disposal of inferior and obsolete properties, and cross-servicing to maximize the productivity of costly property of all kinds. Disposal policies should include attention to possibilities for further productive use.

(7) The full use of the contributions of science and technology to support State and local government goals should be encouraged.

(8) Formal recognition should be accorded those persons whose scientific and technological achievements have contributed significantly to the national welfare.

(9) The Federal Government should support applied scientific research, when appropriate, in proportion to the probability of its usefulness, insofar as this probability can be determined; but while maximizing the beneficial consequences of technology, the Government should act to minimize foreseeable injurious consequences.

(10) Federal departments, agencies, and instrumentalities should establish procedures to insure among them the systematic interchange of scientific data and technological findings developed under their programs.

**TITLE II—OFFICE OF SCIENCE AND TECHNOLOGY
POLICY**

SHORT TITLE

SEC. 201. This title may be cited as the "Presidential Science and Technology Advisory Organization Act of 1976".

ESTABLISHMENT

SEC. 202. There is established in the Executive Office of the President an Office of Science and Technology Policy (hereinafter referred to in this title as the "Office").

DIRECTOR; ASSOCIATE DIRECTORS

SEC. 203. There shall be at the head of the Office a Director who shall be appointed by the President, by and with the advice and consent of the Senate, and who shall be compensated at the rate provided for level II of the Executive Schedule in section 5313 of title 5, United States Code. The President is authorized to appoint not more than four Associate Directors, by and with the advice and consent of the Senate, who shall be compensated at a rate not to exceed that provided for level III of the Executive Schedule in section 5314 of such title. Associate Directors shall perform such functions as the Director may prescribe.

FUNCTIONS

SEC. 204. (a) The primary function of the Director is 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.

(b) In addition to such other functions and activities as the President may assign, the Director shall—

(1) advise the President of scientific and technological considerations involved in areas of national concern including, but not limited to, the economy, national security, health, foreign relations, the environment, and the technological recovery and use of resources;

(2) evaluate the scale, quality, and effectiveness of the Federal effort in science and technology and advise on appropriate actions;

(3) advise the President on scientific and technological considerations with regard to Federal budgets, assist the Office of Management and Budget with an annual review and analysis of funding proposed for research and development in budgets of all Federal agencies, and aid the Office of Management and Budget and the agencies throughout the budget development process; and

(4) assist the President in providing general leadership and coordination of the research and development programs of the Federal Government.

POLICY PLANNING, ANALYSIS, AND ADVICE

SEC. 205. (a) The Office shall serve as a source of scientific and technological analysis and judgment for the President with respect to

major policies, plans, and programs of the Federal Government. In carrying out the provisions of this section, the Director shall—

(1) seek to define coherent approaches for applying science and technology to critical and emerging national and international problems and for promoting coordination of the scientific and technological responsibilities and programs of the Federal departments and agencies in the resolution of such problems;

(2) assist and advise the President in the preparation of the Science and Technology Report, in accordance with section 209 of this Act;

(3) gather timely and authoritative information concerning significant developments and trends in science, technology, and in national priorities, both current and prospective, to analyze and interpret such information for the purpose of determining whether such developments and trends are likely to affect achievement of the priority goals of the Nation as set forth in section 101(b) of this Act;

(4) encourage the development and maintenance of an adequate data base for human resources in science, engineering, and technology, including the development of appropriate models to forecast future manpower requirements, and assess the impact of major governmental and public programs on human resources and their utilization;

(5) initiate studies and analyses, including systems analyses and technology assessments, of alternatives available for the resolution of critical and emerging national and international problems amenable to the contributions of science and technology and, insofar as possible, determine and compare probable costs, benefits, and impacts of such alternatives;

(6) advise the President on the extent to which the various scientific and technological programs, policies, and activities of the Federal Government are likely to affect the achievement of the priority goals of the Nation as set forth in section 101(b) of this Act;

(7) provide the President with periodic reviews of Federal statutes and administrative regulations of the various departments and agencies which affect research and development activities, both internally and in relation to the private sector, or which may interfere with desirable technological innovation, together with recommendations for their elimination, reform, or updating as appropriate;

(8) develop, review, revise, and recommend criteria for determining scientific and technological activities warranting Federal support, and recommend Federal policies designed to advance (A) the development and maintenance of broadly based scientific and technological capabilities, including human resources, at all levels of government, academia, and industry, and (B) the effective application of such capabilities to national needs;

(9) assess and advise on policies for international cooperation in science and technology which will advance the national and international objectives of the United States;

(10) identify and assess emerging and future areas in which science and technology can be used effectively in addressing national and international problems;

(11) report at least once each year to the President on the overall activities and accomplishments of the Office, pursuant to section 209 of this Act;

(12) periodically survey the nature and needs of national science and technology policy and make recommendations to the President, for review and transmission to the Congress, for the timely and appropriate revision of such policy in accordance with section 102(a)(6) of this Act; and

(13) perform such other duties and functions and make and furnish such studies and reports thereon, and recommendations with respect to matters of policy and legislation as the President may request.

(b) (1) The Director shall establish an Intergovernmental Science, Engineering, and Technology Advisory Panel (hereinafter referred to as the "Panel"), whose purpose shall be to (A) identify and define civilian problems at State, regional, and local levels which science, engineering, and technology may assist in resolving or ameliorating; (B) recommend priorities for addressing such problems; and (C) advise and assist the Director in identifying and fostering policies to facilitate the transfer and utilization of research and development results so as to maximize their application to civilian needs.

(2) The Panel shall be composed of (A) the Director of the Office, or his representative; (B) at least ten members representing the interests of the States, appointed by the Director of the Office after consultation with State officials; and (C) the Director of the National Science Foundation, or his representative.

(3) (A) The Director of the Office, or his representative, shall serve as Chairman of the Panel.

(B) The Panel shall perform such functions as the Chairman may prescribe, and shall meet at the call of the Chairman.

(4) Each member of the Panel shall, while serving on business of the Panel, be entitled to receive compensation at a rate not to exceed the daily rate prescribed for GS-18 of the General Schedule under section 5332 of title 5, United States Code, including traveltime, and, while so serving away from his home or regular place of business, he may be allowed travel expenses, including per diem in lieu of subsistence in the same manner as the expenses authorized by section 5703(b) of title 5, United States Code, for persons in government service employed intermittently.

FIVE-YEAR OUTLOOK

SEC. 206. (a) Within its first year of operation, the Office shall, to the extent practicable, within the limitations of available knowledge and resources, and with appropriate assistance from the departments and agencies and such consultants and contractors as the Director deems necessary, identify and describe situations and conditions which warrant special attention within the next five years, involving—

(1) current and emerging problems of national significance that are identified through scientific research, or in which scientific or technical considerations are of major significance; and

(2) opportunities for, and constraints on, the use of new and existing scientific and technological capabilities which can make a

significant contribution to the resolution of problems identified under paragraph (1) of this subsection or to the achievement of Federal program objectives or national goals, including those set forth in section 101(b) of this Act.

(b) The Office shall annually revise the five-year outlook developed under subsection (a) of this section so that it takes account of new problems, constraints and opportunities and changing national goals and circumstances, and shall extend the outlook so that it always extends five years into the future.

(c) The Director of the Office shall consult as necessary with officials of the departments and agencies having programs and responsibilities relating to the problems, constraints, and opportunities identified under subsections (a) and (b) of this section, in order to—

(1) identify and evaluate alternative actions that might be taken by the Federal Government, State and local governments, or the private sector to deal with such problems, constraints, or opportunities; and

(2) ensure that alternative actions identified under paragraph (1) of this subsection are fully considered by departments and agencies in formulating their budget, program, and legislative proposals.

(d) The Director of the Office shall consult as necessary with officials of the Office of Management and Budget and other appropriate elements of the Executive Office of the President to ensure that the problems, constraints, opportunities, and alternative actions identified under subsections (a), (b), and (c) of this section are fully considered in the development of the President's Budgets and legislative programs.

ADDITIONAL FUNCTIONS OF THE DIRECTOR; ADMINISTRATIVE PROVISIONS

SEC. 207. (a) The Director shall, in addition to the other duties and functions set forth in this title—

(1) serve as Chairman of the Federal Coordinating Council for Science, Engineering, and Technology established under title IV; and

(2) serve as a member of the Domestic Council.

(b) For the purpose of assuring the optimum contribution of science and technology to the national security, the Director, at the request of the National Security Council, shall advise the National Security Council in such matters concerning science and technology as relate to national security.

(c) In carrying out his functions under this Act, the Director is authorized to—

(1) appoint such officers and employees as he may deem necessary to perform the functions now or hereafter vested in him and to prescribe their duties;

(2) obtain services as authorized by section 3109 of title 5 of the United States Code, at rates not to exceed the rate prescribed for grade GS-18 of the General Schedule by section 5332 of title 5 of the United States Code; and

(3) enter into contracts and other arrangements for studies, analyses, and other services with public agencies and with private persons, organizations, or institutions, and make such payments as

he deems necessary to carry out the provisions of this Act without legal consideration, without performance bonds, and without regard to section 3709 of the Revised Statutes (41 U.S.C. 5).

COORDINATION WITH OTHER ORGANIZATIONS

SEC. 208. (a) In exercising his functions under this Act, the Director shall—

(1) work in close consultation and cooperation with the Domestic Council, the National Security Council, the Council on Environmental Quality, the Council of Economic Advisers, the Office of Management and Budget, the National Science Board, and the Federal departments and agencies;

(2) utilize the services of consultants, establish such advisory panels, and, to the extent practicable, consult with State and local governmental agencies, with appropriate professional groups, and with such representatives of industry, the universities, agriculture, labor, consumers, conservation organizations, and such other public interest groups, organizations, and individuals as he deems advisable;

(3) hold such hearings in various parts of the Nation as he deems necessary, to determine the views of the agencies, groups, and organizations referred to in paragraph (2) of this subsection and of the general public, concerning national needs and trends in science and technology; and

(4) utilize with their consent to the fullest extent possible the services, personnel, equipment, facilities, and information (including statistical information) of public and private agencies and organizations, and individuals, in order to avoid duplication of effort and expense, and may transfer funds made available pursuant to this Act to other Federal agencies as reimbursement for the utilization of such personnel, services, facilities, equipment, and information.

(b) Each department, agency, and instrumentality of the Executive Branch of the Government, including any independent agency, is authorized to furnish the Director such information as the Director deems necessary to carry out his functions under this Act.

(c) Upon request, the Administrator of the National Aeronautics and Space Administration is authorized to assist the Director with respect to carrying out his activities conducted under paragraph (5) of section 205 (a) of this Act.

SCIENCE AND TECHNOLOGY REPORT

SEC. 209. (a) The President shall transmit annually to the Congress, beginning February 15, 1978, a Science and Technology Report (hereinafter referred to as the "Report") which shall be prepared by the Office, with appropriate assistance from Federal departments and agencies and such consultants and contractors as the Director deems necessary. The report shall draw upon the information prepared by the Director pursuant to section 206 of this Act, and to the extent practicable, within the limitations of available knowledge and resources, discuss such issues as—

(1) a review of developments of national significance in science and technology;

(2) the significant effects of current and projected trends in science and technology on the social, economic, and other requirements of the Nation;

(3) a review and appraisal of selected science- and technology-related programs, policies, and activities of the Federal Government;

(4) an inventory and forecast of critical and emerging national problems the resolution of which might be substantially assisted by the application of science and technology;

(5) the identification and assessment of scientific and technological measures that can contribute to the resolution of such problems, in light of the related social, economic, political, and institutional considerations;

(6) the existing and projected scientific and technological resources, including specialized manpower, that could contribute to the resolution of such problems; and

(7) recommendations for legislation on science- and technology-related programs and policies that will contribute to the resolution of such problems.

(b) In preparing the Report under subsection (a) of this section, the Office shall make maximum use of relevant data available from the National Science Foundation and other Government departments and agencies.

(c) The Director shall insure that the Report, in the form approved by the President, is printed and made available as a public document.

TITLE III—PRESIDENT'S COMMITTEE ON SCIENCE AND TECHNOLOGY

ESTABLISHMENT

SEC. 301. The President shall establish within the Executive Office of the President a President's Committee on Science and Technology (hereinafter referred to as the "Committee").

MEMBERSHIP

SEC. 302. (a) The Committee shall consist of—

(1) the Director of the Office of Science and Technology Policy established under title II of this Act; and

(2) not less than eight nor more than fourteen other members appointed by the President not more than sixty days after the Director has assumed office (as provided in section 203 of this Act).

(b) Members of the Committee appointed by the President pursuant to subsection (a) (2) of this section shall—

(1) be qualified and distinguished in one or more of the following areas: science, engineering, technology, information dissemination, education, management, labor, or public affairs;

(2) be capable of critically assessing the policies, priorities, programs, and activities of the Nation, with respect to the findings, policies, and purposes set forth in title I; and

(3) shall collectively constitute a balanced composition with respect to (A) fields of science and engineering, (B) academic, in-

dustrial, and government experience, and (C) business, labor, consumer, and public interest points of view.

(c) The President shall appoint one member of the Committee to serve as Chairman and another member to serve as Vice Chairman for such periods as the President may determine.

(d) Each member of the Committee who is not an officer of the Federal Government shall, while serving on business of the Committee, be entitled to receive compensation at a rate not to exceed the daily rate prescribed for GS-18 of the General Schedule under section 5332 of title 5, United States Code, including traveltime, and while so serving away from his home or regular place of business he may be allowed travel expenses, including per diem in lieu of subsistence, in the same manner as the expenses authorized by section 5703(b) of title 5, United States Code, for persons in Government service employed intermittently.

FEDERAL SCIENCE, ENGINEERING, AND TECHNOLOGY SURVEY

SEC. 303. (a) The Committee shall survey, examine, and analyze the overall context of the Federal science, engineering, and technology effort including missions, goals, personnel, funding, organization, facilities, and activities in general, taking adequate account of the interests of individuals and groups that may be affected by Federal scientific, engineering, and technical programs, including, as appropriate, consultation with such individuals and groups. In carrying out its functions under this section, the Committee shall, among other things, consider needs for—

(1) organizational reform, including institutional realignment designed to place Federal agencies whose missions are primarily or solely devoted to scientific and technological research and development, and those agencies primarily or solely concerned with fuels, energy, and materials, within a single cabinet-level department;

(2) improvements in existing systems for handling scientific and technical information on a Government-wide basis, including consideration of the appropriate role to be played by the private sector in the dissemination of such information;

(3) improved technology assessment in the executive branch of the Federal Government;

(4) improved methods for effecting technology innovation, transfer, and use;

(5) stimulating more effective Federal-State and Federal-industry liaison and cooperation in science and technology, including the formation of Federal-State mechanisms for the mutual pursuit of this goal;

(6) reduction and simplification of Federal regulations and administrative practices and procedures which may have the effect of retarding technological innovation or opportunities for its utilization;

(7) a broader base for support of basic research;

(8) ways of strengthening the Nation's academic institutions' capabilities for research and education in science and technology;

(9) ways and means of effectively integrating scientific and technological factors into our national and international policies;

(10) technology designed to meet community and individual needs;

(11) maintenance of adequate scientific and technological manpower with regard to both quality and quantity;

(12) improved systems for planning and analysis of the Federal science and technology programs; and

(13) long-range study, analysis, and planning in regard to the application of science and technology to major national problems or concerns.

(b) (1) Within twelve months from the time the Committee is activated in accordance with section 302(a) of this Act, the Committee shall issue an interim report of its activities and operations to date. Not more than twenty-four months from the time the Committee is activated, the Committee shall submit a final report of its activities, findings, conclusions, and recommendations, including such supporting data and material as may be necessary, to the President.

(2) The President, within sixty days of receipt thereof, shall transmit each such report to each House of Congress together with such comments, observations, and recommendations thereon as he deems appropriate.

CONTINUATION OF COMMITTEE

SEC. 304. (a) Ninety days after submission of the final report prepared under section 303 of this Act, the Committee shall cease to exist, unless the President, before the expiration of the ninety-day period, makes a determination that it is advantageous for the Committee to continue in being.

(b) If the President determines that it is advantageous for the Committee to continue in being, (1) the Committee shall exercise such functions as are prescribed by the President; and (2) the members of the Committee shall serve at the pleasure of the President.

STAFF AND CONSULTANT SUPPORT

SEC. 305. (a) In the performance of its functions under sections 303 and 304 of this Act, the Committee is authorized—

(1) to select, appoint, employ, and fix the compensation of such specialists and other experts as may be necessary for the carrying out of its duties and functions, and to select, appoint, and employ, subject to the civil service laws, such other officers and employees as may be necessary for carrying out its duties and functions; and

(2) to provide for participation of such civilian and military personnel as may be detailed to the Committee pursuant to subsection (b) of this section for carrying out the functions of the Committee.

(b) Upon request of the Committee, the head of any Federal department, agency, or instrumentality is authorized (1) to furnish to the Committee such information as may be necessary for carrying out its functions and as may be available to or procurable by such department, agency, or instrumentality, and (2) to detail to temporary duty with the Committee on a reimbursable basis such personnel within his administrative jurisdiction as it may need or believe to be useful for carrying out its functions. Each such detail shall be without loss of

seniority, pay, or other employee status, to civilian employees so detailed, and without loss of status, rank, office, or grade, or of any emolument, perquisite, right, privilege, or benefit incident thereto to military personnel so detailed. Each such detail shall be made pursuant to an agreement between the Chairman and the head of the relevant department, agency, or instrumentality, and shall be in accordance with the provisions of subchapter III of chapter 33, title 5, United States Code.

TITLE IV—FEDERAL COORDINATING COUNCIL FOR SCIENCE, ENGINEERING, AND TECHNOLOGY

ESTABLISHMENT AND FUNCTIONS

SEC. 401. (a) There is established the Federal Coordinating Council for Science, Engineering, and Technology (hereinafter referred to as the "Council").

(b) The Council shall be composed of the Director of the Office of Science and Technology Policy and one representative of each of the following Federal agencies: Department of Agriculture, Department of Commerce, Department of Defense, Department of Health, Education, and Welfare, Department of Housing and Urban Development, Department of the Interior, Department of State, Department of Transportation, Veterans' Administration, National Aeronautics and Space Administration, National Science Foundation, Environmental Protection Agency, and Energy Research and Development Administration. Each such representative shall be an official of policy rank designated by the head of the Federal agency concerned.

(c) The Director of the Office of Science and Technology Policy shall serve as Chairman of the Council. The Chairman may designate another member of the Council to act temporarily in the Chairman's absence as Chairman.

(d) The Chairman may (1) request the head of any Federal agency not named in subsection (b) of this section to designate a representative to participate in meetings or parts of meetings of the Council concerned with matters of substantial interest to such agency, and (2) invite other persons to attend meetings of the Council.

(e) 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.

(f) The Council shall perform such other related advisory duties as shall be assigned by the President or by the Chairman.

(g) For the purpose of carrying out the provisions of this section, each Federal agency represented on the Council shall furnish necessary assistance to the Council. Such assistance may include—

- (1) detailing employees to the Council to perform such functions, consistent with the purposes of this section, as the Chairman may assign to them, and
- (2) undertaking, upon request of the Chairman, such special studies for the Council as come within the functions herein assigned.

(h) For the purpose of conducting studies and making reports as directed by the Chairman, standing subcommittees and panels of the Council may be established.

ABOLITION OF FEDERAL COUNCIL FOR SCIENCE AND TECHNOLOGY

SEC. 402. The Federal Council for Science and Technology, established pursuant to Executive Order 10807, issued March 13, 1959, as amended by Executive Order 11381, issued November 8, 1967, is hereby abolished.

TITLE V—GENERAL PROVISIONS

AUTHORIZATION

SEC. 501. (a) For the purpose of carrying out title II of this Act, there are authorized to be appropriated—

- (1) \$750,000 for the fiscal year ending June 30, 1976;
- (2) \$500,000 for the period beginning July 1, 1976, and ending September 30, 1976;
- (3) \$3,000,000 for the fiscal year ending September 30, 1977; and
- (4) such sums as may be necessary for each of the succeeding fiscal years.

(b) For the purpose of carrying out title III of this Act, there are authorized to be appropriated—

- (1) \$750,000 for the fiscal year ending June 30, 1976;
- (2) \$500,000 for the period beginning July 1, 1976, and ending September 30, 1976;
- (3) \$1,000,000 for the fiscal year ending September 30, 1977; and
- (4) such sums as may be necessary for each of the succeeding fiscal years.

STATUTORY REPEAL

SEC. 502. Sections 1, 2, 3, and 4 of Reorganization Plan Numbered 2 of 1962 (76 Stat. 1253) and section 2 of Reorganization Plan Numbered 1 of 1973 (87 Stat. 1089) are repealed.

AMENDMENT

SEC. 503. Section 4 of the National Science Foundation Act of 1950 (42 U.S.C. 1863) is amended by striking out subsection (g) and by re-

designating subsections (h), (i), and (j), and all references thereto, as subsections (g), (h), and (i), respectively.

And the Senate agree to the same.

TED KENNEDY,
WARREN MAGNUSON,
FRANK E. MOSS,
WALTER F. MONDALE,
JOHN TUNNEY,
WENDELL H. FORD,
BARRY GOLDWATER,
J. GLENN BEALL, JR.,
PAUL LAXALT,

Managers on the Part of the Senate.

OLIN E. TEAGUE,
DON FUQUA,
JIM SYMINGTON,
MIKE MCCORMACK,
RAY THORNTON,
C. A. MOSHER,
MARVIN L. ESCH,

Managers on the Part of the House.

JOINT EXPLANATORY STATEMENT OF THE COMMITTEE OF CONFERENCE

The managers on the part of the House and the Senate at the conference on the disagreeing votes of the two Houses on the amendment of the Senate to the bill (H.R. 10230) to establish a science and technology policy for the United States, to provide for scientific and technological advice and assistance to the President, to provide a comprehensive survey of ways and means for improving the Federal effort in scientific research and information handling, and in the use thereof, and for other purposes, submit the following joint statement to the House and the Senate in explanation of the effect of the action agreed upon by the managers and recommended in the accompanying conference report:

The amendment of the Senate struck out all after the enacting clause in the House bill and substituted new language. The Committee of Conference agreed to accept the Senate amendment with certain amendments and stipulations proposed by the conferees.

The substantive changes made by the Senate amendment, together with further amendments and modifications by the Committee of Conference are as follows:

TITLE I—NATIONAL SCIENCE, ENGINEERING AND TECHNOLOGY POLICY AND PRIORITIES

Both versions of the bill contained comprehensive statements designed to establish a national science and technology policy. The statements were similar in many respects and often duplicative.

The Committee of Conference substituted a compromise which (1) follows the Senate title, (2) adopts the House style and format, and (3) contains all the significant substantive elements of the policy findings and declarations of each bill.

TITLE II—THE OFFICE OF SCIENCE AND TECHNOLOGY POLICY

This title establishes an Office of Science and Technology Policy within the Executive Office of the President. House and Senate versions differed, and have been resolved, in the following ways.

1. *Associate Directors.*—The House bill authorized the President, at his discretion, to appoint up to four Assistant Directors for the new office. The Senate amendment differed in that it designated the four as "Associate" Directors and required that they be confirmed in office by the Senate. The managers on the part of the House concurred in the Senate change. [Sec. 203]

2. *Annual Report.*—The House required "timely" reports from the new office on its activities and on issues or problems involving important scientific and technological considerations. The Senate amend-

ment required "annual" reports in this area. Managers on the part of the House concurred in the Senate amendment with minor editorial changes. [Sec. 209(a)]

3. *Civil Service Requirements.*—The bill passed by the House stipulated that the appointment of officers and employees by the Director of the Office conform to Civil Service requirements. The Senate amendment contained no such requirement. In conference, the managers on the part of the Senate accepted the House provision. [Sec. 207(c)]

4. *Contract and Hearing Authority.*—The Senate amendment contained broader consultant and contract authority for the new office than did the House bill; it also gave the Director authority to obtain information through the conduct of hearings, which the House bill did not. The managers on the part of the House concurred in the Senate position. [Sec. 208(a) (2) and (3)]

5. *National Security Council and Domestic Council.*—The House bill provided that the Director of the new Office should advise the President on, among other things, scientific and technological considerations involved in national security. The Senate amendment removed this provision, but provided that the Director serve as advisor to the National Security Council when requested by the Council to do so. The Senate amendment also provided that the Director of the Office be made a member of the Domestic Council. The conferees settled these differences by incorporating all three provisions with such editorial changes as were necessary to prevent duplication or conflict. [Sec. 204(b) (1); Sec. 207(a) (2) and (b)]

6. *Five-Year Outlook.*—The Senate amendment contained a provision calling for a five-year outlook, or projection, of scientific and technological issues, situations and conditions likely to warrant special attention within that period, and for appropriate inputs to the Office of Management and Budget and the executive departments and agencies in the formulation of Administration budgets with respect to research and development. The outlook would be up-dated annually. The House bill did not contain a similar provision. Managers on the part of the House agreed to accept the Senate provision with minor modifications. [Sec. 206]

TITLE III—PRESIDENT'S COMMITTEE ON SCIENCE AND TECHNOLOGY

1. *Title.*—The House bill had entitled this special study group as a "Survey" committee. The Senate amendment re-titled it as an "Advisory" committee. Conferees agreed to compromise on the title indicated above.

2. *Mandatory Provisions.*—The House bill contained a mandatory requirement that the Committee be set up as specified. The Senate amendment made the Committee's creation optional with the President. The managers on the part of the Senate concurred in the House provision. [Sec. 302(a)]

3. *Membership Qualifications.*—Both House and Senate versions specified qualifications for membership on the Committee, but the Senate amendment contained broader language and more specific considerations. The conferees agreed to keep the House language but added

the specific categories for balanced membership as set out in the Senate version. [Sec. 302(b)]

4. *Lifetime and Continuation of Committee.*—The House bill provided that the Committee have a lifetime of two years and that the President review and submit the Committee's report—directed toward the examination and analyzation of the total Federal science and technology effort with appropriate findings and recommendations—to the Congress within 60 days, together with his own comments and recommendations. The Senate amendment was essentially the same, except that it provided for a one-year study and also permitted the President to extend the life of the Committee as he saw fit. The conferees agreed to the two-year House plan, but provided for an interim report after one year and a final report after two years. Conferees also agreed to the Senate provision for extension of the Committee's lifetime at the discretion of the President. [Sec. 303(b) and Sec. 304]

TITLE IV—FEDERAL COORDINATING COUNCIL FOR SCIENCE, ENGINEERING AND TECHNOLOGY

This title was not in in the House bill but was added by the Senate amendment.

The effect of this title is to make the existing Federal Council for Science and Technology, set up by Executive Order in 1959, a statutory body with the Director of the new Office as chairman. The current Council is an interdepartmental group representing all Federal agencies with significant research and development missions, whose function is to maintain general liaison of the overall government effort in science and technology. The title adds no new functions. It does change the name of the present Council, emphasizes its mission, and places it on a statutory basis. In interpreting this title, reference should be made to the following statement from the Senate Report (94-622): "These functions are purely advisory in nature and involve no exercise of authority over the participating agencies, whose participation is governed by their applicable statutes." Managers on the part of the House agreed to accept this title.

TITLE V—GENERAL REVISIONS

1. *Authorization.*—The House bill provided only general authorization of such sums as might be necessary to carry out the provisions of the Act. The Senate amendment authorized a total of \$1,250,000 for Fiscal Year 1976 and the transitional quarter (July 1, 1976–September 30, 1976), and \$3,000,000 for Fiscal Year 1977 for Title II of the Act; it authorized a total of \$1,250,000 for Fiscal Year 1976 and the transitional quarter, and \$1,000,000 for Fiscal Year 1977 for Title III of the Act. Conferees agreed to the Senate total authorization figures for Titles II and III for Fiscal Year 1976, the transitional quarter, and Fiscal Year 1977. Beyond that period, however, conferees agreed to authorize such sums as might be necessary. [Sec. 501] It should be noted that the sums authorized parallel closely those which the Administration has indicated it plans to expend for these areas in the next two years.

2. *National Science Foundation Act.*—The House bill repealed one clause in the Organic Act of the National Science Foundation which requires an annual report from the National Science Board on the status of science and technology in the United States. The Senate amendment did not contain this provision. Managers on the part of the Senate agreed to the House provision. [Sec. 503]

OTHER SUBSTANTIVE DIFFERENCES

State and Regional Science and Technology

The Senate amendment contained a separate title comprised of two principal elements. The first of these was a 52 member inter-governmental advisory panel to assist the Director of the new Office in his duties by providing special inputs relative to State and local needs and issues. The panel was to be composed of the Director of the Office, the Director of the National Science Foundation, and one member appointed by the Governor of each State. The second element was a Federal grant program, to be administered by the National Science Foundation, to assist the States in forming or strengthening a science, engineering and technology advisory mechanism within State governments. Each State could receive a maximum of \$200,000 for this purpose upon proper application.

The House bill contained no similar title.

The Committee of Conference agreed to drop the title, as such, but to incorporate into title II a scaled-down version of the inter-governmental panel. The panel's function shall be to (1) identify and define civilian problems at the State, regional and local levels which science, engineering, and technology may assist in resolving or ameliorating; (2) recommend priorities for addressing such problems; and (3) advise and assist the Director in identifying and fostering policies to facilitate the transfer and utilization of research and development results so as to maximize their application to civilian needs. [Sec. 205(b)]

At the same time, conferees agreed to express their unanimous conviction (1) of the soundness of the concept that State and local governments would profit from their own science advisory systems; (2) that such systems could be made more effective through appropriate liaison with the Federal government, and (3) that greater cooperation and improved financial arrangements between the States and localities and the National Science Foundation are in order, including adequate additional financial support of programs designed to increase a State's capacity for wise application of science and technology to State and local needs.

Conferees further agreed to recommend to the appropriate committee members of both the Senate and House that immediate consideration be given to effecting these matters at the earliest opportunity. Such consideration should include the current annual authorization for the National Science Foundation, which has not yet been reported from the Committee on Labor and Public Welfare of the Senate.

"Engineering" Terminology

The House bill, in its general terminology, used the phrase "science and technology" throughout as reference to the generic matter with

which it was dealing. The Senate amendment employed the phrase "science, engineering and technology" for the same purpose.

The Committee of Conference agreed that the judicious use of each phrase was appropriate in accordance with the particular subject matter being described. Consequently, the term "engineering" was employed in certain areas and omitted in others, as follows:

1. "Engineering" has been retained in Title I, which deals with general national policy and priorities, and in Title IV which deals with all Federal research and development activities on a government-wide basis. It has not been used in either Title II or Title III, both of which deal with entities that are limited to the functions, administration and discretion of the President's immediate Executive Office.

2. The term "engineering" has also been employed in all instances where the Act is concerned with manpower, with human resources or with education, training or retraining of scientific personnel.

3. Engineering has been included in those critical parts of the Act where qualifications for offices created by the legislation are involved. It has also been incorporated into the State-advisory panel established in the new Policy Office [Sec. 205(b)] and into the operation of the President's Committee on Science and Technology with reference to its two-year survey of Federal science operations. [Sec. 303]

4. The "manpower" clauses, which the Senate amendment contained and which were designed in part to emphasize the Nation's engineering needs, have also been retained by the conferees. [Sec. 101(a) (4) and (5);] An important new clause to ensure appropriate inputs from the engineering community into the Federal policy-making process has been added. [Sec. 102(b) (5)]

5. In most other parts of the Act, the House terminology has been retained.

TED KENNEDY,
WARREN MAGNUSON,
FRANK E. MOSS,
WALTER F. MONDALE,
JOHN TUNNEY,
WENDELL H. FORD,
BARRY GOLDWATER,
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Managers on the Part of the Senate.

OLIN E. TEAGUE,
DON FUQUA,
JIM SYMINGTON,
MIKE McCORMACK,
RAY THORNTON,
C. A. MOSHER,
MARVIN L. ESCH,

Managers on the Part of the House.



Ninety-fourth Congress of the United States of America

AT THE SECOND SESSION

*Begun and held at the City of Washington on Monday, the nineteenth day of January,
one thousand nine hundred and seventy-six*

An Act

To establish a science and technology policy for the United States, to provide for scientific and technological advice and assistance to the President, to provide a comprehensive survey of ways and means for improving the Federal effort in scientific research and information handling, and in the use thereof, to amend the National Science Foundation Act of 1950, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "National Science and Technology Policy, Organization, and Priorities Act of 1976".

TITLE I—NATIONAL SCIENCE, ENGINEERING, AND TECHNOLOGY POLICY AND PRIORITIES

FINDINGS

SEC. 101. (a) The Congress, recognizing the profound impact of science and technology on society, and the interrelations of scientific, technological, economic, social, political, and institutional factors, hereby finds and declares that—

(1) the general welfare, the security, the economic health and stability of the Nation, the conservation and efficient utilization of its natural and human resources, and the effective functioning of government and society require vigorous, perceptive support and employment of science and technology in achieving national objectives;

(2) the many large and complex scientific and technological factors which increasingly influence the course of national and international events require appropriate provision, involving long-range, inclusive planning as well as more immediate program development, to incorporate scientific and technological knowledge in the national decisionmaking process;

(3) the scientific and technological capabilities of the United States, when properly fostered, applied, and directed, can effectively assist in improving the quality of life, in anticipating and resolving critical and emerging international, national, and local problems, in strengthening the Nation's international economic position, and in furthering its foreign policy objectives;

(4) Federal funding for science and technology represents an investment in the future which is indispensable to sustained national progress and human betterment, and there should be a continuing national investment in science, engineering, and technology which is commensurate with national needs and opportunities and the prevalent economic situation;

(5) the manpower pool of scientists, engineers, and technicians, constitutes an invaluable national resource which should be utilized to the fullest extent possible; and

(6) the Nation's capabilities for technology assessment and for technological planning and policy formulation must be strengthened at both Federal and State levels.

(b) As a consequence, the Congress finds and declares that science and technology should contribute to the following priority goals without being limited thereto:

(1) fostering leadership in the quest for international peace and progress toward human freedom, dignity, and well-being by enlarging the contributions of American scientists and engineers to the knowledge of man and his universe, by making discoveries of basic science widely available at home and abroad, and by utilizing technology in support of United States national and foreign policy goals;

(2) increasing the efficient use of essential materials and products, and generally contributing to economic opportunity, stability, and appropriate growth;

(3) assuring an adequate supply of food, materials, and energy for the Nation's needs;

(4) contributing to the national security;

(5) improving the quality of health care available to all residents of the United States;

(6) preserving, fostering, and restoring a healthful and esthetic natural environment;

(7) providing for the protection of the oceans and coastal zones, and the polar regions, and the efficient utilization of their resources;

(8) strengthening the economy and promoting full employment through useful scientific and technological innovations;

(9) increasing the quality of educational opportunities available to all residents of the United States;

(10) promoting the conservation and efficient utilization of the Nation's natural and human resources;

(11) improving the Nation's housing, transportation, and communication systems, and assuring the provision of effective public services throughout urban, suburban, and rural areas;

(12) eliminating air and water pollution, and unnecessary, unhealthful, or ineffective drugs and food additives; and

(13) advancing the exploration and peaceful uses of outer space.

DECLARATION OF POLICY

SEC. 102. (a) PRINCIPLES.—In view of the foregoing, the Congress declares that the United States shall adhere to a national policy for science and technology which includes the following principles:

(1) The continuing development and implementation of strategies for determining and achieving the appropriate scope, level, direction, and extent of scientific and technological efforts based upon a continuous appraisal of the role of science and technology in achieving goals and formulating policies of the United States, and reflecting the views of State and local governments and representative public groups.

(2) The enlistment of science and technology to foster a healthy economy in which the directions of growth and innovation are compatible with the prudent and frugal use of resources and with the preservation of a benign environment.

(3) The conduct of science and technology operations so as to serve domestic needs while promoting foreign policy objectives.

(4) The recruitment, education, training, retraining, and beneficial use of adequate numbers of scientists, engineers, and tech-

nologists, and the promotion by the Federal Government of the effective and efficient utilization in the national interest of the Nation's human resources in science, engineering, and technology.

(5) The development and maintenance of a solid base for science and technology in the United States, including: (A) strong participation of and cooperative relationships with State and local governments and the private sector; (B) the maintenance and strengthening of diversified scientific and technological capabilities in government, industry, and the universities, and the encouragement of independent initiatives based on such capabilities, together with elimination of needless barriers to scientific and technological innovation; (C) effective management and dissemination of scientific and technological information; (D) establishment of essential scientific, technical and industrial standards and measurement and test methods; and (E) promotion of increased public understanding of science and technology.

(6) The recognition that, as changing circumstances require periodic revision and adaptation of title I of this Act, the Federal Government is responsible for identifying and interpreting the changes in those circumstances as they occur, and for effecting subsequent changes in title I as appropriate.

(b) IMPLEMENTATION.—To implement the policy enunciated in subsection (a) of this section, the Congress declares that:

(1) The Federal Government should maintain central policy planning elements in the executive branch which assist Federal agencies in (A) identifying public problems and objectives, (B) mobilizing scientific and technological resources for essential national programs, (C) securing appropriate funding for programs so identified, (D) anticipating future concerns to which science and technology can contribute and devising strategies for the conduct of science and technology for such purposes, (E) reviewing systematically Federal science policy and programs and recommending legislative amendment thereof when needed. Such elements should include an advisory mechanism within the Executive Office of the President so that the Chief Executive may have available independent, expert judgment and assistance on policy matters which require accurate assessments of the complex scientific and technological features involved.

(2) It is a responsibility of the Federal Government to promote prompt, effective, reliable, and systematic transfer of scientific and technological information by such appropriate methods as programs conducted by nongovernmental organizations, including industrial groups and technical societies. In particular, it is recognized as a responsibility of the Federal Government not only to coordinate and unify its own science and technology information systems, but to facilitate the close coupling of institutional scientific research with commercial application of the useful findings of science.

(3) It is further an appropriate Federal function to support scientific and technological efforts which are expected to provide results beneficial to the public but which the private sector may be unwilling or unable to support.

(4) Scientific and technological activities which may be properly supported exclusively by the Federal Government should be distinguished from those in which interests are shared with State and local governments and the private sector. Among these enti-

ties, cooperative relationships should be established which encourage the appropriate sharing of science and technology decisionmaking, funding support, and program planning and execution.

(5) The Federal Government should support and utilize engineering and its various disciplines and make maximum use of the engineering community, whenever appropriate, as an essential element in the Federal policymaking process.

(6) Comprehensive legislative support for the national science and technology effort requires that the Congress be regularly informed of the condition, health and vitality, and funding requirements of science and technology, the relation of science and technology to changing national goals, and the need for legislative modification of the Federal endeavor and structure at all levels as it relates to science and technology.

(c) PROCEDURES.—The Congress declares that, in order to expedite and facilitate the implementation of the policy enunciated in subsection (a) of this section, the following coordinate procedures are of paramount importance:

(1) Federal procurement policy should encourage the use of science and technology to foster frugal use of materials, energy, and appropriated funds; to assure quality environment; and to enhance product performance.

(2) Explicit criteria, including cost-benefit principles where practicable, should be developed to identify the kinds of applied research and technology programs that are appropriate for Federal funding support and to determine the extent of such support. Particular attention should be given to scientific and technological problems and opportunities offering promise of social advantage that are so long range, geographically widespread, or economically diffused that the Federal Government constitutes the appropriate source for undertaking their support.

(3) Federal promotion of science and technology should emphasize quality of research, recognize the singular importance of stability in scientific and technological institutions, and for urgent tasks, seek to assure timeliness of results. With particular reference to Federal support for basic research, funds should be allocated to encourage education in needed disciplines, to provide a base of scientific knowledge from which future essential technological development can be launched, and to add to the cultural heritage of the Nation.

(4) Federal patent policies should be developed, based on uniform principles, which have as their objective the preservation of incentives for technological innovation and the application of procedures which will continue to assure the full use of beneficial technology to serve the public.

(5) Closer relationships should be encouraged among practitioners of different scientific and technological disciplines, including the physical, social, and biomedical fields.

(6) Federal departments, agencies, and instrumentalities should assure efficient management of laboratory facilities and equipment in their custody, including acquisition of effective equipment, disposal of inferior and obsolete properties, and cross-servicing to maximize the productivity of costly property of all kinds. Disposal policies should include attention to possibilities for further productive use.

(7) The full use of the contributions of science and technology to support State and local government goals should be encouraged.

(8) Formal recognition should be accorded those persons whose scientific and technological achievements have contributed significantly to the national welfare.

(9) The Federal Government should support applied scientific research, when appropriate, in proportion to the probability of its usefulness, insofar as this probability can be determined; but while maximizing the beneficial consequences of technology, the Government should act to minimize foreseeable injurious consequences.

(10) Federal departments, agencies, and instrumentalities should establish procedures to insure among them the systematic interchange of scientific data and technological findings developed under their programs.

TITLE II—OFFICE OF SCIENCE AND TECHNOLOGY POLICY

SHORT TITLE

SEC. 201. This title may be cited as the "Presidential Science and Technology Advisory Organization Act of 1976".

ESTABLISHMENT

SEC. 202. There is established in the Executive Office of the President an Office of Science and Technology Policy (hereinafter referred to in this title as the "Office").

DIRECTOR; ASSOCIATE DIRECTORS

SEC. 203. There shall be at the head of the Office a Director who shall be appointed by the President, by and with the advice and consent of the Senate, and who shall be compensated at the rate provided for level II of the Executive Schedule in section 5313 of title 5, United States Code. The President is authorized to appoint not more than four Associate Directors, by and with the advice and consent of the Senate, who shall be compensated at a rate not to exceed that provided for level III of the Executive Schedule in section 5314 of such title. Associate Directors shall perform such functions as the Director may prescribe.

FUNCTIONS

SEC. 204. (a) The primary function of the Director is 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.

(b) In addition to such other functions and activities as the President may assign, the Director shall—

(1) advise the President of scientific and technological considerations involved in areas of national concern including, but not limited to, the economy, national security, health, foreign relations, the environment, and the technological recovery and use of resources;

(2) evaluate the scale, quality, and effectiveness of the Federal effort in science and technology and advise on appropriate actions;

(3) advise the President on scientific and technological considerations with regard to Federal budgets, assist the Office of Management and Budget with an annual review and analysis of funding proposed for research and development in budgets of all Federal agencies, and aid the Office of Management and Budget and the agencies throughout the budget development process; and

(4) assist the President in providing general leadership and coordination of the research and development programs of the Federal Government.

POLICY PLANNING, ANALYSIS, AND ADVICE

SEC. 205. (a) The Office shall serve as a source of scientific and technological analysis and judgment for the President with respect to major policies, plans, and programs of the Federal Government. In carrying out the provisions of this section, the Director shall—

(1) seek to define coherent approaches for applying science and technology to critical and emerging national and international problems and for promoting coordination of the scientific and technological responsibilities and programs of the Federal departments and agencies in the resolution of such problems;

(2) assist and advise the President in the preparation of the Science and Technology Report, in accordance with section 209 of this Act;

(3) gather timely and authoritative information concerning significant developments and trends in science, technology, and in national priorities, both current and prospective, to analyze and interpret such information for the purpose of determining whether such developments and trends are likely to affect achievement of the priority goals of the Nation as set forth in section 101(b) of this Act;

(4) encourage the development and maintenance of an adequate data base for human resources in science, engineering, and technology, including the development of appropriate models to forecast future manpower requirements, and assess the impact of major governmental and public programs on human resources and their utilization;

(5) initiate studies and analyses, including systems analyses and technology assessments, of alternatives available for the resolution of critical and emerging national and international problems amenable to the contributions of science and technology and, insofar as possible, determine and compare probable costs, benefits, and impacts of such alternatives;

(6) advise the President on the extent to which the various scientific and technological programs, policies, and activities of the Federal Government are likely to affect the achievement of the priority goals of the Nation as set forth in section 101(b) of this Act;

(7) provide the President with periodic reviews of Federal statutes and administrative regulations of the various departments and agencies which affect research and development activities, both internally and in relation to the private sector, or which may interfere with desirable technological innovation, together with

recommendations for their elimination, reform, or updating as appropriate;

(8) develop, review, revise, and recommend criteria for determining scientific and technological activities warranting Federal support, and recommend Federal policies designed to advance (A) the development and maintenance of broadly based scientific and technological capabilities, including human resources, at all levels of government, academia, and industry, and (B) the effective application of such capabilities to national needs;

(9) assess and advise on policies for international cooperation in science and technology which will advance the national and international objectives of the United States;

(10) identify and assess emerging and future areas in which science and technology can be used effectively in addressing national and international problems;

(11) report at least once each year to the President on the overall activities and accomplishments of the Office, pursuant to section 209 of this Act;

(12) periodically survey the nature and needs of national science and technology policy and make recommendations to the President, for review and transmission to the Congress, for the timely and appropriate revision of such policy in accordance with section 102(a)(6) of this Act; and

(13) perform such other duties and functions and make and furnish such studies and reports thereon, and recommendations with respect to matters of policy and legislation as the President may request.

(b)(1) The Director shall establish an Intergovernmental Science, Engineering, and Technology Advisory Panel (hereinafter referred to as the "Panel"), whose purpose shall be to (A) identify and define civilian problems at State, regional, and local levels which science, engineering, and technology may assist in resolving or ameliorating; (B) recommend priorities for addressing such problems; and (C) advise and assist the Director in identifying and fostering policies to facilitate the transfer and utilization of research and development results so as to maximize their application to civilian needs.

(2) The Panel shall be composed of (A) the Director of the Office, or his representative; (B) at least ten members representing the interests of the States, appointed by the Director of the Office after consultation with State officials; and (C) the Director of the National Science Foundation, or his representative.

(3)(A) The Director of the Office, or his representative, shall serve as Chairman of the Panel.

(B) The Panel shall perform such functions as the Chairman may prescribe, and shall meet at the call of the Chairman.

(4) Each member of the Panel shall, while serving on business of the Panel, be entitled to receive compensation at a rate not to exceed the daily rate prescribed for GS-18 of the General Schedule under section 5332 of title 5, United States Code, including traveltime, and, while so serving away from his home or regular place of business, he may be allowed travel expenses, including per diem in lieu of subsistence in the same manner as the expenses authorized by section 5703 (b) of title 5, United States Code, for persons in government service employed intermittently.

FIVE-YEAR OUTLOOK

SEC. 206. (a) Within its first year of operation, the Office shall, to the extent practicable, within the limitations of available knowledge and resources, and with appropriate assistance from the departments and agencies and such consultants and contractors as the Director deems necessary, identify and describe situations and conditions which warrant special attention within the next five years, involving—

(1) current and emerging problems of national significance that are identified through scientific research, or in which scientific or technical considerations are of major significance; and

(2) opportunities for, and constraints on, the use of new and existing scientific and technological capabilities which can make a significant contribution to the resolution of problems identified under paragraph (1) of this subsection or to the achievement of Federal program objectives or national goals, including those set forth in section 101 (b) of this Act.

(b) The Office shall annually revise the five-year outlook developed under subsection (a) of this section so that it takes account of new problems, constraints and opportunities and changing national goals and circumstances, and shall extend the outlook so that it always extends five years into the future.

(c) The Director of the Office shall consult as necessary with officials of the departments and agencies having programs and responsibilities relating to the problems, constraints, and opportunities identified under subsections (a) and (b) of this section, in order to—

(1) identify and evaluate alternative actions that might be taken by the Federal Government, State and local governments, or the private sector to deal with such problems, constraints, or opportunities; and

(2) ensure that alternative actions identified under paragraph (1) of this subsection are fully considered by departments and agencies in formulating their budget, program, and legislative proposals.

(d) The Director of the Office shall consult as necessary with officials of the Office of Management and Budget and other appropriate elements of the Executive Office of the President to ensure that the problems, constraints, opportunities, and alternative actions identified under subsections (a), (b), and (c) of this section are fully considered in the development of the President's Budgets and legislative programs.

ADDITIONAL FUNCTIONS OF THE DIRECTOR;
ADMINISTRATIVE PROVISIONS

SEC. 207. (a) The Director shall, in addition to the other duties and functions set forth in this title—

(1) serve as Chairman of the Federal Coordinating Council for Science, Engineering, and Technology established under title IV; and

(2) serve as a member of the Domestic Council.

(b) For the purpose of assuring the optimum contribution of science and technology to the national security, the Director, at the request of the National Security Council, shall advise the National Security Council in such matters concerning science and technology as relate to national security.

(c) In carrying out his functions under this Act, the Director is authorized to—

(1) appoint such officers and employees as he may deem necessary to perform the functions now or hereafter vested in him and to prescribe their duties;

(2) obtain services as authorized by section 3109 of title 5 of the United States Code, at rates not to exceed the rate prescribed for grade GS-18 of the General Schedule by section 5332 of title 5 of the United States Code; and

(3) enter into contracts and other arrangements for studies, analyses, and other services with public agencies and with private persons, organizations, or institutions, and make such payments as he deems necessary to carry out the provisions of this Act without legal consideration, without performance bonds, and without regard to section 3709 of the Revised Statutes (41 U.S.C. 5).

COORDINATION WITH OTHER ORGANIZATIONS

SEC. 208. (a) In exercising his functions under this Act, the Director shall—

(1) work in close consultation and cooperation with the Domestic Council, the National Security Council, the Council on Environmental Quality, the Council of Economic Advisers, the Office of Management and Budget, the National Science Board, and the Federal departments and agencies;

(2) utilize the services of consultants, establish such advisory panels, and, to the extent practicable, consult with State and local governmental agencies, with appropriate professional groups, and with such representatives of industry, the universities, agriculture, labor, consumers, conservation organizations, and such other public interest groups, organizations, and individuals as he deems advisable;

(3) hold such hearings in various parts of the Nation as he deems necessary, to determine the views of the agencies, groups, and organizations referred to in paragraph (2) of this subsection and of the general public, concerning national needs and trends in science and technology; and

(4) utilize with their consent to the fullest extent possible the services, personnel, equipment, facilities, and information (including statistical information) of public and private agencies and organizations, and individuals, in order to avoid duplication of effort and expense, and may transfer funds made available pursuant to this Act to other Federal agencies as reimbursement for the utilization of such personnel, services, facilities, equipment, and information.

(b) Each department, agency, and instrumentality of the Executive Branch of the Government, including any independent agency, is authorized to furnish the Director such information as the Director deems necessary to carry out his functions under this Act.

(c) Upon request, the Administrator of the National Aeronautics and Space Administration is authorized to assist the Director with respect to carrying out his activities conducted under paragraph (5) of section 205 (a) of this Act.

SCIENCE AND TECHNOLOGY REPORT

SEC. 209. (a) The President shall transmit annually to the Congress, beginning February 15, 1978, a Science and Technology Report (hereinafter referred to as the "Report") which shall be prepared by the Office, with appropriate assistance from Federal departments and agencies and such consultants and contractors as the Director deems necessary. The report shall draw upon the information prepared by the Director pursuant to section 206 of this Act, and to the extent practicable, within the limitations of available knowledge and resources, discuss such issues as—

(1) a review of developments of national significance in science and technology;

(2) the significant effects of current and projected trends in science and technology on the social, economic, and other requirements of the Nation;

(3) a review and appraisal of selected science- and technology-related programs, policies, and activities of the Federal Government;

(4) an inventory and forecast of critical and emerging national problems the resolution of which might be substantially assisted by the application of science and technology;

(5) the identification and assessment of scientific and technological measures that can contribute to the resolution of such problems, in light of the related social, economic, political, and institutional considerations;

(6) the existing and projected scientific and technological resources, including specialized manpower, that could contribute to the resolution of such problems; and

(7) recommendations for legislation on science- and technology-related programs and policies that will contribute to the resolution of such problems.

(b) In preparing the Report under subsection (a) of this section, the Office shall make maximum use of relevant data available from the National Science Foundation and other Government departments and agencies.

(c) The Director shall insure that the Report, in the form approved by the President, is printed and made available as a public document.

TITLE III—PRESIDENT'S COMMITTEE ON SCIENCE AND TECHNOLOGY

ESTABLISHMENT

SEC. 301. The President shall establish within the Executive Office of the President a President's Committee on Science and Technology (hereinafter referred to as the "Committee").

MEMBERSHIP

SEC. 302. (a) The Committee shall consist of—

(1) the Director of the Office of Science and Technology Policy established under title II of this Act; and

(2) not less than eight nor more than fourteen other members appointed by the President not more than sixty days after the Director has assumed office (as provided in section 203 of this Act).

(b) Members of the Committee appointed by the President pursuant to subsection (a) (2) of this section shall—

(1) be qualified and distinguished in one or more of the following areas: science, engineering, technology, information dissemination, education, management, labor, or public affairs;

(2) be capable of critically assessing the policies, priorities, programs, and activities of the Nation, with respect to the findings, policies, and purposes set forth in title I; and

(3) shall collectively constitute a balanced composition with respect to (A) fields of science and engineering, (B) academic, industrial, and government experience, and (C) business, labor, consumer, and public interest points of view.

(c) The President shall appoint one member of the Committee to serve as Chairman and another member to serve as Vice Chairman for such periods as the President may determine.

(d) Each member of the Committee who is not an officer of the Federal Government shall, while serving on business of the Committee, be entitled to receive compensation at a rate not to exceed the daily rate prescribed for GS-18 of the General Schedule under section 5332 of title 5, United States Code, including traveltime, and while so serving away from his home or regular place of business he may be allowed travel expenses, including per diem in lieu of subsistence, in the same manner as the expenses authorized by section 5703(b) of title 5, United States Code, for persons in Government service employed intermittently.

FEDERAL SCIENCE, ENGINEERING, AND TECHNOLOGY SURVEY

SEC. 303. (a) The Committee shall survey, examine, and analyze the overall context of the Federal science, engineering, and technology effort including missions, goals, personnel, funding, organization, facilities, and activities in general, taking adequate account of the interests of individuals and groups that may be affected by Federal scientific, engineering, and technical programs, including, as appropriate, consultation with such individuals and groups. In carrying out its functions under this section, the Committee shall, among other things, consider needs for—

(1) organizational reform, including institutional realignment designed to place Federal agencies whose missions are primarily or solely devoted to scientific and technological research and development, and those agencies primarily or solely concerned with fuels, energy, and materials, within a single cabinet-level department;

(2) improvements in existing systems for handling scientific and technical information on a Government-wide basis, including consideration of the appropriate role to be played by the private sector in the dissemination of such information;

(3) improved technology assessment in the executive branch of the Federal Government;

(4) improved methods for effecting technology innovation, transfer, and use;

(5) stimulating more effective Federal-State and Federal-industry liaison and cooperation in science and technology, including the formation of Federal-State mechanisms for the mutual pursuit of this goal;

(6) reduction and simplification of Federal regulations and administrative practices and procedures which may have the effect of retarding technological innovation or opportunities for its utilization;

(7) a broader base for support of basic research;

(8) ways of strengthening the Nation's academic institutions' capabilities for research and education in science and technology;

(9) ways and means of effectively integrating scientific and technological factors into our national and international policies;

(10) technology designed to meet community and individual needs;

(11) maintenance of adequate scientific and technological manpower with regard to both quality and quantity;

(12) improved systems for planning and analysis of the Federal science and technology programs; and

(13) long-range study, analysis, and planning in regard to the application of science and technology to major national problems or concerns.

(b)(1) Within twelve months from the time the Committee is activated in accordance with section 302(a) of this Act, the Committee shall issue an interim report of its activities and operations to date. Not more than twenty-four months from the time the Committee is activated, the Committee shall submit a final report of its activities, findings, conclusions, and recommendations, including such supporting data and material as may be necessary, to the President.

(2) The President, within sixty days of receipt thereof, shall transmit each such report to each House of Congress together with such comments, observations, and recommendations thereon as he deems appropriate.

CONTINUATION OF COMMITTEE

SEC. 304. (a) Ninety days after submission of the final report prepared under section 303 of this Act, the Committee shall cease to exist, unless the President, before the expiration of the ninety-day period, makes a determination that it is advantageous for the Committee to continue in being.

(b) If the President determines that it is advantageous for the Committee to continue in being, (1) the Committee shall exercise such functions as are prescribed by the President; and (2) the members of the Committee shall serve at the pleasure of the President.

STAFF AND CONSULTANT SUPPORT

SEC. 305. (a) In the performance of its functions under sections 303 and 304 of this Act, the Committee is authorized—

(1) to select, appoint, employ, and fix the compensation of such specialists and other experts as may be necessary for the carrying out of its duties and functions, and to select, appoint, and employ, subject to the civil service laws, such other officers and employees as may be necessary for carrying out its duties and functions; and

(2) to provide for participation of such civilian and military personnel as may be detailed to the Committee pursuant to subsection (b) of this section for carrying out the functions of the Committee.

(b) Upon request of the Committee, the head of any Federal department, agency, or instrumentality is authorized (1) to furnish to

the Committee such information as may be necessary for carrying out its functions and as may be available to or procurable by such department, agency, or instrumentality, and (2) to detail to temporary duty with the Committee on a reimbursable basis such personnel within his administrative jurisdiction as it may need or believe to be useful for carrying out its functions. Each such detail shall be without loss of seniority, pay, or other employee status, to civilian employees so detailed, and without loss of status, rank, office, or grade, or of any emolument, perquisite, right, privilege, or benefit incident thereto to military personnel so detailed. Each such detail shall be made pursuant to an agreement between the Chairman and the head of the relevant department, agency, or instrumentality, and shall be in accordance with the provisions of subchapter III of chapter 33, title 5, United States Code.

TITLE IV—FEDERAL COORDINATING COUNCIL FOR SCIENCE, ENGINEERING, AND TECHNOLOGY

ESTABLISHMENT AND FUNCTIONS

SEC. 401. (a) There is established the Federal Coordinating Council for Science, Engineering, and Technology (hereinafter referred to as the "Council").

(b) The Council shall be composed of the Director of the Office of Science and Technology Policy and one representative of each of the following Federal agencies: Department of Agriculture, Department of Commerce, Department of Defense, Department of Health, Education, and Welfare, Department of Housing and Urban Development, Department of the Interior, Department of State, Department of Transportation, Veterans' Administration, National Aeronautics and Space Administration, National Science Foundation, Environmental Protection Agency, and Energy Research and Development Administration. Each such representative shall be an official of policy rank designated by the head of the Federal agency concerned.

(c) The Director of the Office of Science and Technology Policy shall serve as Chairman of the Council. The Chairman may designate another member of the Council to act temporarily in the Chairman's absence as Chairman.

(d) The Chairman may (1) request the head of any Federal agency not named in subsection (b) of this section to designate a representative to participate in meetings or parts of meetings of the Council concerned with matters of substantial interest to such agency, and (2) invite other persons to attend meetings of the Council.

(e) 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.

(f) The Council shall perform such other related advisory duties as shall be assigned by the President or by the Chairman.

(g) For the purpose of carrying out the provisions of this section, each Federal agency represented on the Council shall furnish necessary assistance to the Council. Such assistance may include—

(1) detailing employees to the Council to perform such functions, consistent with the purposes of this section, as the Chairman may assign to them, and

(2) undertaking, upon request of the Chairman, such special studies for the Council as come within the functions herein assigned.

(h) For the purpose of conducting studies and making reports as directed by the Chairman, standing subcommittees and panels of the Council may be established.

ABOLITION OF FEDERAL COUNCIL FOR SCIENCE AND TECHNOLOGY

SEC. 402. The Federal Council for Science and Technology, established pursuant to Executive Order 10807, issued March 13, 1959, as amended by Executive Order 11381, issued November 8, 1967, is hereby abolished.

TITLE V—GENERAL PROVISIONS

AUTHORIZATION

SEC. 501. (a) For the purpose of carrying out title II of this Act, there are authorized to be appropriated—

(1) \$750,000 for the fiscal year ending June 30, 1976;

(2) \$500,000 for the period beginning July 1, 1976, and ending September 30, 1976;

(3) \$3,000,000 for the fiscal year ending September 30, 1977; and

(4) such sums as may be necessary for each of the succeeding fiscal years.

(b) For the purpose of carrying out title III of this Act, there are authorized to be appropriated—

(1) \$750,000 for the fiscal year ending June 30, 1976;

(2) \$500,000 for the period beginning July 1, 1976, and ending September 30, 1976;

(3) \$1,000,000 for the fiscal year ending September 30, 1977; and

(4) such sums as may be necessary for each of the succeeding fiscal years.

STATUTORY REPEAL

SEC. 502. Sections 1, 2, 3, and 4 of Reorganization Plan Numbered 2 of 1962 (76 Stat. 1253) and section 2 of Reorganization Plan Numbered 1 of 1973 (87 Stat. 1089) are repealed.

H. R. 10230—15

AMENDMENT

SEC. 503. Section 4 of the National Science Foundation Act of 1950 (42 U.S.C. 1863) is amended by striking out subsection (g) and by redesignating subsections (h), (i), and (j), and all references thereto, as subsections (g), (h), and (i), respectively.

Speaker of the House of Representatives.

*Vice President of the United States and
President of the Senate.*

OFFICE OF THE WHITE HOUSE PRESS SECRETARY

THE WHITE HOUSE

REMARKS OF THE PRESIDENT
UPON SIGNING H.R. 10230
THE BILL TO CREATE THE OFFICE OF
SCIENCE AND TECHNOLOGY POLICY

THE EAST GARDEN

10:48 A.M. EDT

Mr. Vice President, Members of the House and Senate, distinguished leaders of the Scientific and Engineering Community, and friends:

I am pleased that all of you could join with me on this very important occasion.

Almost 200 years ago, Thomas Jefferson said: "Knowledge is power; knowledge is safety; knowledge is happiness."

We Americans have sought knowledge since Jefferson's time, sometimes for its own sake and often used for the betterment of our own lives and the protection of the ideals on which our country was founded.

Those of us here today share a very strong view that science and engineering and technology can and must continue to make great contributions to the achievement of our goals. We look to the men and women of our scientific and engineering community to provide new knowledge and to provide new products and services that we need for the growth of our economy, for the improvement of our health and for the defense of our Nation and for a better life for all.

During the past 21 months I have been able to put into practice some of my views about the importance of science and technology. In June of 1975, I proposed legislation to create a new Office of Science and Technological Policy. That proposal has passed the Congress and is now before me for approval. We have taken other steps to draw upon the knowledge of our scientific and technical experts.

I have submitted to the Congress, as part of a fiscal year 1977 budget, requests for nearly \$25 billion that is needed to assure that we are moving forward in all major areas of research and development, particularly in basic research. This is an increase of approximately 11 percent.

MORE

Today, I sign into law the National Science and Technological Policy and Organization and Priorities Act of 1976. In addition to establishing the new office, the bill calls for an intensive study of the way we utilize science and technology in the Government and in the Nation. It helps to assure that we will have the views of State and local governments, business, labor and citizen groups in a great effort.

I congratulate and thank the Members of the Congress on the fine work represented by this legislation. It is a good example of an effective cooperation between the Congress and the Executive Branch and I am most grateful.

I am now very pleased to sign this bill into law.

END (AT 10:52 A.M. EDT)

MAY 11, 1976

Office of the White House Press Secretary

THE WHITE HOUSE

STATEMENT BY THE PRESIDENT

Two hundred years ago, one of this Nation's Founding Fathers and a man of great intellect -- Thomas Jefferson -- observed, "Knowledge is power, knowledge is safety, knowledge is happiness."

Jefferson knew, as did the other great leaders who established this republic, that the pursuit and wise application of new knowledge are essential to any nation's progress. They encouraged exploration, new methods of agriculture, the establishment of scientific societies and institutions of higher learning, and protection and improvement of the Nation's health. They supported those who sought to expand America's physical and intellectual frontiers -- our explorers, scientists, inventors, engineers, and teachers.

This strong emphasis on progress through knowledge has continued throughout our history. It has been instrumental in helping develop the America we know -- its agriculture, industry, economy, health, national security, and many of the amenities we enjoy. Science, engineering and technology have combined to become a basic underlying force in American life -- a force that America has shared with the world to the ultimate benefit of all mankind.

Now as we enter our Third Century science, engineering and technology are more important than ever in meeting the challenges and opportunities which lie ahead for this Nation and the world.

The bill that I am signing today -- the National Science and Technology Policy, Organization and Priorities Act of 1976, H.R. 10230 -- will help us in meeting those challenges. It outlines a comprehensive policy for achievement of our national objectives through the effective utilization of science and technology.

The key provision of the bill is the creation of a new Office of Science and Technology Policy in the Executive Office of the President. I first proposed legislation to authorize this office in June 1975. I attach great importance not only to a strong national effort in science and technology but also to the availability of expert advice at all levels in the Federal government. This new office will provide an important source of advice on the scientific, engineering, and technical aspects of issues that require attention at the highest levels of government.

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The bill also calls for a two-year study of the overall context of the Federal science, engineering and technology effort. This study should provide the basis for reassessing the organization and management of Federal research and development activities. It should help to ensure that government efforts are properly related to those of private enterprise which has the primary responsibility for turning new ideas into new and improved products and services for the marketplace.

Finally, the bill calls upon the Director of the new office to establish an intergovernmental science, engineering and technology advisory panel to identify problems of the State, regional and local levels where science and technology can contribute.

Along with continued, vigorous support from the private sector, a strong Federal effort in science, engineering and technology is critical to our future. My 1977 Budget calls for \$24.7 billion for Federal research and development programs -- an increase of 11 percent over 1976 estimates. I am hopeful that the Congress will approve my funding requests, particularly those to increase Federal support of basic research.

The National Science and Technology Policy Organizational and Priorities Act of 1976 reflects a renewed recognition of the importance of scientific, engineering and technological contributions. It symbolizes the confidence we Americans have in our ability to improve our way of life and to find better solutions to the problems of the future. I take great pleasure in signing this bill into law.

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May 3, 1976

Dear Mr. Director:

The following bill was received at the White House on May 3rd:

H.R. 10230

Please let the President have reports and recommendations as to the approval of this bill as soon as possible.

Sincerely,

Robert D. Linder
Chief Executive Clerk

The Honorable James T. Lynn
Director
Office of Management and Budget
Washington, D.C.

