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It has been my distinct pleasure to serve again as OTA’s Chairman during the 103d Congress.

My association with this agency goes back to its earliest days. I still feel a great deal of pride and excitement about the work the agency does. OTA continues to produce a steady stream of advice for the Congress—advice which always can be counted on to be competent, objective, and useful. This advice also has been impressive since it helps us with technology on a broad range of topics, such as education, defense, medicine, and transportation.

In a time when some have come to question the value of OTA, my own opinion is that without OTA the Congress will be a less informed place, making decisions knowing less, which is a position that few of our constituents would support. For a relatively small sum, OTA arms Members of Congress with high-quality advice on issue of enormous magnitude and cost—it’s a bargain in my book.

I look forward to a continued association with OTA and its advisors, and to a vigorous future.

Edward M. Kennedy
IT HAS BEEN MY PLEASURE TO SERVE AS the Chairman of the Technology Assessment Advisory Council during the past Congress. I would like to extend my particular thanks to Dr. Jim Hunt, who has served so ably as the Vice Chairman, and who will now succeed me as Chairman.

OTA is a unique resource to the Congress. In a period where some are questioning its value, I would like to extend my personal regards to the organization. OTA manages to put out a steady stream of high-quality analysis which is objective, thorough, and reliable.

As Congress faces a multitude of complex issues of public policy for the remainder of the 1990s, I hope it will continue to support this organization, which will be more needed than ever.
During fiscal year 1994 OTA underwent a sweeping restructuring that to some extent had been foreshadowed by events in FY 1993. The proposal for this restructuring was developed through extensive consultation with OTA staff at all levels. The organizational plan approved by OTA’s Technology Assessment Board streamlined OTA’s research activities from nine programs to six. This move followed similar streamlining in FY 1993, when three divisions were merged into two, and all administrative functions were placed under the direction of OTA’s assistant directors to eliminate separate operations management.

A number of objectives have been achieved by this restructuring. OTA has responded to legislative branch budget policy by creating substantial economies by eliminating about 35 to 40 percent of senior management positions; these savings amount to approximately $1.3 million annually. Also, the restructuring has permitted maintenance of “critical mass” during maximum workloads. In addition, eliminating a number of internal boundaries and establishing a culture of collaboration and sharing has improved cross-program and cross-discipline cooperation and reinforcement. It has become easy to recruit project teams from throughout the agency based on desirable skills and experience, regardless of the program home of any individual staff member; this has moved OTA toward matrix management. Also, larger research units provide greater diversity and enhance the capacity for staff to participate in multiple projects simultaneously. The result of all this is a more efficient and, of course, less expensive organization. There is further renewal in the agency in that seven of the current nine senior managers are new in their jobs, and the two who continue as program directors have new responsibilities insofar as their programs are changed and enlarged through restructuring.
Focus on Technology

In 1994 the Appropriations Committees asked OTA to consider ways in which the agency could focus more sharply on science and technology and ensure that work did not stray into other fields where it might duplicate the efforts of other support agencies. OTA responded promptly to these instructions from the Committees, designing a three-part approach that was approved by OTA's board on June 23, 1994.

First, OTA strengthened the analysis that staff always undertake in preparing proposals to be taken to the Technology Assessment Board on work requested by Committees of Congress. Staff are required to review proposed responses to Committee requests in order to specify what technological applications and what societal impacts of such applications would be involved in the study and be included in the final report. Staff must identify what sections of OTA's enabling statute, P.L. 92-484, would support the proposed work. This analysis is set forth in a "technology page" included prominently in all proposals submitted to the Board for approval. In this way, staff and management identify and specify the technology content, and the Board is assured that this step has been undertaken and can review the documentation in the course of deciding on the appropriateness of the work for OTA. All proposals after the June Board meeting have included this "technology page." This has been helpful in focusing attention on the science and technology content of OTA work.

Second, to improve the understanding of the Appropriations Committees and to enable them to better review and assess OTA's performance, the Committees were formally invited to a meeting of the Board staff with OTA and to a regular Board meeting. Staff of the Committees attended these meetings.

Third, to expand requesting Committee understanding of OTA's role among the support agencies and to improve and refine requesters' focus on OTA as a science and technology agency, several brochures and other materials were prepared and made widely available in Congress.
In this time of change and restructuring, OTA succeeded in maintaining traditional levels of output. OTA delivered 51 publications to Congress, including 22 assessments, 27 background papers, and two administrative documents, and testified 38 times before Congressional Committees. OTA also provided numerous special briefings and expert advice. As of September 30, 1994, 44 studies approved by the Technology Assessment Board and nine special responses were in progress. OTA's reports for the year covered the usual wide range of subject matter, and included a number which could be singled out as particularly of interest and use to Congress and the nation:

- The second of two studies on multinational corporations and the U.S. technology base was completed. The assessment provided careful analysis of the impact of multinational corporate policy on the development of technologies and high-technology manufacturing in this country and the linkage of foreign investment policy and trade balances, particularly in the case of Japan.

- As the health reform debate heated up over the course of the second session of the 103d Congress, OTA took an in-depth look at the strengths and weaknesses of economic projections in reports on understanding estimates of expenditures under health reform and questioned the reliability of such estimates and the likely validity of assumptions on the use of system technologies on which economic models are based.

- At the request of the Appropriations Committees, OTA also prepared a report on the Social Security Administration's massive computer procurement strategy. In essence, the report noted that SSA had not developed the service plan to effect the maximum value from the intelligent workstation/local area network technical solution proposed. The Committees have held up some funding pending better descriptions and planning from SSA.

- OTA investigated information security and privacy in network environments. This study took issue with the formulation of the federal decision regarding the “clipper chip” solution and probed the appropriateness of
federal decisions that may have an effect on private industrial capacity to develop security and to compete outside of the United States if federal governmental access to transmissions has been built into hardware.

- OTA issued a report on managed health care and competitive health care markets.
- A series of reports examined a variety of issues with respect to technologies underlying, and methods of control of, weapons of mass destruction.
- And the most recent in a series of OTA reports analyzing defense industry conversion assessed the potential for civil-military integration.

Many other reports could be highlighted in the areas of technology covered by OTA, including energy, the environment, health, international security, transportation, education, information technologies and telecommunications, and industrial competitiveness. We see complex issues involving science and technology continuing to come before Congress and the American people—issues that will need thoughtful, careful analysis. We look forward to continuing to serve as a shared resource for the Senate and the House, the Majority and the Minority, to help frame issues, to help inform the debate, and to provide useful options for resolution of the issues.
Organization and operations

The profound technological and scientific advances affecting all facets of the nation’s future—from economic competitiveness in the new global economy, to the challenges of new communication technologies, to the changing needs of national security—are placing unprecedented and complex policy issues before Congress. The Office of Technology Assessment (OTA), a congressional support agency created by the Technology Assessment Act of 1972 [86 Stat.797], provides Congress with objective and extensive analyses of these issues.

With an analytical staff representing every major field of science and technology, OTA works directly for congressional committees. The small agency (about 200 employees) has two analytical divisions: 1) Industry, Commerce, and International Security; and 2) Health, Education, and the Environment. They include assessments grouped in the areas of energy, transportation, and infrastructure; industry, telecommunications, and commerce; international security and space; education and human resources; environment; and health.

Administrative offices support the analytical work of the agency. These offices handle budget and finance, contracts, information services, personnel, telecommunications and information systems, building services, and publishing.

The Congressional and Public Affairs Office handles much of OTA’s congressional and press liaison work, relations with the Technology Assessment Board, and relations with the Technology Assessment Advisory Council. OTA publications are widely disseminated on Capitol Hill and are publicly available in both electronic and paper formats. Electronic versions of OTA publications, information about the agency, and news about work in progress are accessed by thousands of users worldwide. The agency’s Information Center provides public access to the full collection of OTA.
publications, including an on-line index, and the Publications Distribution Office handles public dissemination of OTA publications. (General information about OTA and availability of OTA publications is listed on page 60.)

OTA is governed by a 12-member bipartisan congressional Technology Assessment Board of six Senators and six Representatives, equally divided by party. In addition, a distinguished council of 10 leaders from science and technology, business and industry, and education provides advice.

OTA undertakes assessments at the request of any congressional committee Chairman. The Chairman may request the work personally, on behalf of a Ranking Minority Member, or on behalf of a majority of committee Members. The OTA Board may also request work, as can OTA’s Director. In practice, most assessments are requested by the Chairman and the Ranking Minority Member of a committee, and many are supported by more than one committee. The Technology Assessment Board makes the final decision on whether OTA can proceed with an assessment and reviews all reports prior to their release.

Most of OTA’s work concentrates on in-depth assessments that take one to two years to complete. Drawing on past and current work, OTA also meets immediate congressional needs with a variety of analytical support such as briefings, testimony, and special reports.

Fiscal Year 1994 Activities

OTA continues, as it has since 1972, to follow the agenda set by the requests from committees of Congress and approved by its bipartisan Technology Assessment Board “as an aid in the identification and consideration of existing and probable impacts of technological application (P.L. 92-484 ).” Each year sees a shifting array of issues in science and technology to which OTA must respond, and which require a consistent approach and the delivery of accurate, complete, nonpartisan information, analysis and conclusions that can serve as a foundation for congressional deliberations and actions. OTA’s reports help the Congress in the preparation of specific legislation, in deliberating from a general background and base of information and knowledge, and in providing oversight and monitoring of executive branch programs.

During FY 1994, OTA delivered 51 formal publications to Congress, including reports, background papers, and administrative documents. As of September 30, 1994, 44 approved studies and nine special responses were in progress. An integral aspect of OTA’s assessments includes providing expert advice, briefings, testimony, and results of OTA research to committees throughout the projects. The
following are examples of OTA projects that had a significant impact in areas that are of vital interest to the Congress:

➢ Major work has been delivered, and more is in process, about proliferation of weapons of mass destruction, including technologies for detecting, assessing the risk, and controlling proliferation, as well as technologies for counterproliferation, including preventive, active and passive measures.

➢ Congress’s concern about the future of the U.S. space launch industry and the uses to which satellites might be put has spawned a number of projects to provide Congress with information on ways to structure approaches to this industry, a vital national security sector.

➢ Two reports have been released on multinational corporations and the U.S. technology base, exploring the role of multinational corporations in the development of technologies for American industry and the way that technology diffuses and is controlled through networks of multinationals and their subsidiaries. This analysis points out the major implications for U.S. trade and competitiveness of how and, most importantly, where advanced research is carried out and where the new technology is located. OTA continues to work on a related issue, commercialization of emerging technologies, and issues relevant to the conceptualization of a technology policy.

➢ In the 104th Congress, OTAs Energy Transportation, and Infrastructure Program will deliver work on technological reshaping of metropolitan America. New communications, information, and transportation production technologies have affected and will continue to affect the distribution and location of economic activity in America’s cities and suburbs, and this in turn will need to be understood to direct the wise use of public and private transportation and other infrastructure investments. At the same time, advanced automotive technologies will play a role not only in urban and transportation policy but in energy and environmental policies as well.

➢ OTA’s Education and Human Resources Program is looking at the technologies useful to work-based learning and training and how these might make a difference in the employability of America’s youth, their preparation to use
the technologies becoming so pervasive in the workplace, and the competitiveness of American industry. This program is also examining the full scope of residential design technologies for elderly and disabled populations, a study with particularly wide application. It has long been thought that facilities for these populations do not take full advantage of the technological potential for improvement in the care of patients.

OTA's new Environment Program is more diverse than in the past, and its projects reflect this increased diversity. A great variety of impacts flow from the extensive nuclear contamination of the former Soviet Union, particularly in the Arctic, and this contamination of the waters of the northern oceans has major implications. An extensive assessment of the Arctic and other regional impacts from Soviet nuclear contamination is underway, examining a huge geographic area with severe contamination. Smaller projects undertaken include a look at the potential for biological pest control as the number of chemical pesticides available for agriculture diminishes.

In support of health reform efforts which may be undertaken in the 104th Congress, OTA has delivered reports on international differences in health technology, services and economics and identifying health technologies that work, and has illuminated the strengths and usefulness of economic projections in reports on understanding estimates of expenditures under health reform. OTA is also researching impacts of antibiotic-resistant bacteria. The emergence of strains of common infectious bacteria that are resistant to all, or almost all, of the currently available antimicrobial drugs is becoming recognized as a significant threat to the public health. It is important for Congress to know the extent of this threat, the seriousness of the implications for health care, and the possible actions that might be taken to ameliorate the situation.

OTA’s work in FY 1996 will continue to reflect the explicit needs of the committees of jurisdiction. The bipartisan, bicameral Technology Assessment Board will guide OTA’s work with committees and shape the agency’s agenda through the assessment proposal approval process. OTA serves as a shared resource for Congress, providing nonpartisan analysis of scientific and technological issues—issues intrinsic to all important policy issues—in a highly cost-effective way.
The Industry, Commerce, and International Security Division comprises three research programs: Energy Transportation, and Infrastructure; Industry, Telecommunications, and Commerce; and International Security and Space.

Energy, transportation, and infrastructure are essential systems underpinning the nation’s prosperity, security, and well-being. The Energy, Transportation, and Infrastructure (ETI) Program examines the role of technology in producing and using energy resources; designing, operating, and improving transportation systems; and constructing and maintaining infrastructure. Applications of materials to these issues, including the development of natural and manufactured material resources through extraction, processing, use, and recycling or waste management are also included in ETI’s work. The program covers the export and import of energy, transportation, and infrastructure technologies, goods, and services, including energy fuels and efficiency. The program’s work helps Congress develop policies for these systems that will sustain economic growth, global competitiveness, and international stability while minimizing adverse social, economic, and environmental impacts.

The Industry, Telecommunications, and Commerce (ITC) Program is responsible for assessments on technology and international industrial competitiveness, telecommunications and computing technologies, international trade, industry productivity, and related topics. ITC examines how technology affects the ability of U.S. industry to contribute to a healthy national economy. This includes consideration of the role of technology on competitiveness of U.S. industries in international markets; trade and economic development issues; the changing role of telecommunications and computing technologies in the nation’s industry, commerce, and government; the effect of technology on the number and nature of employment opportunities in the U.S. economy; the effects of technological change on
jobs and training; and ways to ease adjustments in structural economic transitions brought about by technological change. The program also studies telecommunications regulation, information policy, and applications of information technology in the public sector.

OTA’s work concerning technological aspects of national security, international security (as it concerns the U.S.), and space is pursued in the International Security and Space (ISS) Program. The program’s security work focuses on implications of technology and technological change for national defense as well as international stability, arms control, arms proliferation, terrorism, and alliance relations. Assessments of issues related to the nation’s defense industrial and technology base is an increasing part of ISS’s work. The program’s space work involves a broad range of issues, such as space transportation, earth observation, international cooperation and competition, exploration, use, and commercialization of space. The program’s work has also ranged into areas such as law enforcement.

In FY 1994, the Industry, Commerce, and International Security Division published 13 assessment reports and six background papers.

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<td>Energy Efficiency in Federal Facilities: Update in Funding and Potential</td>
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- Export Controls and Nonproliferation Policy
  Requested by:
  Senate Committee on Foreign Relations
  Senate Committee on Governmental Affairs

- Power Sources for Remote Arctic Applications
  Requested by:
  Senator Ted Stevens
  Senator Frank Murkowski

- Fueling Reform: Energy Technologies for the Former East Bloc
  Requested by:
  Senate Committee on Environment and Public Works
  House Committee on Foreign Affairs
  House Committee on Energy and Commerce
  Senate Committee on Foreign Relations

- Saving Energy in U.S. Transportation
  Requested by:
  Senate Committee on Governmental Affairs
  Senate Committee on Energy and Natural Resources
  House Committee on Energy and Commerce
  House Committee on Science, Space, and Technology

- Information Security and Privacy in Network Environments
  Requested by:
  Senate Committee on Governmental Affairs

- Proliferation and the Former Soviet Union
  Requested by:
  Senate Committee on Foreign Relations
  Senate Committee on Governmental Affairs

- Remotely Sensed Data: Technology, Management, and Markets
  Requested by:
  House Committee on Science, Space, and Technology
  Senate Committee on Commerce, Science, and Transportation

- Civilian Satellite Remote Sensing: A Strategic Approach
  Requested by:
  House Committee on Science, Space, and Technology
  Senate Committee on Commerce, Science, and Transportation

  Requested by:
  Senate Committee on Armed Services and its Subcommittee on Defense Technology, Acquisition, and Industrial Base
  House Committee on Armed Services

- Federal Research and Technology for Aviation
  Requested by:
  House Committee on Science, Space, and Technology
  Endorsed by:
  House Committee on Public Works and Transportation, Subcommittee on Aviation

- Multinationals and the U.S. Technology Base
  Requested by:
  Senate Committee on Commerce, Science, and Transportation
  Senate Committee on Banking, Housing, and Urban Affairs

- Studies of the Environment Costs of Electricity
  Requested by:
  House Committee on Science, Space, and Technology

- Virtual Reality and Technologies for Combat Simulation
  Requested by:
  House Committee on Armed Services
  Senate Committee on Armed Services and its Subcommittee on Defense Technology, Acquisition, and Industrial Base
The Health, Education, and Environment Division comprises three programs: Education and Human Resources, Environment, and Health.

The Education and Human Resources (EHR) Program is responsible for studies of technologies for learning, and of science-grounded human resource topics. Education studies critically examine technologies of all kinds, for learners of all ages and abilities, and in all settings. Human resources studies deal with the costs, availability, effectiveness, and impacts of technologies in areas such as long-term care and disability services, housing for people with disabilities, and prevention of drug abuse.

The Environment (ENV) Program assesses scientific, technical, and policy issues related to the environment. Program areas include the use and conservation of renewable resources; pollution prevention, control, and remediation; and environmental health and risk management. Assessments have focused on such topics as agriculture; management of public lands; biological diversity; risk assessment methods and policy; air and water pollution; management of solid, hazardous, and nuclear wastes; and the effects of weather and climate change.

The Health (HLTH) Program’s charter is reflected in three primary types of efforts: 1) assessments of specific clinical and general health care technologies, 2) studies of broader issues of health policy related to or with implications for technology, and 3) studies of applications, particularly to human health, of the biological and behavioral sciences (including biotechnology, human molecular genetics, neurological sciences, and health-related behaviors). The program also is responsible for OTA’s statutory, methodology oversight responsibilities regarding Vietnam veterans’ health studies.

In addition, the division provides the staff work for the OTA Director’s mandated responsibility to select and appoint members of the Prospective Payment Assessment Commission, the Physician Payment Review Commission, and the Advisory Panel on Alzheimer’s Disease.
In FY 1994, the Health, Education, and the Environment Division published nine assessment reports and 21 background papers.

- **Researching Health Risks**
  *Requested by:*
  - House Committee on Energy and Commerce
  - House Committee on Science, Space, and Technology

- **Preparing for an Uncertain Climate, volume 1**

- **Preparing for an Uncertain Climate, volume 2**
  *Requested by:*
  - Senate Committee on Environment and Public Works
  - Senate Committee on Commerce, Science, and Transportation
  - House Committee on Science, Space, and Technology

- **International Health Statistics: What the Numbers Mean for the United States**
  *Requested by:*
  - House Committee on Ways and Means and its Subcommittee on Health

- **Psychiatric Disabilities, Employment and the Americans with Disabilities Act**
  *Requested by:*
  - Senate Committee on Labor and Human Resources
  *Endorsed by:*
  - House Working Group on Mental Illness and Health

- **Testing and Assessment in Vocational Education**
  *Requested by:*
  - House Committee on Education and Labor

- **An Alaskan Challenge: Native Village Sanitation**
  *Requested by:*
  - Senator Ted Stevens, Member, Technology Assessment Board

- **Understanding Estimates of National Health Expenditures Under Health Reform**
  *Requested by:*
  - Technology Assessment Board

- **Technical Options for the Advanced Liquid Metal Reactor**
  *Requested by:*
  - House Committee on Energy and Commerce, Subcommittee on Energy and Power

- **Wage Record Information Systems**

- **Climate Treaties and Models: Issues in the International Management of Climate Change**
  *Requested by:*
  - Senate Committee on Environment and Public Works
  - Senate Committee on Commerce, Science, and Transportation
  - House Committee on Science, Space, and Technology

- **Managed Care and Competitive Health Care Markets: The Twin Cities Experience**
  *Requested by:*
  - Technology Assessment Board

- **Defensive Medicine and Medical Malpractice**
  *Requested by:*
  - House Committee on Ways and Means
  - Senate Committee on Labor and Human Resources
  - House Committee on Appropriations

- **Technologies for Understanding and Preventing Substance Abuse and Addiction**
  *Requested by:*
  - Senate Committee on Labor and Human Resources
  - Senate Committee on Governmental Affairs
  - House Committee on Government Operations
Identifying Health Technologies That Work: Searching for Evidence

Requested by:
Senate Committee on Labor and Human Resources

Endorsed by:
Technology Assessment Board

Perspectives on the Role of Science and Technology in Sustainable Development

Requested by:
House Committee on Foreign Affairs
Senate Committee on Foreign Affairs

Universal Health Insurance and Uninsured People: Effects on Use and Cost

Requested by:
Senate Committee on Labor and Human Resources

Understanding Estimates of the Impact of Health Reform on the Federal Budget

Requested by:
Technology Assessment Board

OTA Review: The Medical Follow-Up Agency

Requested by:
House Committee on Veterans’ Affairs
Senate Committee on Veterans’ Affairs

Public Information About Osteoporosis: What’s Available, What’s Needed?

Requested by:
Senate Special Committee on Aging

Tools for Evaluating Health Technologies—5 Background Papers

1. Using Patients’ Reports to Evaluate Medical Outcomes
2. Large Administrative Database Analysis
3. Large and Small Randomized Trials
4. Meta-Analysis
5. Clinical-Economic Trials

Requested by:
Senate Committee on Labor and Human Resources

The Department of Defense Kuwait Oil Health Fire Risk Assessment (The “Persian Gulf Veterans’ Registry”)

Requested by:
Mandated under Public Law 102-585

International Comparisons of Administrative Costs in Health Care

Requested by:
House Committee on Ways and Means and its Subcommittee on Health

Mental Disorders and Genetics: Bridging the Gap Between Research and Society

Requested by:
House Committee on Appropriations
House Committee on Energy and Commerce
House Committee on Science, Space, and Technology
House Committee on Veterans Affairs
Senate Committee on Commerce, Science, and Transportation, Subcommittee on Science, Technology, and Space

Health Care Technology and Its Assessment in Eight Countries

Requested by:
House Committee on Ways and Means and its Subcommittee on Health

External Review of the Federal Centers for Disease Control and Prevention’s HIV Prevention Programs

Requested by:
House Committee on Energy and Commerce, Subcommittee on Health and the Environment
THE CONGRESSIONAL OFFICE OF TECHNOLOGY ASSESSMENT (OTA) has taken advantage of recent developments in information technologies to make its work widely available electronically. General information about the agency, electronic versions of OTA publications, and news about work in progress all are accessible online. You can retrieve this information in a variety of ways.

HOW TO ACCESS

OTA Online includes many common Internet features such as a World Wide Web (WWW) home page, an FTP collection of OTA report files and other information, and an electronic bulletin board (BBS) accessible via WWW or Telnet that permits file text searches. OTA Online is accessible through the following standard Internet tools:

- **WWW:** [http://www.ota.gov](http://www.ota.gov)
- **FTP:** otabbs.ota.gov, login as anonymous, password is your e-mail address; publications are in the /pub directory
- **Telnet:** otabbs.ota.gov, login as public, password is public

Additional features of the BBS are available through client software with a graphical user interface for Microsoft Windows. This software is available free through the WWWV home page or by contacting the OTA Telecommunications and Information Systems Office. (202) 228-6000, or e-mail sysop@ota.gov. Soon the BBS will be available via telephone dial-in access. Questions or comments on Internet services should be directed by e-mail to netsupport@ota.gov.
OTA also maintains a free electronic mailing list known as OTANEWS which allows anyone with access to electronic mail on the Internet to receive notices of all OTA reports upon their release. To subscribe to OTANEWS, address an electronic mail message to listserv@ota.gov. Leave the subject line blank. In the text of the message, type: subscribe otanews [your name]. For example, Jane Smith would type:

SUBSCRIBE OTANEWS JANE SMITH

After you have sent the message, you will receive confirmation that your subscription has been entered. If you encounter difficulties, send an e-mail message to postmaster@ota.gov
More than 44 projects were in progress during fiscal year 1994. In addition, 24 new studies were undertaken. This section lists the titles of assessments underway or in progress, as of September 30, 1994. For a full description of these projects, please refer to the current “Assessment Activities,” OTA-PC-105. This pamphlet is available from OTA by calling the Publications Distribution Office, (202) 224-8996.

Industry, Commerce, and International Security Division

> Energy, Transportation, and Infrastructure Program
  Advanced automotive technologies
  Renewing our energy future: research, development and commercialization of renewable energy technologies
  Reducing earthquake damage: research, development, and application
  International collaboration in large science and technology projects
  Cities, technology, and infrastructure

> Industry, Telecommunications, and Commerce Program
  Commercialization of emerging technologies
  Technology, jobs and productivity in the service economy
  Information technology and the health care system
  Wireless technologies and the national information infrastructure
  Telecommunications technology and Native Americans: opportunities and challenges
  Information technologies for control of money laundering
  Global communications policy: issues and technology
  Development and diffusion of innovative environmental technologies
OSHA’s selection of control technologies and assessments of their impacts and costs
Arctic and other regional impacts from soviet nuclear contamination
Technologies to protect fish at dams
Technologies for testing and review of chemicals in commerce
An Assessment of the agricultural research system and conservation program
Safety of rotary kiln incineration systems at Superfund sites and possible alternative technologies

Health, Education, and the Environment Division

International Security and Space Program
Defense modeling and simulation
Proliferation of weapons of mass destruction
Assessing future space launch industry alternatives
Technologies for tracking ammunition and for controlling the inadvertent use of handguns
Countering proliferated weapons of mass destruction
International peace support operations

Health Program
Regulatory and health assessment of dietary supplements
Monitoring of mandated veteran studies
Federal response to AIDS: congressional issues
Improving the distribution of the medical workforce
Technology, insurance, and the health care system
International differences in health technology, services and economics
Policy issues in the prevention and treatment of osteoporosis
Impacts of antibiotic-resistant bacteria
Appointment and monitoring of the Prospective Payment Assessment Commission and the Physician Payment Review Commission

Education and Human Resources Program
Teachers and technology
The human genome project and patenting human DNA sequences
Eligibility criteria for a federally mandated long-term care program
Technology and work-based learning
Residential design technologies for elderly and disabled populations

Environment Program
New approaches to environmental regulation
Agriculture, trade and the environment
Aquaculture: food and renewable resources from U.S. waters
Biological pest control
Risks to students in school
Technology assessment advisory council*

The Technology Assessment Advisory Council (TAAC) was established by OTA’s statute, and members are appointed by OTA’s Congressional Technology Assessment Board (TAB). The Council advises TAB and the Director on issues and other matters related to science, technology, and technology assessment.

James Hunt, Chairman

Dr. Hunt is Distinguished Professor, Health Sciences Center, at the University of Tennessee in Memphis. He previously served as Chancellor of the Health Science Center and as the Dean of Medicine for the University. Prior to joining the University, he served as Chairman of the Department of Medicine at the Mayo Clinic.

Max Lennon, Vice Chairman

Dr. Lennon is President and CEO of Eastern Foods, Inc., Atlanta, Georgia. Previously he served as President of Clemson University. He also served on the faculties of Ohio State University (Vice-President for Agricultural Administration and Executive Dean for Agriculture, Home Economics and Natural Resources), University of Missouri, and Texas Tech University.

Lewis M. Branscomb

Dr. Branscomb is the Albert Pratt Public Service Professor at Harvard’s John F. Kennedy School of Government. He is a former executive of International Business Machines. Prior to joining IBM, he was the Director of the National Bureau of Standards.

Herbert D. (Ted) Doan

Mr. Doan is a Partner with Doan Associates. He was Chairman and Founder of Doan Resources Corporation. He served as President of the Dow Chemical Company for nine years.
Dr. Harl is the Charles F. Curtiss Distinguished Professor of Economics at Iowa State University, where he has served on the faculty since 1964.

Dr. Lederberg was President of Rockefeller University, New York. He is the former Chairman of the Department of Genetics at Stanford University School of Medicine. He is a member of the National Academy of Sciences and is a Nobel Laureate in Physiology and Medicine.

Mr. Perkins is the General Partner of Kleiner & Perkins in San Francisco. He held a number of positions with Hewlett Packard Company, most recently as Assistant Manager, Corporate Research Laboratories. He also served as Vice President, Marketing with Optics Technology, Inc. and as an Electrical Engineer with Sperry Corporation.

Dr. Sims is Vice President for Marketing for Usibelli Coal Mine, Inc. He previously served as Director of the Office of Mineral Development with the Alaska Department of Commerce and Economic Development. Dr. Sims also taught Geological Engineering at the University of Alaska-Fairbanks.

Dr. Smoot is Dean, College of Engineering and Technology, at Brigham Young University. He is also Director of the Advanced Combustion Engineering Research Center. He has been associated with the Brigham Young University since 1967. Dr. Smoot previously served as a visiting assistant professor at the California Institute of Technology and as an engineer with Lockheed Propulsion.

Dr. Whitman is a Professor at the Institute of Public Policy Studies at the University of Michigan. Previously she served as the Vice President and Group Executive for Public Affairs Staffs Group at General Motors Corporation. She also served as Vice President and Chief Economist at General Motors. Prior to joining General Motors she taught at the University of Pittsburgh.

Mr. Bowsher is Comptroller General of the United States and Director of the U. S. General Accounting Office.

Dr. Mulhollan is Director of the Congressional Research Service, U.S. Library of Congress.

*Chase N. Peterson, TAAC Member*
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Awards and fellowship programs

In the May 15 issue of Library Journal, the American Library Association’s Government Documents Round Table announced their list of Notable Government Documents for 1994. Of the 20 federal government documents recognized, three were OTA reports:

- **P Harmful Non-Indigenous Species in the United States**
  Environment Program
  Phyllis Windle, Project Director

- **Making Government Work: Electronic Delivery of Federal Services**
  Telecommunication and Computing Technologies Program
  Fred Wood, Project Director

- **Proliferation of Weapons of Mass Destruction: Assessing the Risks**
  International Security and Space Program
  Gerald Epstein, Project Director

The Government Documents Round Table selects those documents they consider to be the best of the government information sources produced in the previous year. These documents “expand our knowledge, enhance the quality of life, and/or contribute to an understanding of govern merit.”
BLUE PENCIL AWARDS

The National Association of Government Communicators conducts the Blue Pencil Competition as an annual recognition of outstanding government communications projects and producers. Entries are judged on writing, editorial content, layout and design, achievement of purpose and cost effectiveness. This year two OTA reports were recognized in the competition:

- **Adult Literacy and New Technologies: Tools for a Lifetime**
  Science, Education, and Transportation Program
  Kathleen Fulton, Senior Analyst
  Second Place, Books for a Technical Audience Category

- **Biological Components for Substance Abuse and Addiction**
  Biological and Behavioral Sciences Program
  Kevin O’Connor, Project Director,
  Second Place, Publications for a Technical Audience Category

THE MORRIS K. UDALL FELLOWSHIP PROGRAM

The Udall Fellowship Program is awarded to up to six individuals each year for a one-year appointment at OTA. It was established in April 1991 by the Technology Assessment Board in honor of Morris K. Udall, retired congressman from Arizona who served 30 years in the House of Representatives and 18 years on the Technology Assessment Board. Qualified candidates must demonstrate exceptional ability in areas needed in OTA’s work, such as the physical or biological sciences, engineering, law, economics, environmental and social sciences, and public policy. Candidates must have significant experience in technical fields or management or have completed research at the doctoral level.

- **Fellows, 1993-94**
  Dean Cheng, International Security and Space Program
  Betsy Gunn, Environment Program
  Lois Joellenbeck, Environment Program

- **Fellows, 1994-95**
  Elise Berliner, Health Program
  William Creager, Industry Telecommunications, and Commerce Program
The Milbank Memorial Fund and OTA established the Congressional Fellowship in Health Policy in 1992 to be served at OTA beginning in September 1992. The program seeks candidates with substantial training and experience in research and a strong interest in health policy. The fellowship provides an opportunity for an individual of proven ability and considerable promise to work with OTA researchers to assist Congress in its deliberations of science and technology issues affecting our nation’s health policy and to gain a better understanding of the ways in which Congress establishes national policy related to these issues.

The fund and OTA invited applications from individuals who have demonstrated ability in research on issues of health policy. Applicants should have doctorates in the social sciences or related areas or have terminal scientific or professional degrees and considerable training in research using the policy sciences.

> Fellow, 1993-94
Gerard Fergerson, Biological and Behavioral Sciences Program

> Fellows, 1994-95
Cynthia Palmer, Health Program
Rochelle Rollins, Health Program
Advisory panel members*


⇒ A D V A N C E D A U T O M O T I V E T E C H N O L O G Y P R O J E C T

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Nobukichi Nakamura, Project General Manager
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Service of North America

Peter T. Peterson, Director
Marketing Strategies & Product Applications
U.S. Steel

Daniel Roos, Director
Center for Technology, Policy & Industrial Development
MIT

Rhett Ross, Sales Manager/Engineer
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Dan Santini, Section Manager
Environmental & Economic Analysis Section
Argonne National Laboratories

“Affiliations are at time of appointment to panel or workshop
Owen J. Viergutz, Executive Engineer
New Generation Vehicles
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Margaret Walls, Fellow
Energy & Natural Resources Division
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University of Pennsylvania

Mike Lynch, Earthquake Program Manager
Department of Emergency Services
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Pacific Gas and Electric Enterprise

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Energy and Environmental Markets
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“Eric R Zausner, President
Strategic Performance Management

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- Workshop on Review of Federal Fusion Energy Program
- Workshop on International Collaboration in Large Science Projects

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Dorm Walklet, President
Terra Nova Corporation

Albert D. Wheelon, Consultant

Proliferation of Weapons of Mass Destruction

James E. Goodby, Chairman
- Distinguished Service Professor
- Carnegie-Mellon University

James F. Leonard, Chairman, Executive Director
- Washington Council on Non-Proliferation

George Anzelon, Associate Division Leader
- Lawrence Livermore National Laboratory

Will D. Carpenter, Consultant

Lewis A. Dunn, Assistant Vice President and Manager of Negotiations and Planning Division
- Science Applications International Corporation

Randall Forsberg, Executive Director
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Thomas R. Fox, Director
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- Pacific Northwest Laboratories

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- Industrial Biotechnology Association

John M. Googin, Senior Staff Consultant
- Martin Marietta Energy Systems, Inc.

Robert G. Gough, Senior Member, Technical Staff
- Sandia National Laboratories

Elisa D. Harris, Senior Research Analyst
- The Brookings Institution

Geoffrey Kemp, Senior Associate
- Carnegie Endowment for International Peace

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Stanford University

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Department of Biochemistry and Molecular Biology
Harvard University

Stephen M. Meyer, Professor
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Massachusetts Institute of Technology

Gary Milhollin, Director
Wisconsin Project on Nuclear Arms Control

Marvin M. Miller, Senior Research Scientist
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Massachusetts Institute of Technology

Janne E. Nolan, Senior Fellow-in-Foreign Policy
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William C. Potter, Director
Center for Russian and Eurasian Studies
Monterey Institute of International Studies

Barbara Hatch Rosenberg, Professor
Division of Natural Sciences
SUNY

Lawrence Scheinman, Professor of Government and Associate Director
Peace Studies Program
Cornell University

Leonard S. Spector, Senior Associate
Carnegie Endowment for International Peace

Sergio C. Trindade, President
SETI International, Ltd

Workshop on Future of Remotely Sensed Data
Workshop on Geospatial Data: Agency Needs, Formats and Standards
Workshop on USGCRP and NASA's Earth Observation Systems

1 Resigned March 22, 1993 to become Chief U.S. Negotiator for Safe and Secure Dismantlement of Nuclear Weapons.
2 Panel member until June 1, 1993; Panel chair after June 1, 1993.
4 Resigned January 29, 1993 to join National Security Council staff.
5 Ex-officio; Member of Technology Assessment Advisory Council.
6 Resigned August 13, 1993 to become Counselor for Nonproliferation in the U.S. Department of Energy

TELECOMMUNICATION AND COMPUTING TECHNOLOGIES PROGRAM

Assessment of Information Technology for Control of Money Laundering

Randall Davis, Assistant Director
Artificial Intelligence Laboratory
Massachusetts Institute of Technology

Elroy Garcia, Jr., Assistant Special Agent in Charge
Operational Commander
Houston H. I. D.T.A.

W. Douglas Johnson, Assistant Director
Division of Banking
Department of Banking and Finance
State of Florida

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The Chase Manhattan Bank, N.A.
Bruce W. Porter, Associate Professor of Computer Science
Department Of Computer Sciences
University of Texas at Austin

Priscilla M. Regan, Assistant Professor Department of Public & International Affairs
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Joel Reidenberg, Associate Professor of Law
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Robert Serino, Deputy Chief Counsel Office of the Comptroller of the Currency
U.S. Department of Treasury

John Stern, Executive Vice President
Human Resources
Sony Electronics, Inc.

David Vogt, Assistant Director, Financial Crimes Enforcement Network (FinCEN)
U.S. Department of Treasury

Sarah N. Welling, Professor of Law
College of Law
University of Kentucky

Looking to the Future

Daniel Bell, Chairman
Scholar-in-Residence
American Academy of Arts & Sciences

Marietta L. Baba, Acting Chair
Department of Anthropology
Wayne State University

James Beatty, President
National Consulting Systems

Jim Berm, Executive Director
Federation for Industrial Retention & Renewal

Kathleen Bernard, Director, External Programs
North Carolina Supercomputer Center

Willard R. Bishop, Jr., President
Willard Bishop Associates

Fred Block, Chairman
Department of Sociology
University of California, Davis

Bernie Campbell, Vice President
Information Services
Sonoco Products

Carl Cargill, Standards Strategist
Sun Microsystems, Inc.

Rev. William Cunningham Founder and Director
Focus HOPE

Irvin Dorros, Vice President
Technical Services
Bell Communications Research

Frank Emspak, Professor
University of Wisconsin, Madison
School for Workers

Sara Kiesler, Professor
Department of Social and Decision Sciences
Carnegie Mellon University

James L. Koontz, Chief Executive Officer
Kingsbury Corporation

Donald Lasher, President
Information Service Division
United States Automobile Association

Scott Lofness, Group Vice President
Visa International

Glenn Smith, Manager
Strategic Technology Planning
United Parcel Service

Paul Vetter, Director
Information Services
Cone Mills Corporation

Mark Weiser, Chief Scientist and Manager
Computer Science Lab
Xerox Palo Alto Research Center
Information Technology and the Health Care System

Clement J. McDonald, Chairman
Professor of Medicine
Director, Computer Science Research
Wishard Memorial Hospital

June C. Abbey, Director of Research
Institute of Innovation
Shadyside Hospital

Lee B. Barrett, Assistant Vice President
Applied Technology
Aetna Life & Casualty

Stephen Deutsch, Professor
Labor Education and Research Center
University of Oregon

Elliott S. Fisher, Associate Professor
of Medicine
Dartmouth Medical School

Bonnie Guiton Hill, Dean
McIntire School of Commerce
University of Virginia

James A. Hazelrigs, Executive Director
Medical Database Commission
State of North Carolina

Susan Horn, Senior Scientist
Institute for Health Care Delivery Research
Intermountain Health Care

James C. Hunt, Distinguished Professor
Health Sciences Center
University of Tennessee

Lori Muhlstein, Market Manager
Health Care
Bell Atlantic Corporation

Information Security and Privacy in Network Environments

James M. Anderson, Director of Security
Mead Data Central, Inc.

Alexander Cavalli, Director,
Research & Development
Enterprise Integration Division
Microelectronics and Computer Technology

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Computer Science Department
Georgetown University

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Software Engineering Institute
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Lee A. Hollaar, Professor of
Computer Science
Director of Campus Networking
The University of Utah
Burton S. Kaliski, Jr., Chief Scientist  
RSA Laboratories  

Stephen T. Kent, Chief Scientist  
Security Technology  
BBN Communications  

Clifford A. Lynch, Director  
Library Automation  
University of California, Oakland  

Simona Nass, President  
The Society for Electronic Access  

Jeffrey D. Neuburger, Attorney  
Brown Raysman & Millstein  

Susan Nycum, Attorney  
Baker & McKenzie  

David Alan Pensak, Principle Consultant  
Computing Technology  
E.I. DuPont de Nemours, Inc.  

Richard M. Peters, Jr., Senior VP for  
Corporate Development  
Oceana  

Joel R. Reidenberg, Professor  
Fordham University School of Law  

Thomas B. Seipert, Detective Sergeant  
Portland Police Bureau  

Willis H. Ware, Consultant  
The RAND Corporation  

Wireless Technologies and the National Information Infrastructure  

Alfred F. Boschulte, President & Chairman  
NYNEX Mobile Communications Company  

Timothy J. Brennan, Professor  
Policy Sciences & Economics  
University of Maryland Baltimore County  

Steven D. Dorfman, Senior Vice President  
GM Hughes Electronics Corporation  

"Francis J. Erbrick, Senior Vice President  
United Parcel Service  

Susan G. Hadden,* Professor  
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The University of Texas at Austin  

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Technology & Infrastructure  
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Jim Lovette, Principal Scientist  
Communications Technology  
Apple Computer, Inc.  

John Major, Senior VP and Director  
Spectrum, Standards and Software Management  
Motorola, Inc.  

Howard Miller, Senior Vice President  
Broadcast Operations & Engineering  
Public Broadcasting Service (PBS)  

Alex Netchvolodoff, VP, Public Policy  
Cox Enterprises, Inc.  

Stewart D. Personick, Assistant VP  
Information Networking Research  
Bellcore  

William W. Redman, Jr., Commissioner  
North Carolina Utilities Commission  

W. Scott Schelle, Executive Vice President  
American Personal Communications  

Jim Strand, Executive Vice President  
Lincoln Telephone Company  

William F. Sullivan, General Manager  
KPAX-TV, Missouli, MT  

*Deceased.
Laurel L. Thomas, Director of
Telecommunications
Bloomsburg Telecommunications
Consortium for Columbia, PA County
and Region

Marilyn B. Ward, Division Commander
Communications Division and ComCenter
Orlando Police Department

Information Technology and the Health
Care System Workshop on Consumer
Issues

Information Technology and the Health
Care System Federal Agency Workshop

Information Security and Privacy in
Network Environments Federal
Agency Workshop

Information Security and Privacy in
Network Environments: Federal
Context Workshop

Information Security Privacy in
Network Environments Workshop on
Commercial, Industry, and Research
Perspectives

Workshop on Information Technologies for
Analyzing Wire Transfers

Workshop on Privacy and Confidentiality
in Payment Systems

Workshop on Wire Transfer in Money
Laundering

Workshop on the Social Security
Administration’s Automation Program

Workshop on Wireless Technologies and
the National Information Infrastructure

Education and Human
Resources Program

Human Genome Project and
Patenting DNA Sequences

LeRoy Walters, Chair
Director, Center for Bioethics
Kennedy Institute of Ethics
Georgetown University

Charles Auffrey, Project Director
Genethon, Evry, France

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Stanford University Medical Center

Robert M. Cook-Deegan, Senior Program
Officer
National Academy of Sciences

Rebecca S. Eisenberg, Professor of Law
University of Michigan Law School

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Fish & Neave

Marilyn Hartig, Vice President
External Alliance and Technology
Bristol Myers Squibb

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International Patent and Copyright  
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J. Craig Venter, President and Director  
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Office of Technology Transfer  
Purdue Research Foundation

Ronald G. Worton, Geneticist-in-Chief  
Department of Genetics  
Hospital for Sick Children  
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Yolanda Jenkins, Education Specialist  
Compaq Computers

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Jefferson Junior HS, Washington, DC

Leslie Lemon Hunt, Second Grade Teacher  
Beauvoir Elementary School, Biloxi, MI

Louise McCarran, Regulatory Consultant

Henry R. Marockie, Superintendent of Schools  
WV State Department of Education

Argelio B. Perez, Consultant  
Dwight Prince, Principal  
Robert E. Lee Elementary School, Long Beach, CA

Tom Snyder, President  
Tom Snyder Productions

Adam Urbanski, President  
Rochester Teachers Association, New York

Valerie J. Wilford, Media Specialist  
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Illinois Valley Library System

Art Wise, President  
National Council for Accreditation of Teacher Education

Kristina Woolsey, Distinguished Scientist  
Advanced Technology Group  
Apple Computer

Teachers and Technology

Allen Glenn, Chairperson  
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Chris Cross, President  
Council for Basic Education

Molly Drake, Director  
Alternate Teacher Preparation Program  
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Lee Ehman, Professor of Education  
Indiana University, Bloomington

Geoffrey Fletcher, Interim Executive Deputy Commissioner for Curriculum, Assessment and Professional Development  
Texas Education Agency

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University of Washington

Keith Heuttig, Board of Directors  
National School Board Association  
Valley School District, Hazleton, Indiana

Understanding the Root Causes of Substance Abuse and Addiction

Patricia E. Evans, Chair  
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Robert Wood Johnson Medical School
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John Lucas Enterprises

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National Center for American Indian and Alaska Native Mental Health Research
University Health Science Center

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National Families in Action

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School of Public Health
University of Michigan

Roger Wilkins, Clarence J. Robinson Professor of History and American Culture
George Mason University

Workshop on Commercial Biotechnology and Patenting Human DNA Sequences

Workshop on Eligibility Criteria for Long-Term Care

Workshop on Technology Implementation Projects: What Research Reveals About Teachers and Technology

Environment Program

Agriculture, Trade and the Environment

Sandra Batie, Professor
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Robbin Johnson, Corporate Vice President
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Environment, Infrastructure and Agriculture Division
The World Bank

AQUACULTURE: Food and Renewable Resources From U.S. Waters

Don Abt, Marine Biological Laboratory
Woodhole Oceanographic Institute

Jan Auyong, Project Manager
Mar Res Associates

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National Association of Aquiculture Coordinators

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Litigation
Yale Law School

Deeohn Ferris, Consultant

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Department of Environmental Resources
State of Pennsylvania

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Health Effects Institute

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Natural Resources Defense Council

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Strategic/Environmental Planning
Safety-Kleen Corporation

Randy Johnson, Commissioner
Board of Hennepin County Commissioners
Minneapolis, MN

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Justice John J. Francis Scholar
Rutgers University School of Law

Lester B. Lave, James H. Higgins Professor
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Industrial Administration
Carnegie-Mellon University

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Stationary Source Compliance
South Coast Air Quality Management
District

Steven B. Lovejoy, Professor
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Environmental and Safety Engineering
Ford Motor Company

Ernest S. Rosenberg, Director, External
Affairs & Compliance Support
Health, Environment and Safety
Occidental Petroleum Corporation

Preparing for an Uncertain Climate

Helen M. Ingram, Chairman
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Barbara Miller, Senior Civil Engineer
Tennessee Valley Authority

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Electric Power Research Institute

Herman Shugart Chairman
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Phil Sisson, Director
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Quaker Oats Corporation

Don Wilhite, Director
International Drought Information Center
University of Nebraska

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> Researching Health Risks

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University of Texas Southwestern Medical Center

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“ Murray Feshbach, Research Professor
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Pacific Northwest Labs

William R. Wiley, Senior VP
Science & Technology Policy
Battelle Memorial Institute
OSHAA’S CHOICE OF CONTROL
TECHNOLOGY and ESTIMATION OF ECONOMIC IMPACTS

John R. Froines, Chair
Director, Center for Occupational and Environmental Health
UCLA School of Public Health

Nicholas A. Ashford, Professor
Center for Technology, Policy and Industrial Development
Massachusetts Institute of Technology

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The Brookings Institution

Morton Corn, Professor
School of Hygiene and Public Health
The Johns Hopkins University-Baltimore

James S. Holt, Senior Economist and Vice President for Research
Employment Policy Foundation

William P. Kelly VP and General Manager, Fibers Division
The Carborundum Company

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University of Wisconsin—Madison

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Department of Economics
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Thomas McGarity, William Stamps Farish Professor of Law, School of Law
University of Texas at Austin

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University of Pittsburgh

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University of North Carolina

Susan Rose-Ackerman, Henry R. Luce Professor of Jurisprudence
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AFL/CIO

James W. Smith
Chief Economist (ret.) USWA

BIOLOGICAL PEST CONTROL ASSESSMENT

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Biological Control Institute
Auburn University

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University of Massachusetts

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North Carolina Department of Agriculture

Roger C. Funk, Vice President
Human & Technical Resources
The Davey Tree Expert Company

Harry J. Griffiths, Chairman
Entomological Services, Inc.

Judith A. Hansen, Superintendent
Cape May County Mosquito Extermination Commission-Cape May, NJ

Dennis L. Isaacson, Program Director
Noxious Weed Control Section
Oregon Department of Agriculture

Deborah B. Jensen, VP Conservation Science & Stewardship
The Nature Conservancy
Workshop on Agriculture, Trade and The Environment

Workshop on Biological Pest control: Role of the Private Sector

Workshop on Technologies to Benefit Shoreline Property and Rare Wildlife: An Atlantic Coast Example

Workshop on Risks to Students in School

HEALTH PROGRAM

> ASSESSING THE ASSUMPTIONS BEHIND HEALTH REFORM PROJECTIONS

Joseph P. Newhouse, Chair
Director, Division of Health Policy Research and Education
Harvard University

Stuart H. Altman, Dean
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Harold Cohen, President
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Karen Davis, Executive Vice President
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William Hsiao, Professor of Health System Economics, Department of Health Policy and Management
Harvard School of Public Health

Lawrence R. Klein, Professor of Economics
University of Pennsylvania

Woodrow Myers, VP for Medical Affairs
The Associated Group

Jack Rodgers, Senior Manager
Director of Health Policy Analysis
Price Waterhouse

Allen J. Sorbo, Principal
Tillinghast, A Towers Perrin Company

Gail R. Wilensky, Senior Fellow
Project HOPE
Michael C. Wolfson, Director General
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Statistics Canada, Ottawa

DEFENSIVE MEDICINE AND MEDICAL MALPRACTICE

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American College of Physicians

James Blumstein, Professor of Law
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Edward David, Chairman
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Richard Frank, Professor
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Richmond Prescott, former Associate
Executive Director for the
Permanante Medical Group, Inc.

David Sundwall, VP and Medical Director
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INTERNATIONAL DIFFERENCES IN HEALTH TECHNOLOGY SERVICES AND ECONOMICS

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Annette Gelijns, Director
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Medical Workforce Reform

James Bernstein, Director
North Carolina Office of Rural Health & Resource Development

Charles Briscoe, student
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Association of Academic Health Centers

Paul Brucker, President
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Clyde Oden, President & CEO
Watts Health Foundation

Barbara Ross-Lee, Professor of Family Medicine & Dean
Ohio University College of Osteopathic Medicine

Barbara Safriet, Associate Dean & Lecturer
Yale Law School

David R. Smith, Commissioner of Health Department of Health
State of Texas-Austin
POLICY ISSUES IN THE PREVENTION AND TREATMENT OF OSTEOPOROSIS

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Creighton University

Steven R Cummings, Research Director
Division of General Internal Medicine
University of California, College of Medicine

Barbara L. Drinkwater, Research Physiologist, Department of Medicine
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Deborah T. Gold, Assistant Professor of Medical Sociology, Center for Study of Aging & Human Development
Duke University Medical Center

Susan L. Greenspan, Director
Osteoporosis and Metabolic Bone Disease Clinic

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Department of Orthopedics
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Sylvia Houghland, Associate Director
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Division of Endocrinology and Metabolism
Indiana University School of Medicine

Shiriki K Kumanyika, Associate Professor of “Nutritional Epidemiology
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Robert Lindsay, Chief Internal Medicine
Helen Hayes Hospital

Betsy Love, Program Manager
Center for Metabolic Bone Disorders
Providence Medical Center

Robert Marcus, Director
Aging Study Unit
VA Medical Center, Palo Alto

Lee Joseph Melton, III, Head, Section of Epidemiology, Department of Health Sciences Research
Mayo Clinic

Gregory Miller, V.P. Nutrition
Research/Technical Services
National Dairy Council

Morris Notelovitz, President and Medical Director
Women’s Medical & Diagnostic Center and Climacteric Clinic, Inc.

William Arno Peck, Dean
University of Washington School of Medicine

Diana Petitti, Director, Research and Evaluation
Southern California Kaiser Permanence Medical Care Program

Neil M. Resnick, Chief Geriatrics
Brigham & Women’s Hospital

Gideon A. Rodan, Executive Director
Department of Bone Biology
Merck, Sharp & Dohme Research

Mehrsheed Sinaki, Professor, Physical Medicine and Rehabilitation
Mayo Medical School
IDENTIFYING HEALTH TECHNOLOGIES THAT WORK

William Fullerton, Chair
Consultant

Robert Brook, Deputy Director for Health Services
The RAND Corporation

Iain Chalmers, Director
The Cochrane Center
NHS R&D Program, United Kingdom

Harold Cohen, President
Harold Cohen, Inc.

David Eddy, Professor of Health Policy and Management
Duke University

Ruth Faden, Professor and Director
Program in Law, Ethics and Health
The School of Hygiene and Public Health
Johns Hopkins University

Diana Jest, Vice President,
Government Affairs
Group Health Association of America

Robert Keller, Executive Director
Maine Medical Assessment Foundation

Jonathan Lomas, Professor
Centre for Health Economics and Policy Analysis, Department of Clinical Epidemiology and Biostatics
McMaster University, Ontario

Michael McCulley, Assistant General Counsel
Johnson & Johnson

Barbara J. McNeil, Ridley Watts Professor and Head, Department of Health Care Policy, Harvard Medical School
Brigham & Women’s Hospital

Frederick Mosteller, Director
Technology Assessment Program
Harvard University, School of Public Health

Richard Pete, ICRF Reader in Cancer Studies
Clinical Trial Service Unit
Radcliffe Infirmary, UK

John Wennberg, Director
Center for Evaluative Clinical Sciences
Dartmouth Medical School

Workshop on Impacts of Antibiotic Resistant Bacteria

Workshop on Eligibility Criteria for Federally Mandated Long-Term Care

Workshop on Issues in the Development and Marketing of an AIDS Vaccine

Workshop on IOM Medical Follow-Up Agency

Workshop on Mental Health and Substance Abuse
Office of Technology Assessment Act

PUBLIC LAW 92-484
92D CONGRESS, H.R. 10243
OCTOBER 13, 1972
AN ACT

TO ESTABLISH AN OFFICE OF TECHNOLOGY ASSESSMENT for the Congress as an aid in the identification and consideration of existing and probable impacts of technological application; 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 maybe cited as the “Technology Assessment Act of 1972.”

FINDINGS AND DECLARATION OF PURPOSE
SEC. 2. The Congress hereby finds and declares that:

(a) As technology continues to change and expand rapidly, its applications are-
1. large and growing in scale; and
2. increasingly extensive, pervasive, and critical in their impact, beneficial and adverse, on the natural and social environment.

(b) Therefore, it is essential that, to the fullest extent possible, the consequences of technological applications be anticipated, understood, and considered in determination of public policy on existing and emerging national problems.

(c) The Congress further finds that:
1. the Federal agencies presently responsible directly to the Congress are not designed to provide the legislative branch with adequate and timely information, independently developed, relating to the potential impact of technological applications, and
2. the present mechanisms of the Congress do not and are not designed to provide the legislative branch with such information.

(d) Accordingly, it is necessary for the Congress to-
1. equip itself with new and effective means for securing competent, unbiased information concerning the physical, biological, economic, social, and political effects of such applications; and
2. utilize this information, whenever appropriate, as one factor in the legislative assessment of matters pending before the Congress, particular in those instances where the Federal Government may be called upon to consider support for, or management or regulation of, technological applications.
ESTABLISHMENT OF THE OFFICE OF TECHNOLOGY ASSESSMENT

SEC. 3. (a) In accordance with the findings and declaration of purpose in section 2, there is hereby created the Office of Technology Assessment (hereinafter referred to as the "Office") which shall be within and responsible to the legislative branch of the Government.

(b) The Office shall consist of a Technology Assessment Board (hereinafter referred to as the "Board") which shall formulate and promulgate the policies of the Office, and a Director who shall carry out such policies and administer the operations of the Office.

(c) The basic function of the Office shall be to provide early indications of the probable beneficial and adverse impacts of the applications of technology and to develop other coordinate information which may assist the Congress. In carrying out such function, the Office shall:
1. identify existing or probable impacts of technology or technological programs;
2. ascertain cause-and-effect relationships;
3. identify alternative technological methods of implementing specific programs;
4. identify alternative programs for achieving requisite goals;
5. make estimates and comparisons of the impacts of alternative methods and programs;
6. present findings of completed analyses to the appropriate legislative authorities;
7. identify areas where additional research or data collection is required to provide adequate support for the assessments and estimates described in paragraph (1) through (5) of this subsection; and
8. undertake such additional associated activities as the appropriate authorities specified under subsection (d) may direct.

(d) Assessment activities undertaken by the Office may be initiated upon the request of:
1. the chairman of any standing, special, or select committee of either House of the Congress, or of any joint committee of the Congress, acting for himself or at the request of the ranking minority member or a majority of the committee members;
2. the Board; or
3. the Director, in consultation with the Board.

(e) Assessments made by the Office, including information, surveys, studies, reports, and findings related thereto, shall be made available to the initiating committee or other appropriate committees of the Congress. In addition, any such information, surveys, studies, reports, and findings produced by the Office may be made available to the public except where:
1. to do so would violate security statutes; or
2. the Board considers it necessary or advisable to withhold such information in accordance with one or more of the numbered paragraphs in section 552(b) of title 5, United States Code.

TECHNOLOGY ASSESSMENT BOARD

SEC. 4. (a) The Board shall consist of thirteen members as follows:
1. six Members of the Senate, appointed by the President pro tempore of the Senate, three from the majority party and three from the minority party;
2. six Members of the House of Representatives appointed by the Speaker of the House of Representatives, three from the majority party and three from the minority party; and
3. the Director, who shall not be a voting member.

(b) Vacancies in the membership of the Board shall not affect the power of the remaining members to execute the functions of the Board and shall be filled in the same manner as in the case of the original appointment.
(c) The Board shall select a chairman and a vice chairman from among its members at the beginning of each Congress. The vice chairman shall act in the place and stead of the chairman in the absence of the chairman. The chairmanship and the vice chairmanship shall alternate between the Senate and the House of Representatives with each Congress. The chairman during each even-numbered Congress shall be selected by the Members of the House of Representatives on the Board from among their number. The vice chairman during each Congress shall be chosen in the same manner from that House of Congress other than the House of Congress of which the chairman is a Member.

(d) The Board is authorized to sit and act at such places and times during the sessions, recesses, and adjourned periods of Congress, and upon a vote of a majority of its members, to require by subpoena or otherwise the attendance of such witnesses and the production of such books, papers, and documents, to administer such oaths and affirmations, to take such testimony, to procure such printing and binding, and to make such expenditures, as it deems advisable. The Board may make such rules respecting its organization and procedures as it deems necessary, except that no recommendation shall be reported from the Board unless a majority of the Board assent. Subpoenas maybe issued over the signature of the chairman of the Board or of any voting member designated by him or by the Board, and may be served by such person or persons as maybe designated by such chairman or member. The chairman of the Board or any voting member thereof may administer oaths or affirmations to witnesses.

DIRECTOR AND DEPUTY DIRECTOR
SEC. 5. (a) The Director of the Office of Technology Assessment shall be appointed by the Board and shall serve for a term of six years unless sooner removed by the Board. He shall receive basic pay at the rate provided for level III of the Executive Schedule under section 5314 of title 5, United States Code.

(b) In addition to the powers and duties vested in him by this Act, the Director shall exercise such powers and duties as maybe delegated to him by the Board.

(c) The Director may appoint with the approval of the Board, a Deputy Director who shall perform such functions as the Director may prescribe and who shall be Acting Director during the absence or incapacity of the Director or in the event of a vacancy in the office of Director. The Deputy Director shall receive basic pay at the rate provided for level IV of the Executive Schedule under section 5315 of title 5, United States Code.

(d) Neither the Director nor the Deputy Director shall engage in any other business, vocation, or employment than that of serving as such Director or Deputy Director, as the case may be; nor shall the Director or Deputy Director, except with the approval of the Board, hold any office in, or act in any capacity for, any organization, agency, or institution with which the Office makes any contract or other arrangement under this Act.

AUTHORITY OF THE OFFICE
SEC. 6. (a) The Office shall have the authority, within the limits of available appropriations, to do all things necessary to carry out the provisions of this Act, including but without being limited to, the authority to:

1. make full use of competent personnel and organizations outside the Office, public or private, and form special ad hoc task forces or make other arrangements when appropriate;
2. enter into contracts or other arrangements as may be necessary for the conduct of the work of the Office with any agency or instrumentality of the United States, with any State, territory, or possession or any political subdivision thereof, or with any person, firm, association, corporation, or educational institution, with or without reimbursement, without performance or other bonds, and without regard to section 3701 of the Revised Statutes (41 U.S.C. 5);
3. make advance, progress, and other payments which relate to technology assessment without regard to the provisions of section 3648 of the Revised Statutes (31 U.S.C. 529);
4. accept and utilize the services of voluntary and uncompensated personnel necessary for the conduct of
the work of the Office and provide transportation and subsistence as authorized by section 5703 of
title 5, United States Code, for persons serving without compensation;
5. acquire by purchase, lease, loan, or gift, and hold and dispose of by sale, lease, or loan, real and
personal property of all kinds necessary for or resulting from the exercise of authority granted by this
Act; and
6. prescribe such rules and regulations as it deems necessary governing the operation and organization of
the Office.

(b) Contractors and other parties entering into contracts and other arrangements under this section which
involve costs to the Government shall maintain such books and related records as will facilitate an effective
audit in such detail and in such manner as shall be prescribed by the Office, and such books and records
(and related documents and papers) shall be available to the Office and the Comptroller General of the
United States, or any of their duly authorized representatives, for the purpose of audit and examination.

(c) The Office, in carrying out the provisions of this Act, shall not, itself, operate any laboratories, pilot plants,
or test facilities.

(d) The Office is authorized to secure directly from any executive department or agency information,
suggestions, estimates, statistics, and technical assistance for the purpose of carrying out its functions
under this Act. Each such executive department or agency shall furnish the information, suggestions,
estimates, statistics, and technical assistance directly to the Office upon its request.

(e) On request of the Office, the head of any executive department or agency may detail, with or without
reimbursement, any of its personnel to assist the Office in carrying out its functions under this Act.

(f) The Director shall, in accordance with such policies as the Board shall prescribe, appoint and fix the
compensation of such personnel as may be necessary to carry out the provisions of this Act.

SEC. 7. (a) The office shall establish a Technology Assessment Advisory Council (hereinafter referred to as the
"Council"). The Council shall be composed of the following twelve members:
1. ten members from the public, to be appointed by the Board, who shall be persons eminent in one or
more fields of the physical, biological, or social sciences or engineering or experienced in the
administration of technological activities, or who may be judged qualified on the basis of contributions
made to educational or public activities;
2. the Comptroller General; and
3. the Director of the Congressional Research Service of the Library of Congress.

(b) The Council, upon request by the Board, shall—
1. review and make recommendations to the Board on activities undertaken by the Office or on the
initiation thereof in accordance with section 3(d);
2. review and make recommendations to the Board on the findings of any assessment made by or for the
Office; and
3. undertake such additional related tasks as the Board may direct.

(c) The Council, by majority vote, shall elect from its members appointed under subsection (a)(l) of this
section a Chairman and a Vice Chairman, who shall serve for such time and under such conditions as the
Council may prescribe. In the absence of the Chairman, or in the event of his incapacity, the Vice
Chairman shall act as Chairman.
(d) The term of office of each member of the Council appointed under subsection (a)(1) shall be four years except that any such member appointed to fill a vacancy occurring prior to the expiration of the term for which his predecessor was appointed shall be appointed for the remainder of such term. No person shall be appointed a member of the Council under subsection (a)(1) more than twice. Terms of the members appointed under subsection (a)(1) shall be staggered so as to establish a rotating membership according to such method as the Board may devise.

(e) 1. The members of the Council other than those appointed under subsection (a)(1) shall receive no pay for their services as members of the Council, but shall be allowed necessary travel expenses (or, in the alternative, mileage for use of privately owned vehicles and per diem in lieu of subsistence at not to exceed the rate prescribed in sections 5702 and 5704 of title 5, United States Code), and other necessary expenses incurred by them in the performance of duties vested in the Council, without regard to the provisions of subchapter 1 of chapter 57 and section 5731 of title 5, United States Code, and regulations promulgated thereunder.

2. The members of the Council appointed under subsection (a)(1) shall receive compensation for each day engaged in the actual performance of duties vested in the Council at rates of pay not in excess of the daily equivalent of the highest rate of basic pay set forth in the General Schedule of section 5332(a) of title 5, United States Code, and in addition shall be reimbursed for travel, subsistence, and other necessary expenses in the manner provided for other members of the Council under paragraph (1) of this subsection.

UTILIZATION OF THE LIBRARY OF CONGRESS

SEC. 8. (a) To carry out the objectives of this Act, the Librarian of Congress is authorized to make available to the Office such services and assistance of the Congressional Research Service as may be appropriate and feasible.

(b) Such services and assistance made available to the Office shall include, but not be limited to, all of the services and assistance which the Congressional Research Service is otherwise authorized to provide to the Congress.

(c) Nothing in this section shall alter or modify any services or responsibilities, other than those performed for the Office, which the Congressional Research Service under law performs for or on behalf of the Congress. The Librarian is, however, authorized to establish within the Congressional Research Service such additional divisions, groups, or other organizational entities as may be necessary to carry out the purpose of this Act.

(d) Services and assistance made available to the Office by the Congressional Research Service in accordance with this section may be provided with or without reimbursement from funds of the Office, as agreed upon by the Board and the Librarian of Congress.
General information

The following OTA administrative reports contain information about OTA and its products. These reports are available from the Publication Distribution Office.

- **OTA Role & Function**
  Defines OTA’s purpose and mission, and outlines its organization.

- **Publications Catalog**
  Catalogs by subject area many of OTA’s published reports with instructions about how to order them.

- **Summaries of OTA Reports**
  The summaries of most OTA reports are available, at no cost, as a separate booklet.

- **Report Briefs**
  One- to four-page summaries of OTA reports.

- **Assessment Activities**
  Lists and briefly summarizes OTA’s ongoing projects and publications in press.
For information about OTA publications, call or write:

- **Office of Technology Assessment**  
  U.S. Congress  
  Washington, DC 20510-8025  
  Attn: Publication Distribution  
  202.224.8996

  E-mail: pubsrequest@ota.gov

For information on the operation of OTA or the nature and status of ongoing assessments, call or write:

- **Congressional and Public Affairs**  
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