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Technology Assessment in Congress: History and Legislative Options

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Summary

Congress created the Office of Technology Assessment (OTA) in 1972 (P.L. 92-484) and terminated its funding in 1995. Since then the pros and cons of reviving OTA or re-creating a similar body has been examined. Since 2002, the General Accounting Office has published two pilot technology assessments at congressional request and has begun two others. Legislative action in the 108th Congress includes proposals (1) to restore funding for OTA (H.R. 125 and appropriations action), (2) to create a Science and Technology Assessment Service in the legislative branch (H.R. 6 as passed in the Senate, but not in the conference report), and (3) to fund GAO to conduct additional technology assessments and to assess whether or not GAO should assume a larger role in conducting technology assessments (report language on H.R. 2657). Issues under debate include need for assessments, funding, usefulness of GAO pilot assessments, and options for institutional arrangements. This report will be updated as needed.

Office of Technology Assessment. Congress established the Office of Technology Assessment (OTA) in 1972 with passage of P.L. 92-484. The law effectively augmented existing congressional resources by creating a support agency dedicated to providing Congress with objective and authoritative analysis of complex scientific and technical issues to aid in policymaking. This facilitated congressional access to scientific and technical expertise and permitted legislators to consider objectively information presented by the executive branch, interest groups, and other stakeholders to controversial technological policy questions. During the period 1973 to 1995, OTA conducted technology assessments, requested by committee chairmen for themselves, ranking minority members, or a majority of the committee, by the Technology Assessment Board (a body which was composed of equal numbers of House and Senate members and of members from both parties), or by the Director of the OTA in consultation with the Board. OTA produced in-depth, often long-range reports that assessed the consequences of science and technology applications and identified the pros and cons of policy options to deal with science and technology. The office had authority to hire staff and to contract for personnel and studies. Peak funding in the early 1990s totaled about $20 million annually, with about 140 hired staff plus additional contractors. Although OTA is still

authorized, it was effectively eliminated in 1995 when Congress did not appropriate funds for FY1996 for its continued operation and appropriated funds to close it down. Its archived reports are available via the internet at [http://www.wws.princeton.edu/~ota/].

Several reasons were given for terminating OTA's funding and numerous studies have been written about the rise and fall of the agency. Critics of OTA cited such reasons as difficulty in completing reports in time to meet congressional schedules, lack of utility to congressional decisionmaking, alleged bias toward "liberal" solutions, or partisan politics.[1] Some say that Congress can turn to and fund studies by The National Academies (composed of the National Academy of Sciences (NAS), the National Academy of Engineering, the Institute of Medicine, and the National Research Council, NRC), or utilize the services of the General Accounting Office (GAO) and the Congressional Research Service (CRS) for information and analysis on science and technology issues.[2] Others disagree and cite the utility of OTA studies to congressional decisionmaking and the need for Congress to maintain its own support agency devoted to assessing technology.[3] Some former OTA staff members and science policy analysts[4] have called for resumption of funding for OTA or creation of a legislative organization to perform OTA-like functions or to contract with outside groups to perform such functions. Some Members of Congress and others have said that if the OTA were still

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[1] See "OTA Reconsidered, Letter by Robert S. Walker," *Issues in Science and Technology*, Spring 2001; Bruce Bimber, *The Politics of Expertise in Congress, The Rise and Fall of the Office of Technology Assessment,* State University of New York Press, 1996, 128 p.; Bruce Bimber and David H. Guston, "Technology Assessment; The End of OTA," in *Technological Forecasting and Social Change, Special Issue,* Nos. 2 and 3, February/March 1997, whole issue; Richard M. Jones, "Holt Sponsors Bill to Reestablish Office of Technology Assessment," *FYI #76 (American Institute of Physics)*, June 18, 2001. A June 2001 conference on "Creating an Institutional Structure to Provide Science and Technology Advice to the U.S. Congress," organized by Granger Morgan and co-sponsored by the MacArthur Foundation, the Heinz Endowment and Carnegie Mellon University, assessed ways to provide Congress counsel on science and technology issues, including re-creating OTA and alternatives. A follow-up meeting was held on July 14, 2003 in cooperation with the National Academies to discuss options for advice, discussed in *Science and Technology Advice for Congress,* M. Granger Morgan and Jon Peha, eds., Washington, Resources for the Future, 2003, 236 p.

[2] See M. Davis, "A Reinvented Office of Technology Assessment May Not Suit Congressional Information Requirements...,"*Washington Fax,* June 18, 2001.

[3] See Daryl E. Chubin, "Filling the Policy Vacuum Created by OTA's Demise," *Issues in Science and Technology*, Winter 2000, 31-32; "OTA Reconsidered, Letter From John H. Gibbons, Letter From Roger Herdman" *Issues in Science and Technology*, Spring 2001; John A. Alic, "OTA Assessments Were Tailored for Congress," *Science,* Feb. 1, 2002; Julie Wakefield, "Flunking Science," *The Washington Monthly,* January/February 2001, 23-27; Rep. Amo Houghton, "In Memoriam: The Office of Technology Assessment, 1972-95," Extension of Remarks, *Congressional Record,* Sept. 28, 1995, E1868-E1870.

[4] M. Granger Morgan, Amo Houghton, and John H. Gibbons, "Improving Science and Technology Advice for Congress," *Science,* Sept. 14, 2001; David H. Guston, "Prospects of a Revived OTA for Congress," *Science,* July 13, 2001; Wil Lepkowski: "The Restless Mummy," *Science and Policy Perspectives,* April 10, 2001, "The Mummy Blinks," *Science and Policy Perspectives,* June 25, 2001, and "The Mummy Returns," *Science and Policy Perspectives,* June 25, 2001; and D. Malakoff, "Memo to Congress: Get Better Advice," *Science,* June 23, 2001.

operating it might have provided Congress with information required to make important program and policy decisions relating to technological issues.[5]

Legislation to Fund OTA. In the 107th Congress, Representative Rush Holt introduced H.R. 2148, the OTA Re-establishment Act. It would have authorized funding OTA at $20 million annually for FY2002-FY2007. Ultimately, the bill had 87 co-sponsors and was referred to the House Science Committee. No further action was taken. H.R. 125, introduced in the 108th Congress, is similar to H.R. 2148, 107th Congress. It would rename the Technology Assessment Act of 1972 as the Office of Technology Assessment Reestablishment Act of 2003 and would authorize OTA appropriations at $20 million annually for FY2004 to FY2009. The bill was referred to the House Science Committee.

Representative Holt has also proposed funding OTA through appropriations action. In 2002, he sought to introduce an amendment to H.R. 5121, the Legislative Branch Appropriations Act FY2003, to provide $4 million to fund OTA for FY2003. But the Rules Committee considered the amendment not in order.[6] He made a similar attempt in 2003 to amend the FY2004 Legislative Branch Appropriations bill, H.R. 2657, to fund OTA at $7 million; but, he said, the Rules Committee ruled the amendment not in order.[7]

Legislation to Create a Science and Technology Assessment Service. Proposals to create a Science and Technology Assessment Service in the legislative branch to provide technology assessment-related support, have been made since 2001.

107th Congress. Such a proposal was made first in Section 153 of S. 1716, "The Global Climate Change Act," introduced on November 15, 2001 by Senator John F. Kerry, and referred to the Committee on Commerce, Science, and Transportation. It would have created a Science and Technology Assessment Service to provide ongoing independent science and technology advice and specified that the Service "shall be within and responsible to the legislative branch." Assessment work would be performed using experts selected in consultation with the NRC, the policy research arm of The National Academies. Senator Kerry said that the Service "... would ensure that we in Congress get the best independent scientific and technical expertise in our climate change oversight role" and would support oversight in other areas. He explained the need for technical expertise and a perceived drain on NAS resources to conduct studies for Congress:

> ... Since the Office [of Technology Assessment] ... was eliminated in 1995, experts agree that Congress has suffered from lack of ongoing, credible advice. While some objected to the OTA structure, all agree that expert technical advice for Congress is essential to ensuring we hold up our end in efforts to make progress on this important

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[5] For example, "Need for Reestablishing the Office of Technology Assessment," Extensions of Remarks of Hon. Rush D. Holt, *Congressional Record*, Dec. 5, 2001, p. E2212 and Ellis Mottur, *Technology Assessment in the War on Terrorism and Homeland Security: the Role of OTA*, Report Prepared at the Request of Hon. Ernest F. Hollings, Chairman, Senate Committee on Commerce, Science, and Transportation , 107th Cong. 2nd Sess., S. Prt. 107-61, Apr. 2002.

[6] Statement of Rep. Holt, "Providing for Consideration of H.R. 5121, Legislative Branch Appropriations Act, 2003," on the Floor of the House, July 18, 2002, p. H4880.

[7] Statement of Rep. Holt, *Congressional Record*, July 9, 2003, pp. H6427-H6428.

issue. Congressional requests for advice are overburdening the National Academy of Sciences and threatening to compromise its independent stature.[8]

OTA had focused on providing information about technology's *impacts*, notably "early indications of the probable beneficial and adverse impacts of the applications of technology" and other information. In contrast, the proposed Science and Technology Assessment Service would focus more broadly on developing information about the *uses* of technology, specifically information "relating to the uses and applications of technology to address current national science and technology policy issues." The Service's organization and functions would incorporate many features of OTA, including bipartisan and bicameral congressional boards to govern activities, and a Director to carry out policies and manage activities; a process to select studies using committee chairmen, the Board, or the Director (in OTA by the Director in consultation with the Board); and identical annual report requirements. The two organizations would differ because the proposed Assessment Service would: use the NRC to select experts to conduct assessments, a provision that was not in the OTA law; be smaller than OTA, lacking OTA's Deputy Director and Technology Assessment Advisory Council, the latter which was composed of private science and technology experts, the Comptroller General, and the CRS Director, to advise the Board on OTA operations and on assessment reports; have authority to contract and use personnel, but the Service would have less specific authority than OTA had, for instance, to purchase and hold property, detail personnel from other agencies, or obtain information from other agencies; and not have OTA's authority to seek assistance from CRS and the National Science Foundation, nor OTA's authority to distribute reports to congressional committees or the public.

Provisions to create a Science and Technology Assessment Service subsequently were included as Title XVI of S. 1766, the Energy Policy Act of 2002, which was introduced on December 5, 2001, by Senators Daschle and Bingaman. On February 27, 2002, S. 1766 was incorporated as substitute amendment (SA) 2917 to S. 517, the Energy Security Policy bill (which had been introduced originally on March 12, 2001). The provisions relating to the Assessment Service in S. 517 were identical to those in S. 1716 and S. 1766. On April 10, 2002, during floor consideration, Senator John McCain, ranking minority member of the Commerce, Science and Transportation Committee, submitted S.Amdt. 3089 to delete language to create the Assessment Service from S.Amdt. 2917. However, on April 25, 2002, Senator McCain said on the floor of the Senate[9] that he would withdraw his amendment and, instead, urged the Chairman of the Senate Commerce, Science, and Transportation Committee, to hold hearings on the proposal in order to assess "the needs and benefits" of such a Service to Congress. On April 25, 2002, the Senate incorporated S. 517, as amended, into H.R. 4, and passed the bill. Although a conference was held, no final action was taken on the bill.

108th Congress. During the 108th Congress, the Senate could not reach agreement on energy legislation (S. 14) and decided to use as a substitute amendment to the energy bill passed in the House (H.R. 6), the energy bill it passed in 2002, which contained Title XVI to create the Science and Technology Assessment Service. Thus, H.R. 4, as passed

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[8] Remarks Upon Introduction of S. 1716, *Congressional Record,* Nov. 15, 2001, p. S11957.

[9] *Congressional Record,* Apr. 25, 2002, pp. S3407-S3408.

in the Senate in 2002, was introduced as SA1537 to H.R. 6, as passed in the House and sent to the Senate. The Senate agreed to SA1537, and H.R. 6 incorporating it was passed on July 31, 2003. The Assessment Service provision was not included in the conference report on H.R. 6, H.Rept. 108-375, which the House agreed to on November 18, 2003.

Legislation to Fund General Accounting Office Pilot Projects on Technology Assessment. For three successive years, appropriations report language has directed GAO to conduct technology assessments on a small scale.

FY2002. House Report 107-259, the conference report that accompanied H.R. 2647, the Legislative Branch Appropriations Bill for FY2002, enacted as P.L. 107-68, directed that up to $500,000 of GAO's appropriation be obligated to conduct a technology assessment pilot project and that results of the project be reported to the Senate by June 15, 2002. The provision had originated in the Senate, sponsored by Senator Jeff Bingaman. Funding for the pilot study was specified at $1 million in S. 1172, as amended by S.Amdt. 1026, and passed in the Senate. The Senate provision seemed intended to focus on a pilot project that would be conducted by The National Academies and on a model that might lead to possible funding for a small OTA-like organization that would conduct assessments largely by issuing contracts to non-profit groups.[10] The enacted Legislative Branch Appropriations bill did not contain this language.

The conference report did not authorize an assessment topic, but Senators Bingaman, Lieberman, Roberts, and Domenici requested GAO to assess technologies for U.S. border control together with a review of the technology assessment process. At the same time, six House members (Congressmen Hall, Boehlert, Holt, Houghton, Jim Moran, and Ehlers) wrote to GAO supporting the pilot technology assessment project. After consulting congressional staff, GAO agreed to assess biometric technologies. It used its standing contract with NAS to convene two meetings which resulted in advice from 35 external experts on the maturity of biometric technologies and their implications on privacy and civil liberties. GAO also did its usual audit work to gather information. The resulting report was issued in November 2002 as *Technology Assessment: Using Biometrics for Border Security* (GAO-03-174), available at [http://www.gao.gov/new.items/d03174.pdf].

FY2003. The FY2003 Senate legislative branch appropriations report noted the utility of GAO's work and said it provided $1 million in funding for three more technology assessments in order to maintain an assessment capability in the legislative

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[10] Sen. Bingaman originally proposed that CRS manage the pilot study with a contract to an organization like the National Academy of Sciences because he felt that CRS is "better suited to conduct and oversee this type of long-term research activity." He also said he expected "that oversight would be provided by the Senate Rules and House Administration Committees and through these Committees, the Joint Committee on the Library of Congress." He disagreed with suggestions that the GAO might be better suited to manage the pilot than CRS, but that "it is better to start an initial pilot program ...rather than no pilot program at all." He also proposed an assessment selection process and said he envisioned "...a small legislative branch staff using outside non-profit groups to perform the in-depth research," rather than the larger OTA model with a staff of about 200 people and funding of about $20 million. ("Office of Technology Assessment," Discussion in the Senate on the Legislative Branch Appropriations Act, *Congressional Record,* July 20, 2001, pp. S8008-S8009.)

branch and to evaluate the GAO pilot process (S.Rept. 107-209, [To accompany S. 2720], pp. 49-50.) This language was not included in the Senate bill (S. 2720); the House bill (H.R. 5121) or the accompanying report; or in H.J.Res. 2, the Consolidated Appropriations Resolution, enacted as P.L. 108-7, which included Legislative Branch Appropriations for FY2003; or in the accompanying conference report. Although funds were not explicitly provided for a study, GAO conducted a technology assessment that is consistent with the Senate report language. It was printed as *Cybersecurity for Critical Infrastructure Protection*, May 2004, GAO-04-321, 214 pp.

FY2004. The House Appropriations Committee report on Legislative Branch Appropriations for FY2004 directed GAO to "... allocate within existing resources funding that will permit three technology assessment studies that will be of relevance to the Congress's work in the upcoming fiscal year" (H.Rept. 108-186, July 1, 2003, on H.R. 2657, p. 25). The language does not appear in the House bill passed on July 9, 2003. The Senate incorporated S. 1383 in H.R. 2657, and passed it, amended, on July 11. S.Rept. 108-88, accompanying S. 1383, recommended $1 million for funding two or three technology assessment reports in FY2004 and said that the Committee expects GAO's technology assessment work to be undertaken only if it is consistent with GAO's mission (p. 44). According to the Conference Committee, GAO's two-year evaluation of the need for legislative technology assessment capability showed that "such a capability would enhance the ability of key congressional committees to address complex technical issues in a more timely and effective manner." The conferees directed GAO to report by December 15, 2003 to the House and Senate Committees on Appropriations " ... the impact that assuming a technology assessment role would have on its current mission and resources. The report should be submitted by December 15, 2003" (House Report 108-279). The bill became P.L. 108-83 on September 30, 2003. GAO reported directly to the Appropriations Committees; its response was not released directly to the public.

In spring 2004 GAO initiated two new technology assessments, one focusing on protecting buildings from forest fires, and the other on port security.

FY2005. In its FY2005 appropriations request, GAO requested $545,000 for four new FTE positions and contract support to establish "a baseline technology assessment capability," allowing GAO to conduct one assessment per year.

Policy Issues. The following issues could be considered when evaluating proposals to expand legislative technology assessment capability: (1) analysis of the need for more technology assessment information and advice; (2) evidence of political support for enhancing legislative capabilities for technology assessment; (3) with respect to GAO's conducting pilot technology assessments: the availability of funds and the possible need for new funding, the timing, and the utility of GAO's technology assessments for congressional decisionmaking, and also, the harmony between GAO's technology assessment functions and the agency's auditing and evaluation activities; and (4) the potential benefits and costs of establishing a more independent legislative technology assessment function, such as in a separate OTA-like support activity or organization.