110TH CONGRESS
1st Session

HOUSE OF REPRESENTATIVES

REPORT
110–39

SOWING THE SEEDS THROUGH SCIENCE AND ENGINEERING RESEARCH ACT

MARCH 8, 2007.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

Mr. GORDON of Tennessee, from the Committee on Science and Technology, submitted the following

R E P O R T

[To accompany H.R. 363]

[Including cost estimate of the Congressional Budget Office]

The Committee on Science and Technology, to whom was referred the bill (H.R. 363) to authorize appropriations for basic research and research infrastructure in science and engineering, and for support of graduate fellowships, and for other purposes, having considered the same, reports favorably thereon with amendments and recommends that the bill as amended do pass.

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59–006

I. AMENDMENT

The amendments are as follows:

Strike all after the enacting clause and insert the following:

SECTION 1. SHORT TITLE.

This Act may be cited as the "Sowing the Seeds Through Science and Engineering Research Act".

SEC. 2. NATIONAL SCIENCE FOUNDATION EARLY CAREER AWARDS FOR SCIENCE AND ENGINEERING RESEARCHERS.

(a) IN GENERAL.—The Director of the National Science Foundation shall carry out a program to award grants to scientists and engineers at the early stage of their careers at institutions of higher education and organizations described in subsection (c)(2) to conduct research in fields relevant to the mission of the Foundation. The existing Faculty Early Career Development (CAREER) Program may be designated as the mechanism for awarding such grants.

(b) SIZE AND DURATION OF AWARD.—The duration of awards under this section shall be 5 years, and the amount per year shall be at least $80,000.

(c) ELIGIBILITY.—Award recipients shall be individuals who are employed in a tenure-track position as an assistant professor or equivalent title, or who hold an equivalent position, at—

(1) an institution of higher education in the United States; or

(2) an organization in the United States that is a nonprofit, nondegree-granting research organization such as a museum, observatory, or research laboratory.

(d) SELECTION.—Award recipients shall be selected on a competitive, merit-reviewed basis.

(e) SELECTION PROCESS AND CRITERIA FOR AWARDS.—An applicant seeking funding under this section shall submit a proposal to the Director at such time, in such manner, and containing such information as the Director may require. In evaluating the proposals submitted under this section, the Director shall consider, at a minimum—

(1) the intellectual merit of the proposed work;

(2) the innovative or transformative nature of the proposed research;

(3) the extent to which the proposal integrates research and education, including undergraduate education in science and engineering disciplines; and

(4) the potential of the applicant for leadership at the frontiers of knowledge.

(f) AWARDS.—In awarding grants under this section, the Director shall endeavor to ensure that the recipients are from a variety of types of institutions of higher education and nonprofit, nondegree-granting research organizations. In support of this goal, the Director shall broadly disseminate information about when and how to apply for grants under this section, including by conducting outreach to Historically Black Colleges and Universities that are part B institutions as defined in section 322(2) of the Higher Education Act of 1965 (20 U.S.C. 1061(2)) and minority institutions (as defined in section 365(3) of that Act (20 U.S.C. 1067k(3))).

(g) AUTHORIZATION OF APPROPRIATION.—For each of the fiscal years 2008 through 2012, the Director shall allocate at least 3.5 percent of funds appropriated to the National Science Foundation for Research and Related Activities to the grants program under this section.

(h) REPORT.—Not later than 6 months after the date of enactment of this Act, the Director shall transmit to the Committee on Science and Technology of the House of Representatives and to the Committee on Commerce, Science, and Transportation of the Senate a report describing the distribution of the institutions from which individuals have participated in the Faculty Early Career Development Program since fiscal year 2001 among each of the categories of institutions of higher education defined by the Carnegie Foundation for the Advancement of Teaching and the organizations in subsection (c)(2).

(i) EVALUATION.—Not later than 2 years after the date of enactment of this Act, the Director shall transmit to the Committee on Science and Technology of the House of Representatives and to the Committee on Commerce, Science, and Transportation of the Senate a report evaluating the impact of the program carried out under this section on the ability of young faculty to compete for National Science Foundation research grants.

SEC. 3. DEPARTMENT OF ENERGY EARLY CAREER AWARDS FOR SCIENCE AND ENGINEERING RESEARCHERS.

(a) IN GENERAL.—The Director of the Office of Science of the Department of Energy shall carry out a program to award grants to scientists and engineers at the early stage of their careers at institutions of higher education and organizations de-

scribed in subsection (c)(2) to conduct research in fields relevant to the mission of the Department.

(b) SIZE AND DURATION OF AWARD.—The duration of awards under this section shall be up to 5 years, and the amount per year shall be at least $80,000.

(c) ELIGIBILITY.—Award recipients shall be individuals who are employed in a tenure-track position as an assistant professor or equivalent title, or who hold an equivalent position, at—

(1) an institution of higher education in the United States; or

(2) an organization in the United States that is a nonprofit, nondegree-granting research organization such as a museum, observatory, or research laboratory.

(d) SELECTION.—Award recipients shall be selected on a competitive, merit-reviewed basis.

(e) SELECTION PROCESS AND CRITERIA FOR AWARDS.—An applicant seeking funding under this section shall submit a proposal to the Director of the Office of Science at such time, in such manner, and containing such information as the Director may require. In evaluating the proposals submitted under this section, the Director shall consider, at a minimum—

(1) the intellectual merit of the proposed work;

(2) the innovative or transformative nature of the proposed research;

(3) the extent to which the proposal integrates research and education, including undergraduate education in science and engineering disciplines; and

(4) the potential of the applicant for leadership at the frontiers of knowledge.

(f) COLLABORATION WITH NATIONAL LABORATORIES.—In awarding grants under this section, the Director shall give priority to proposals in which the proposed work includes collaboration with the Department of Energy National Laboratories.

(g) AWARDS.—In awarding grants under this section, the Director shall endeavor to ensure that the recipients are from a variety of types of institutions of higher education and nonprofit, nondegree-granting research organizations. In support of this goal, the Director shall broadly disseminate information about when and how to apply for grants under this section, including by conducting outreach to Historically Black Colleges and Universities that are part B institutions as defined in section 322(2) of the Higher Education Act of 1965 (20 U.S.C. 1061(2)) and minority institutions (as defined in section 365(3) of that Act (20 U.S.C. 1067k(3))).

(h) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Secretary of Energy to carry out the Director's responsibilities under this section $25,000,000 for each of the fiscal years 2008 through 2012.

(i) REPORT ON RECRUITING AND RETAINING EARLY CAREER SCIENCE AND ENGINEERING RESEARCHERS AT THE NATIONAL LABORATORIES.—Not later than 3 months after the date of enactment of this Act, the Director of the Office of Science shall transmit to the Committee on Science and Technology of the House of Representatives and to the Committee on Energy and Natural Resources of the Senate a report on efforts to recruit and retain young scientists and engineers at the early stages of their careers at the Department of Energy National Laboratories. The report shall include—

(1) a description of Department of Energy and National Laboratory policies and procedures, including financial incentives, awards, promotions, time set aside for independent research, access to equipment or facilities, and other forms of recognition, designed to attract and retain young scientists and engineers;

(2) an evaluation of the impact of these incentives on the careers of young scientists and engineers at Department of Energy National Laboratories, and also on the quality of the research at the National Laboratories and in Department of Energy programs;

(3) a description of what barriers, if any, exist to efforts to recruit and retain young scientists and engineers, including limited availability of full time equivalent positions, legal and procedural requirements, and pay grading systems; and

(4) the amount of funding devoted to efforts to recruit and retain young researchers and the source of such funds.

SEC. 4. INTEGRATIVE GRADUATE EDUCATION AND RESEARCH TRAINEESHIP PROGRAM.

(a) FUNDING.—For each of the fiscal years 2008 through 2012, the Director of the National Science Foundation shall allocate at least 1.5 percent of funds appropriated for Research and Related Activities to the Integrative Graduate Education and Research Traineeship program.

(b) COORDINATION.—The Director shall coordinate with Federal departments and agencies, as appropriate, to expand the interdisciplinary nature of the Integrative Graduate Education and Research Traineeship program.

(c) AUTHORITY TO ACCEPT FUNDS FROM OTHER AGENCIES.—The Director is authorized to accept funds from other Federal departments and agencies to carry out the Integrative Graduate Education and Research Traineeship program.

SEC. 5. PRESIDENTIAL INNOVATION AWARD.

(a) ESTABLISHMENT.—The President shall periodically present the Presidential Innovation Award, on the basis of recommendations received from the Director of the Office of Science and Technology Policy or on the basis of such other information as the President considers appropriate, to individuals who develop one or more unique scientific or engineering ideas in the national interest at the time the innovation occurs.

(b) PURPOSE.—The awards under this section shall be made to—

(1) stimulate scientific and engineering advances in the national interest;

(2) illustrate the linkage between science and engineering and national needs; and

(3) provide an example to students of the contribution they could make to society by entering the science and engineering profession.

(c) CITIZENSHIP.—An individual is not eligible to receive the award under this section unless at the time such award is made the individual—

(1) is a citizen or other national of the United States; or

(2) is an alien lawfully admitted to the United States for permanent residence who—

(A) has filed an application for naturalization in the manner prescribed by section 334 of the Immigration and Nationality Act (8 U.S.C. 1445); and

(B) is not permanently ineligible to become a citizen of the United States.

(d) PRESENTATION.—The presentation of the award shall be made by the President with such ceremonies as he may deem proper, including attendance by appropriate Members of Congress.

SEC. 6. NATIONAL COORDINATION OFFICE FOR RESEARCH INFRASTRUCTURE.

(a) IN GENERAL.—The Office of Science and Technology Policy shall establish a National Coordination Office for Research Infrastructure. Such Office shall—

(1) identify and prioritize the deficiencies in research facilities and major instrumentation located at academic institutions and at national laboratories that are available for use by academic researchers; and

(2) institute and coordinate the planning by Federal agencies for the acquisition, refurbishment, and maintenance of research facilities and major instrumentation required to address the deficiencies identified under paragraph (1).

In prioritizing the deficiencies identified under paragraph (1), the Office shall consider research needs in areas relevant to the Nation's economic competitiveness.

(b) STAFFING.—The Director of the Office of Science and Technology Policy shall appoint individuals to serve in the Office established under subsection (a) from among the principal Federal agencies that support research in the sciences, mathematics, and engineering, and shall at a minimum include individuals from the National Science Foundation and the Department of Energy.

(c) REPORT.—The Director of the Office of Science and Technology Policy shall provide annually a report to Congress at the time of the President's budget proposal—

(1) describing the research infrastructure needs identified in accordance with subsection (a);

(2) listing research facilities projects and budget proposals, by agency, for major instrumentation acquisitions that are included in the President's budget proposal; and

(3) explaining how these facilities projects and instrumentation acquisitions relate to the deficiencies and priorities arrived at in accordance with subsection (a).

SEC. 7. RESEARCH ON INNOVATION AND INVENTIVENESS.

In carrying out its research programs on science policy and on the science of learning, the National Science Foundation may support research on the process of innovation and the teaching of inventiveness.

SEC. 8. REPORT ON NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY EFFORTS TO RECRUIT AND RETAIN EARLY CAREER SCIENCE AND ENGINEERING RESEARCHERS.

Not later than 3 months after the date of enactment of this Act, the Director of the National Institute of Standards and Technology shall transmit to the Committee on Science and Technology of the House of Representatives and to the Committee on Commerce, Science, and Transportation of the Senate a report on efforts to recruit and retain young scientists and engineers at the early stages of their careers at the National Institute of Standards and Technology laboratories and joint institutes. The report shall include—

(1) a description of National Institute of Standards and Technology policies and procedures, including financial incentives, awards, promotions, time set aside for independent research, access to equipment or facilities, and other forms of recognition, designed to attract and retain young scientists and engineers;

(2) an evaluation of the impact of these incentives on the careers of young scientists and engineers at the National Institute of Standards and Technology, and also on the quality of the research at the National Institute of Standards and Technology's laboratories and in the National Institute of Standards and Technology's programs;

(3) a description of what barriers, if any, exist to efforts to recruit and retain young scientists and engineers, including limited availability of full time equivalent positions, legal and procedural requirements, and pay grading systems; and

(4) the amount of funding devoted to efforts to recruit and retain young researchers and the source of such funds.

SEC. 9. NASA'S CONTRIBUTION TO INNOVATION.

(a) SENSE OF THE CONGRESS.—It is the sense of the Congress that—

(1) a balanced science program as authorized by section 101(d) of the National Aeronautics and Space Administration Authorization Act of 2005 (Public Law 109–155) contributes significantly to innovation in and the economic competitiveness of the United States; and

(2) a robust National Aeronautics and Space Administration, funded at the levels authorized under sections 202 and 203 of that Act, would offer a balance among science, aeronautics, exploration, and human space flight programs, all of which can attract and employ scientists, engineers, and technicians across a broad range of fields in science, technology, mathematics, and engineering.

(b) PARTICIPATION IN INNOVATION AND COMPETITIVENESS PROGRAMS.—The Administrator of the National Aeronautics and Space Administration shall fully participate in any interagency efforts to promote innovation and economic competitiveness through scientific research and development within the spending levels cited in subsection (a).

Amend the title so as to read:

A bill to authorize programs for support of the early career development of science and engineering researchers, and for support of graduate fellowships, and for other purposes.

II. PURPOSE OF THE BILL

The purpose of the bill is to bolster the research base in the United States by strengthening federal investment in the basic research that provides the background knowledge necessary for future technology developments.

III. BACKGROUND AND NEED FOR THE LEGISLATION

Science, technology, and global competitiveness

While the U.S. continues to lead the world in measures of innovation capacity—research and development (R&D) spending, number of scientists and engineers, scientific output, etc.—recent statistics on the level of U.S. support for research relative to other countries indicate that this lead may be slipping. At the same time, other nations—particularly emergent nations such as China and India—have recognized the importance of innovation to economic growth, and are pouring resources into their scientific and technological infrastructure, rapidly building their innovation capacity and increasing their ability to compete with the United States in the global economy.

Federal role in innovation

A number of recent reports have outlined the issues that the United States faces as it tries to maintain a position of leadership in science and technology and have offered recommendations for

what the nation should do to ensure its economic and national security. The National Academy of Sciences (NAS) report, Rising Above the Gathering Storm, describes how science and engineering are critical to American prosperity, examines how the United States is doing relative to other countries in science and technology today and makes recommendations on how federal programs in support of research and education could be improved to position the nation to make the next generation of innovations needed to maintain U.S. competitiveness and security going forward. Other reports on this topic include the National Innovation Initiative, from the Council on Competitiveness, which emphasizes the need to strengthen the innovation infrastructure in the United States to ensure future prosperity, and the National Defense Education and Innovation Initiative, from the Association of American Universities, which focuses on actions universities and the federal government can take to meet oncoming economic and security challenges.

This Act focuses on some of the recommendations made in these reports that relate to science and technology research funding. It strengthens federal support for science and engineering researchers at the early stages of their careers, expands the Integrative Graduate Education and Research Traineeship program at NSF, establishes a Presidential Innovation Award, establishes a coordination office for research infrastructure, and authorizes NSF to support research on innovation.

Support for young researchers is essential because they face the greatest hurdles in setting up laboratories and obtaining research grants, yet they are the ones who are most likely to cross traditional disciplinary boundaries and do innovative or transformative work.

IV. HEARING SUMMARY

During the 109th Congress, the House Committee on Science held two hearings relevant to H.R. 363. On Thursday, July 21, 2005, the Committee on Science held a hearing to examine the relationship between federal science and engineering research and education investments and U.S. economic competitiveness. The witnesses were Mr. Nicholas Donofrio, Executive Vice President for Innovation and Technology at IBM Corporation; Mr. John Morgridge, Chairman of Cisco Systems, Incorporated, and part-time professor at Stanford University's Graduate School of Business; and Dr. William Brody, President of The Johns Hopkins University and co-chair of the Council on Competitiveness working group that authored the National Innovation Initiative.

The witnesses emphasized that the educational system needs to provide students with a solid background in science and engineering fields so that the United States has access to a technologically-literate workforce. The witnesses also stressed that investments in basic university research provide the background knowledge necessary for future technology developments.

On Thursday, October 20, 2005, the Committee on Science held a hearing to receive testimony on the report released by NAS on October 12 entitled Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future. The report, which was requested by Congress, recommends ways to strengthen research and education in science and technology. The

witnesses were Mr. Norman R. Augustine, retired Chairman and CEO of the Lockheed Martin Corporation (Mr. Augustine chaired the committee that wrote the report); Dr. P. Roy Vagelos, retired Chairman and CEO of Merck & Co. (Dr. Vagelos served on the committee that wrote the report), and Dr. William A. Wulf, President of the National Academy of Engineering.

The witnesses emphasized that solving the problems of global economic competition requires significant improvements to America's K–12 and higher education systems and greater support for basic research, including innovative research in cutting-edge fields. The witnesses also stressed that the U.S. ability to innovate has been the source of U.S. prosperity and security, so future policy decisions should be aimed at generating an environment that supports innovation by creating a vibrant research base, educated workforce, and social climate that encourages students to pursue science and technology degrees.

V. COMMITTEE ACTIONS

On January 10, 2007, Rep. Bart Gordon, Chairman of the Committee on Science and Technology, introduced H.R. 363, the Sowing the Seeds Through Science and Engineering Research Act, a bill to authorize appropriations for basic research and research infrastructure in science and engineering, and for support of graduate fellowships, and for other purposes.

The Full Committee on Science and Technology met on Wednesday, February 28, 2007, to consider the bill. Mr. Gordon and Mr. Hall offered a manager's amendment in the nature of a substitute that

- removed Section 2, which spelled out authorizations of specific appropriations at the various federal agencies;
- recast Section 7 as a coordination activity at OSTP;
- added a section directing NIST to transmit a report to Congress on their efforts to recruit and retain young scientists and engineers; and
- added a section expressing the sense of Congress that a balanced and robust research program at NASA is a critical component of the national innovation agenda.

The amendment was adopted by a voice vote. The bill was then approved by a voice vote.

Rep. Ralph Hall, ranking minority member of the Committee, moved that the Committee favorably report the bill, H.R. 363, to the House with the recommendation that the bill do pass, and that the staff be instructed to make technical and conforming changes to the bill and prepare the legislative report and that the Chairman take all necessary steps to bring the bill before the House for consideration. With a quorum present, the motion was agreed to by a voice vote.

VI. SUMMARY OF MAJOR PROVISIONS OF THE BILL

This bill

- authorizes a program at NSF to fund young faculty via grants of at least $80,000 per year over five years to help researchers pursue innovative or transformative research and requires that NSF allocate at least 3.5 percent of funds appro-

priated to Research and Related Activities (R&RA) for these grants;

• establishes a similar program at the Department of Energy (DOE) Office of Science with authorized appropriations of $25,000,000 for each of fiscal years 2008 through 2012;

• directs NSF to spend at least 1.5 percent of R&RA funds on the Integrative Graduate Education and Research Traineeship program;

• establishes a Presidential Innovation Award for individuals who develop unique scientific or engineering breakthroughs in the national interest;

• establishes at the Office of Science and Technology Policy (OSTP) a National Coordination Office for Research Infrastructure, charged with identifying and prioritizing deficiencies in research facilities and instrumentation in academic institutions and in national laboratories;

• allows NSF to support research on the process of innovation and the teaching of inventiveness;

• directs NIST and DOE to report to Congress on their efforts to recruit and retain young scientists and engineers; and

• expresses the sense of Congress that a balanced and robust science program at NASA contributes significantly to innovation and economic competitiveness.

VII. SECTION-BY-SECTION ANALYSIS

Section 1. Short title

Sowing the Seeds Through Science and Engineering Research Act

Section 2. National Science Foundation early career awards for science and engineering researchers

Establishes a program at NSF to award grants to scientists and engineers at the early stage of their careers at institutions of higher education and research institutions. Allows the existing Faculty Early Career Development (CAREER) Program to be designated as the mechanism for awarding such grants. Sets the duration of the awards to be five years and the amount per year to be at least $80,000. Eligible applicants are tenure-track faculty at institutions of higher education or the equivalent at research organizations, such as observatories. Requires the award recipients to be selected on a competitive, merit-reviewed basis, based on the intellectual merit of the proposed work; the innovative or transformative nature of the proposed research; the extent to which the proposal integrates research and education, including undergraduate education in science and engineering disciplines; and the potential of the applicant for leadership at the frontiers of knowledge. Requires the Director of NSF to allocate at least 3.5 percent of funds appropriated for R&RA each year to the grants program under this section.

Requires the Director of NSF to provide to Congress within six months a report describing the distribution of the CAREER Program awardees since fiscal year 2001 among different types of institutions. Requires the Director to provide to Congress within two

years a report evaluating the impact of the CAREER Program on the ability of young faculty to compete for NSF research grants.

Section 3. Department of Energy early career awards for science and engineering researchers

Establishes at the DOE Office of Science a program to award grants to scientists and engineers at the early stage of their careers at institutions of higher education and research institutions. Allows the awards to be for up to five years and the amount per year to be at least $80,000. Eligible applicants are tenure-track faculty at institutions of higher education or the equivalent at research organizations, such as observatories. Requires the award recipients to be selected via a merit-reviewed competition, based on the intellectual merit of the proposed work; the innovative or transformative nature of the proposed research; the extent to which the proposal integrates research and education, including undergraduate education in science and engineering disciplines; and the potential of the applicant for leadership at the frontiers of knowledge. Requires the Director of the Office of Science to give priority to proposals in which the proposed work includes collaboration with a National Laboratory. Authorizes appropriations for the program of $25,000,000 for each of the fiscal years 2008 through 2012.

Requires the Director of the Office of Science to provide to Congress within three months of enactment a report on efforts to recruit and retain young scientists and engineers at the early stages of their careers at the civilian National Laboratories. The report shall include a description of incentives for recruitment and retention, an evaluation of the effectiveness of the incentives, a description of barriers to recruitment and retention, and the amount and source of funding devoted to recruitment and retention efforts.

Section 4. Integrative Graduate Education and Research Traineeship Program

Directs NSF to allocate at least 1.5 percent of the amounts appropriated for R&RA to the Integrative Graduate Education and Research Traineeship (IGERT) program, which provides support for graduate students in fields relevant to national needs. It requires NSF to coordinate with other agencies to expand the interdisciplinary nature of the IGERT program and authorizes NSF to accept funds from other agencies to carry out the program.

Section 5. Presidential Innovation Award

Establishes the Presidential Innovation Award, presented periodically, on the basis of recommendations from the Director of the OSTP, to citizens or permanent residents of the U.S. who develop unique scientific or engineering ideas judged to stimulate scientific and engineering advances in the national interest.

Section 6. National Coordination Office for Research Infrastructure

Establishes a National Coordination Office for Research Infrastructure under OSTP to identify and prioritize deficiencies in research facilities and instrumentation in academic institutions and national laboratories. Requires the Director of OSTP to provide an annual report to Congress describing a list of infrastructure projects proposed for funding.

Section 7. Research on innovation and inventiveness

Authorizes NSF, in carrying out its research programs on science policy and the science of learning, to support research on the process of innovation and the teaching of inventiveness.

Section 8. Report on National Institute of Standards and Technology efforts to recruit and retain early career science and engineering researchers

Requires the Director of NIST to provide to Congress within three months of enactment a report on efforts to recruit and retain young scientists and engineers at the early stages of their careers at NIST and joint institutes.

Section 9. NASA's contribution to innovation

Expresses the sense of Congress that a balanced science program at NASA contributes significantly to innovation and economic competitiveness. Directs the Administrator of NASA to fully participate in interagency efforts to promote innovation.

VIII. COMMITTEE VIEWS

Funding for early career researchers

A number of reports, including Rising Above the Gathering Storm from the NAS, emphasize the importance of funding researchers at the early stages of their careers in science and engineering. The Committee agrees that it is vital to provide support that allows young researchers to establish their laboratories and begin research projects that test accepted notions about existing fields and that launch new fields. The Committee expects that NSF will continue its successful CAREER program, and the Act requires that, as overall funding for research expands at NSF, funding for CAREER grants expand proportionately to ensure that the pipeline of researchers remains strong. The Committee expects that DOE will build on its existing programs for young investigators to carry out the early career program authorized in this Act. The Committee authorizes DOE, in awarding the grants, to favor proposals that include collaboration with the DOE National Laboratories. The Committee intends that use of DOE facilities, such as light sources, particle accelerators, nanoscale science research centers, and supercomputers, be considered as collaboration with the laboratories, provided that there is substantial time spent at the facility or considerable interactions with DOE staff associated with their use.

Integrative graduate education and research traineeships

The Integrative Graduate Education and Research Traineeship (IGERT) program has been developed to meet the challenges of educating U.S. Ph.D. scientists and engineers who will pursue careers in research and education, with interdisciplinary backgrounds, deep knowledge in chosen disciplines, and technical, professional, and personal skills to become leaders and creative agents for change. The program is intended to catalyze a cultural change in graduate education, for students, faculty, and institutions, by establishing innovative new models for graduate education and training in a fertile environment for collaborative research that tran-

scends traditional disciplinary boundaries. It is also intended to facilitate diversity in student participation and preparation, and to contribute to a world-class, broadly inclusive, and globally engaged science and engineering workforce. The Committee directs that this program be sustained and grow along with overall NSF research budgets.

Innovation awards

The Committee finds that a Presidential Innovation Award can stimulate and focus research in selected areas of critical national need. An example might be an award given for a specific breakthrough in clean energy technology. The publicity associated with this award can help entice and motivate children to study subjects that lead to these innovations, can help direct young researchers towards solving these pressing national problems, and can help sustain the work of the awardees, who are recognized as the most successful innovators.

National coordination office

Often cutting-edge research requires the development and use of complex new instruments or systems of instruments. Because the purchase of major facilities and instrumentation cannot be distributed widely and evenly, difficult choices must be made. Such choices require careful evaluation, prioritization, oversight, and coordination across federal agencies. The Committee directs that OSTP establish an office to set the federal agenda in this area, so that federal funding agencies can work together to tackle the highest priority projects.

Research on innovation and inventiveness

The Committee expects NSF, in supporting research on the process of invention and the teaching of inventiveness, to involve the Directorate for Engineering, the Directorate for Social, Behavioral, and Economic Sciences, and the Directorate for Education and Human Resources. In addition, the Committee expects that such activities might include research aimed at increasing understanding of the creative mind and creative environment, including studying the neural, cognitive, and social factors that facilitate or inhibit moments of innovation and discovery and the social and cognitive processes underlying the development of curiosity and problem solving skills; developing measures of inventiveness; studying the cultural, social, and geographic contexts of innovation, including examining the influence on inventiveness of flexible learning environments and the role of parents, teachers, and mentors; and examining what organizational forms and practices, including patents and other governmental policies, facilitate innovation, its transformation into products, and the movement of products to markets.

NIST report on efforts to recruit and retain early career science and engineering researchers

The report required in Section 8 is designed to provide the Committee with information on how the NIST laboratories are using their existing authorities to attract and retain early career researchers with training in fields of national importance. The Com-

mittee believes that it is necessary to ensure that NIST is able to hire and retain young researchers to help replace the growing number of NIST laboratory scientists who are approaching retirement eligibility.

NASA's contribution to innovation

The Committee stresses that NASA contributes significantly to innovation in and the economic competitiveness of the United States. As such, it is imperative that the NASA Administrator be a full participant in any interagency activity or discussion related to efforts to promote innovation and economic competitiveness.

IX. COST ESTIMATE

A cost estimate and comparison prepared by the Director of the Congressional Budget Office under section 402 of the Congressional Budget Act of 1974 has been timely submitted to the Committee on Science and Technology prior to the filing of this report and is included in Section X of this report pursuant to House Rule XIII, clause 3(c)(3).

H.R. 363 does not contain new budget authority, credit authority, or changes in revenues or tax expenditures. Assuming that the sums authorized under the bill are appropriated, H.R. 363 does authorize additional discretionary spending, as described in the Congressional Budget Office report on the bill, which is contained in Section X of this report.

X. CONGRESSIONAL BUDGET OFFICE COST ESTIMATE

MARCH 8, 2007.

Hon. BART GORDON,
Chairman, Committee on Science and Technology,
House of Representatives, Washington, DC.

DEAR MR. CHAIRMAN: The Congressional Budget Office has prepared the enclosed cost estimate for H.R. 363, the Sowing the Seeds Through Science and Engineering Research Act.

If you wish further details on this estimate, we will be pleased to provide them. The CBO staff contact is Daniel Hoople.

Sincerely,

PETER R. ORSZAG.

Enclosure.

H.R. 363—Sowing the Seeds Through Science and Engineering Research Act

Summary: H.R. 363 would authorize funding for programs within the National Science Foundation (NSF) and the Department of Energy (DOE) that provide research grants to scientists and engineers in the early phases of their careers. The bill also would establish the National Coordination Office for Research Infrastructure within the Office of Science and Technology Policy (OSTP). The new office would be responsible for reviewing and reporting on research infrastructure across the federal government. CBO estimates that implementing H.R. 363 would cost $921 million over the 2008–2012 period, assuming appropriation of the necessary funds. Enacting H.R. 363 would have no effect on direct spending or revenues.

H.R. 363 contains no intergovernmental or private-sector mandates as defined in the Unfunded Mandates Reform Act (UMRA); the bill would benefit public institutions of higher education.

Estimated cost to the Federal Government: The estimated budgetary impact of H.R. 363 is shown in the following table. The cost of this legislation falls within budget functions 250 (general science, space, and technology) and 800 (general government).

	By fiscal year, in millions of dollars—					
	2007	2008	2009	2010	2011	2012
SPENDING SUBJECT TO APPROPRIATION						
Spending Under Current Law:						
NSF's Graduate Education and Early Career Programs:						
Estimated Budget Authority [a]	217	0	0	0	0	0
Estimated Outlays	228	174	76	27	9	0
Proposed Changes:						
NSF's Early Career Awards for Science and Engineering Researchers:						
Estimated Authorization Level	0	152	155	158	161	164
Estimated Outlays	0	33	99	135	150	159
DOE's Early Career Awards for Science and Engineering Researchers:						
Authorization Level	0	25	25	25	25	25
Estimated Outlays	0	6	16	22	24	25
NSF's Integrative Graduate Education and Research Traineeship Program:						
Estimated Authorization Level	0	65	66	68	69	70
Estimated Outlays	0	14	42	58	64	68
National Coordination Office for Research Infrastructure:						
Estimated Authorization Level	0	2	2	2	2	2
Estimated Outlays	0	2	2	2	2	2
Other Reporting Requirements:						
Estimated Authorization Level	0	1	0	0	0	0
Estimated Outlays	0	1	0	0	0	0
Total Changes:						
Estimated Authorization Level	0	244	247	252	256	260
Estimated Outlays	0	55	158	216	239	253
Spending Under H.R. 363:						
Estimated Authorization Level [a]	217	244	247	252	256	260
Estimated Outlays	228	229	234	243	248	253

[a] The 2007 level is the amount appropriated for that year for NSF's graduate education and early center programs.

Basis of estimate: H.R. 363 would authorize funding for programs that provide support for students and researchers in the fields of science and engineering. For those provisions, CBO estimates that implementing H.R. 363 would cost $921 million over the 2008–2012 period, assuming appropriation of the necessary funds. For this estimate, CBO assumes that the bill will be enacted in fiscal year 2007 and that spending will follow historical patterns.

Early career awards for science and engineering researchers

Section 2 would direct NSF to allocate no less than 3.5 percent of amounts appropriated for scientific research (approximately $4.2 billion in 2007) to award competitive grants to researchers in tenure-track or equivalent positions at institutions of higher education or nonprofit research organizations. According to NSF, such a program would be similar to the Faculty Early Career Development Program currently in operation. CBO estimates that implementing this provision would cost $33 million in 2008 and $576 million over the 2008–2012 period to fund this program at the percentage speci-

fied in the bill, and assuming that future NSF appropriations for scientific research are adjusted for anticipated inflation.

Section 3 would authorize the appropriation of $25 million a year over the 2008–2012 period to the DOE Office of Science for the operation of a similar early career grant program. CBO estimates that implementing this program would cost $6 million in 2008 and $93 million over the 2008–2012 period. DOE has allocated about $1 million for a similar program in 2007.

Integrative Graduate Education and Research Traineeship Program

Section 4 would direct NSF to allocate no less than 1.5 percent of amounts appropriated for scientific research to the Integrative Graduate Education and Research Traineeship (IGERT) Program. IGERT is an NSF-wide effort to provide funding to universities that offer stipend support and tuition allowances to undergraduate and graduate students in science and engineering. Currently, NSF plans to use about $67 million of science-related funding for this activity in 2007. (This is approximately 1.5 percent of NSF's scientific research budget.) CBO estimates that continuing that level of effort for this program over the 2008–2012 period would cost $246 million, assuming adjustments for anticipated inflation.

National Coordination Office for Research Infrastructure

Section 6 would establish a National Coordination Office for Research Infrastructure within the OSTP to review and report on research facilities infrastructure throughout the United States. Using information from OSTP and based on similar programs, CBO estimates that the office would require an increase in staff and overall administrative expenses of about $2 million annually to coordinate and report to the Congress on research infrastructure.

Other reporting requirements

H.R. 363 would increase the reporting requirements of the NSF, DOE, and the National Institute of Standards and Technology. The majority of the reports specified in the bill would be prepared within three to six months following enactment of the bill and would be nonrecurring. CBO estimates this provision would cost about $1 million in 2008.

Intergovernmental and private-sector impact: H.R. 363 contains no intergovernmental or private-sector mandates as defined in UMRA. Public institutions of higher education would benefit from research funds and activities authorized in the bill.

Estimate prepared by: Federal Costs: Daniel Hoople and Matthew Pickford. Impact on State, Local, and Tribal Governments: Lisa Ramirez-Branum. Impact on the Private Sector: Craig Cammarata.

Estimate approved by: Peter H. Fontaine, Deputy Assistant Director for Budget Analysis.

XI. COMPLIANCE WITH PUBLIC LAW 104–4

H.R. 363 contains no unfunded mandates.

XII. COMMITTEE OVERSIGHT FINDINGS AND RECOMMENDATIONS

The oversight findings and recommendations of the Committee on Science and Technology are reflected in the body of this report.

XIII. STATEMENT ON GENERAL PERFORMANCE GOALS AND OBJECTIVES

Pursuant to clause (3)(c) of House rule XIII, the goals of H.R. 363 are to establish programs to provide grants to researchers just starting their careers to conduct innovative or transformative research; to authorize the acquisition of shared scientific equipment by institutions of higher education; to authorize a program at NSF to fund Integrative Graduate Education and Research Traineeships; to establish a Presidential Innovation Award; to create an office at OSTP for coordinating federal funding of research facilities and instrumentation; and to authorize research at NSF on innovation.

XIV. CONSTITUTIONAL AUTHORITY STATEMENT

Article I, section 8 of the Constitution of the United States grants Congress the authority to enact H.R. 363.

XV. FEDERAL ADVISORY COMMITTEE STATEMENT

H.R. 363 does not establish nor authorize the establishment of any advisory committee.

XVI. CONGRESSIONAL ACCOUNTABILITY ACT

The Committee finds that H.R. 363 does not relate to the terms and conditions of employment or access to public services or accommodations within the meaning of section 102(b)(3) of the Congressional Accountability Act (Public Law 104–1).

XVII. EARMARK IDENTIFICATION

H.R. 363 does not contain any congressional earmarks, limited tax benefits, or limited tariff benefits as defined in clause 9(d), 9(e), or 9(f) of rule XXI.

XVIII. STATEMENT ON PREEMPTION OF STATE, LOCAL, OR TRIBAL LAW

This bill is not intended to preempt any state, local, or tribal law.

XIX. CHANGES IN EXISTING LAW MADE BY THE BILL, AS REPORTED

None.

XX. COMMITTEE RECOMMENDATIONS

On February 28, 2007, the Committee on Science and Technology favorably reported the Sowing the Seeds Through Science and Engineering Research Act by a voice vote, and recommended its enactment.

XXI. PROCEEDINGS OF THE FULL COMMITTEE MARKUP ON H.R. 363, SOWING THE SEEDS THROUGH SCIENCE AND ENGINEERING RESEARCH ACT

WEDNESDAY, FEBRUARY 28, 2007

HOUSE OF REPRESENTATIVES,
COMMITTEE ON SCIENCE AND TECHNOLOGY,
Washington, DC.

The Committee met, pursuant to call, at 10:05 a.m., in Room 2318 of the Rayburn House Office Building, Hon. Bart Gordon [Chairman of the Committee] presiding.

Chairman GORDON. Good morning. The Committee on Science and Technology will come to order. Pursuant to notice, the Committee on Science and Technology meets to consider the following measures: H.R. 363, *Sowing the Seeds Through Science and Engineering Research Act;* H.R. 1068, *To amend the High-Performance Computing Act of 1991;* H.R. 1126, *To reauthorize the Steel and Aluminum Energy Conservation and Technology Competitiveness Act of 1988;* and H.R. 85, the *Energy Technology Transfer.*

Today, we are here to markup these four bipartisan bills. They are all good bills and I am happy to support them all. I want to note that all of these bills have extensive legislative histories in prior Congress. It is not my intention for this committee to regularly markup legislation that has not gone through the Subcommittee hearing process; however, as I noted before, these bills were fully vetted in the last Congress and they are ready to go.

I have said it before and I will say it again. I want this committee to be a Committee of good ideas. Here, we have four good ideas and I hope four bills everybody on this committee can get behind and support.

Now I recognize Mr. Hall to present his opening remarks.

Mr. HALL. Mr. Chairman, I thank you for calling the markup today. We have before us today, as you say, four bills that were passed by this Committee in the 109th Congress, and I look forward to their easy passage again today. The continued bipartisan support for these bills reflects their broad appeal and the fact that they are good bills and they are good for this country.

The National Academy of Science's *Rising Above the Gathering Storm* and the President's American Competitiveness Initiative have emphasized the importance of supporting high-risk research, young researchers, and research infrastructure in the U.S. to ensure that the next generation of high tech industries and products are developed in the United States.

H.R. 363 is a step in the right direction. I thank the Chairman for his willingness to work with us on improving this legislation, and recommend a yes vote for the manager's amendment and for the underlying measure.

As the Chairman has already mentioned, Mrs. Biggert has been instrumental in getting a high-performance computing bill through the Committee and the full House, for that matter, in two previous

Congresses, and I certainly applaud her and Mr. Baird for their persistence. I recommend a yes vote on H.R. 1068 and trust the Senate will follow suit when it is sent to them once again.

I am happy to see Mr. Lipinski and Mr. Ehlers continuing former Representative Hart's lead in their continuing effort to reauthorize the *Steel and Aluminum Energy Conservation and Technology Competitiveness Act of 1988.* This is another bill that has been passed twice by our committee in the full House, and I also recommend a yes vote for H.R. 1126.

I would also recommend a yes vote for Representative Biggert and Representative Miller's bill, H.R. 85, that will provide for the establishment of centers to encourage demonstration and commercial applications of advanced energy methods and technology. As I understand, they will be offering an amendment in the nature of a substitute that makes technical corrections, which I support as well.

Mr. Chairman, I look forward to these bills moving to the Floor. With that, I yield back the balance of my time.

[The prepared statement of Mr. Hall follows:]

PREPARED STATEMENT OF REPRESENTATIVE RALPH M. HALL

Mr. Chairman, thank you for calling this markup today. We have before us today four bills that were passed by this committee in the 109th Congress, and I look forward to their easy passage again today. The continued bipartisan support for these bills reflects their broad appeal and the fact that they are good bills that are good for the country.

The National Academy of Science's *Rising above the Gathering Storm* and the President's American Competitiveness Initiative (ACI) have emphasized the importance of supporting high-risk research, young researchers, and research infrastructure in the United States to ensure that the next generation of high-tech industries and products are developed in the United States. H.R. 363 is a step in the right direction. This bill authorizes programs at the National Science Foundation (NSF) and the Department of Energy (DOE) Office of Science to provide grants to researchers just starting their careers to conduct high-risk, high-return research at the cutting edge of new scientific fields. In addition, it requires NIST to report to us on their efforts to recruit and retain young scientists and engineers, and it includes our recognition that NASA should be at the table for any interagency efforts to promote innovation and economic competitiveness. I thank the Chairman for his willingness to work with us on improving this legislation and recommend a "yes" vote for the managers' amendment and for the underlying measure.

As the Chairman has already mentioned, Mrs. Biggert has been instrumental in getting this bill through the Committee, and the full House for that matter, in two previous Congresses, and I applaud her and Mr. Baird for their persistence. I recommend a "yes" vote on H.R. 1068 and trust the Senate will follow suit when it is sent to them once again.

I am happy to see Mr. Lipinski and Mr. Ehlers continuing former Representative Hart's lead in their continuing effort to reauthorize the *Steel and Aluminum Energy Conservation and Technology Competitiveness Act of 1988.* This is another bill that has been passed twice by our committee, and the full House and I also recommend a "yes" vote for H.R. 1126.

I would also recommend a "yes" vote for Rep. Biggert and Rep. Miller's bill, H.R. 85 that will provide for the establishment of centers to encourage demonstration and commercial application of advanced energy methods and technologies. I understand they will be offering an amendment in the nature of a substitute that makes technical corrections which I will support as well.

Mr. Chairman, I look forward to these bills moving to the floor and being passed. With that I yield back the balance of my time.

Chairman GORDON. Thank you, Mr. Hall.

Without objection, Members may place statements in the record.

[The prepared statement of Mr. Mitchell follows:]

PREPARED STATEMENT OF REPRESENTATIVE HARRY MITCHELL

Thank you, Mr. Chairman.

America needs innovators and leaders if it wants to remain competitive in the global economy. This is especially true when it comes to science and engineering.

Retaining scientists and engineers, however, is often difficult, because they receive such low pay early-on in their careers.

If we don't invest early in our future innovators, we will fall behind.

Spreading technological innovation across existing industry is another indispensable part of maintaining our competitiveness.

In my view, we should help businesses access both the technology and the research they need to modernize and improve their efficiency.

Industry standards can also play a role.

Today, we are considering four bills to address these issues and I look forward to working on them.

I yield back the balance of my time.

Chairman GORDON. At this point, we will now consider H.R. 363, *Sowing the Seeds Through Science and Engineering Research Act.* I yield myself five minutes to describe the bill.

H.R. 363 will implement several important provisions for the National Academy of Science's report, *"Rising Above the Gathering Storm."* Let me take just a moment for the new Members on the Committee. The *Rising Above the Gathering Storm* came about when Sherry Boehlert, our former Chairman, Lamar Alexander, and Jeff Bingaman, made a recommendation to the National Academies that they give us a report on competitiveness in the 21st century. It is my blueprint for this committee. It is an exceptional piece of work. Norm Augustine, who was the former Chairman of the Lockheed Martin Marietta headed this committee. He will be before us in about two weeks to go over it again. I hope that if you have not seen it, there is an executive summary. I hope that your staffs will make you aware of it. It is something I talk about at home all the time. It is something that is really important for the country, and very succinct. So you will see a lot of what we are doing now is pulling out pieces of that, and if you haven't had a chance, I would hope that you would get a chance to review it. It would be good for everybody.

That report recommends that we, and I am quoting, "sustain and strengthen the Nation's traditional commitment to long-term basic research that has the potential to be transformational, to maintain the flow of new ideas that fuel the economy, provide security, and enhance the quality of life." The *Gathering Storm* doesn't merely offer this abstract recommendation, it proposes six specific high-priority action items to realize it. I hope in time we will be able to implement all six of those items.

But H.R. 363 isn't trying to do all that at once. Here, we have identified several action items that address research that fall clearly within the jurisdiction of the Committee that have broad bipartisan support, and that have, for the most part, already passed through the Committee in a bill reported during the 109th Congress. In my vision, when this committee notes good ideas with broad bipartisan support, we are going to move those ideas forward. We have been strategizing with the Members on both sides of the aisle to determine exactly how to structure this bill. In a few moments, Mr. Hall and I will present the result of those negotiations as a manager's amendment to the nature of a substitute. I will speak about the details of that amendment when it is offered.

I urge my opponent—rather, colleagues, to support this bill—I hope there are no opponents here—which invest in our nation's capacity to innovate. It is through such measures that we are guaranteed a scientific infrastructure to support a continued high standard of living in our Nation in the decades ahead.

I recognize Mr. Hall to present any remarks on the bill.

Mr. HALL. Mr. Chairman, I will speak a little bit later when this lady to my right punches me and says it is time to go.

But in the meantime, I just want to say when we have Norm Augustine here, I hope all of us really listen to him. I don't know if he is a Democrat or Republican, but I wonder sometimes why we can't have a guy, clean guy, successful guy like him running for President on one of the tickets. He really is a great man. He is a giver and he has been before these committees. A lot of times, he leads almost every effort worthwhile in this country. Norm Augustine is really a great American.

That is all I have to say. I yield back my time.

Chairman GORDON. You know, I concur and I really do encourage you and the staff members that are here of Members that aren't here yet, to get your Member here today—for this particular meeting with Norm Augustine. You really will be impressed. It is something we can do for our country and it is something you can take home, also.

Does anyone else wish to be recognized?

Then I ask unanimous consent that the bill is considered as read, and open to amendments at any point, and that the Members proceed with the amendments in the order of the roster.

Without objection, so ordered.

The first amendment on the roster is a Chairman's amendment offered in the nature of a substitute. I ask unanimous consent that the amendment in the nature of a substitute be treated as original text for the purposes of amendment under the five-minute rule. Without objection, so ordered.

The Clerk will report the amendment.

The CLERK. Amendment in the nature of a substitute to H.R. 363, offered by Mr. Gordon of Tennessee and Mr. Hall of Texas.

Chairman GORDON. I ask unanimous consent to dispense with the reading. Without objection, so ordered.

I recognize myself for five minutes to explain the substitute amendment.

This amendment in the nature of a substitute which I offered with Ranking Member Hall represents the result of a bipartisan agreement, and I think agreement sounds better than negotiation, because it wasn't a negotiation, it was an agreement. It incorporates several changes from the original bill as introduced.

We have eliminated the original Section 2 that spelled out specific authorizations of appropriations for research at various agencies. The Committee will address these matters separately as part of reauthorization bills of NIST and the National Science Foundation, and in the future, DOE authorization. The increases for the Office of Science at the Department of Energy proposed under the American Competitiveness Initiative are covered by the DOE authorization statute that runs through fiscal year 2009. Section 7 has been recast as a coordinated activity under the auspices of the Office of Science and Technology Policy. This section creates a

mechanism for assessing, prioritizing, maintaining the Nation's research facilities and major instrumentation.

Finally, the amendment adds two additional sections from H.R. 5356 as reported by the Committee last year. The first directs the National Institute of Standards and Technology to report on their efforts to recruit new scientists and engineers. The second expresses the sense of Congress that a balanced and robust research program at NASA is critical to national competitiveness. The amendment retains the programs contained in H.R. 363 as introduced that focus on early career awards to young researchers through grant programs at the National Science Foundation and DOE. These provisions, as well as provisions expanding the National Science Foundation's graduate traineeship program are identical to the language in H.R. 5356 approved by the Committee last year. This is a bipartisan amendment that authorizes several valuable programs to strengthen basic research in the fields that would advance innovation and contribute to the National Competitiveness.

I urge the approval of this committee, and now, let me tell you in English what I was just mentioning there.

All these bills today by and large either passed this committee or passed this committee and the House last time, but because of either jurisdictional problems, petty jurisdictional—well, I guess I shouldn't say that—jurisdictional problems either here or in the Senate, because there were parts of bigger bills that did not get enacted in law.

So what we tried to do was slim the bills down so that they are basically our jurisdiction. We tried to accommodate the Senate on some of their quirks over there, and this again is an effort to try to not just talk about things, but really try to get some real competitiveness advantages for the United States. These are small bills, but bills we can get passed, and those really—that was the function of the various changes that we made.

The other—since Mr. Hall didn't discuss it earlier, I think now is the time for Mr. Hall, if he had any—if he would like to———

Mr. HALL. Yeah. We might agree on what petty differences mean. That is what the other side brings up.

We have not had any petty differences up to this time, so—H.R. 363, as the Chairman has said, authorizes programs at the National Science Foundation and at the Department of Energy, Office of Science, to provide grants to researchers that are just starting their careers to conduct high-risk, high return research at the cutting edge of new scientific fields. In addition, it requires NIST to report to us on their efforts to recruit and retain young scientists and engineers. It includes our recognition that NASA should be at the table for any interagency efforts to promote innovation and economic competitiveness.

I want to thank the Chairman and his staff. They have worked well with our staff. They have had some agreements and disagreements, but they worked all of them out. They have taken some of the recommendations we made. We appreciate that, and we look forward to passing these bills today and working now and in the future as this Chairman gives us leadership.

Re-yield back to you, sir.

Chairman GORDON. Thank you.

Are there any amendments to the amendment in the nature of a substitute?

If not, the vote occurs on the amendment in the nature of a substitute. All in favor, say aye. Opposed, nay. The ayes have it.

The vote is on the bill, H.R. 363 as amended. All those in favor, say aye. All those opposed will say no. In the opinion of the Chair, the ayes have it.

I recognize Mr. Hall to offer a motion.

Mr. HALL. Mr. Chairman, I move that the Committee favorably report H.R. 363 as amended to the House with a recommendation that the bill do pass. Furthermore, I move that the staff be instructed to prepare the legislative report and make necessary technical and conforming changes, and that the Chairman take all necessary steps to bring the bill before the House for consideration.

Chairman GORDON. The question is on the motion to report the bill favorably. Those in favor of the motion will signify by saying aye. Opposed, no. The ayes have it. The bill is favorably reported. Without objection, the motion to reconsider is laid upon the table.

I move that Members have two subsequent calendar days in which to submit supplemental, minority, or additional views on the measure.

I move pursuant to Clause I of Rule 22 of the Rules of the House of Representatives that the Committee authorizes the Chairman to offer such motions as may be necessary in the House to adopt and pass H.R. 363, *Sowing Seeds Through the Science and Engineering Research Act,* as amended. Without objection, so ordered.

Let me finally say that these amendments—and I thank all of you for a smooth hearing, smooth markup. We went fairly quick today, but the reason is there was a lot of staff work put in before this, and I thank the staff for that. I thank the Members for their patience, and this is the conclusion of our Committee markup.

Now let me—Ranking Member Hall has brought to my attention that my gavel was a little fast earlier, and so for that reason, I would like to ask unanimous consent that Mr. McCaul have an opportunity to both place in the record any statement, as well as make an oral statement at this time.

Mr. MCCAUL. I thank the Chairman for that opportunity, and I want to commend the Chairman and Ranking Member for introducing H.R. 363. It is an important bill. As we read the National Academy of Science's report on the *Rising Above the Gathering Storm,* clearly illustrates why we need this legislation.

I was proud last Congress to have introduced the *Research for Competitiveness Act,* which your bill incorporates many of those provisions, so I want to thank you for the opportunity to put this before the Committee again, and now that it passed before the House Floor, hopefully it will get success this time in this Congress on that bill.

It is a very important bill for teaching young scientists and engineers at our universities, such as the one in my hometown of Austin, University of Texas. So again, I want to commend you for your efforts on this important legislation.

Chairman GORDON. Thank you, Mr. McCaul.

Yeah, it is fun being able to do something productive, and I hope we are going to be able to do that.

You know, we are taking, to some extent, the low-hanging fruit right now, but to continue this, the Subcommittees have got to get to work and get out more good product. I think that after we pass these four bills today, that we will probably have passed more legislation into the Congress than any one committee, even the Post Office Committee, which is—I am pleased to announce.

Now let me, if I could, take a brief interlude from the bills, because I would like to announce the appointment of our new Vice Chairmen. The Vice Chairman of the Energy and Environment Committee will be Ms. Gabrielle Giffords from Arizona; Space and Aeronautics, Mr. Charlie Melancon. I guess I just screwed that name up about as well as anybody, haven't I? Okay. Research and Science Education will be Mr. Jerry McNerney; Technology and Innovation, Mr. Harry Hall, Investigations and Oversight, Ms. Darlene Hooley.

And let me also take this opportunity, Mr. Bonner is not here right now, but he had asked me the other day about a particular Codel, and let me just tell you—I see I got Mr. Ross's attention—I am one that thinks congressional travel is a part of the job. I think that you can learn more on site than you can by hearing witnesses here, and so we are—we want to try to make that opportunity available to folks.

Let me—and I welcome anybody's suggestions or criticism if you don't think this is the way to go, but my thought is this. Just like we are trying to take good ideas, sort of narrow them and get them through, I think that probably our best Codel travel really will be on shorter hops, and the reason for this is, as a practical matter, we have less open breaks this time. The—I won't say more significant, but the bigger committees are going to have access to the big planes and so what could very well happen, we could spend a lot of staff time planning something and get bumped by Armed Services or somebody else.

So what I see us trying to do is look for those breaks where we are not going to have a Monday—or rather a Friday or a Monday vote, leaving on a Thursday night, coming back on Monday or Tuesday morning, one-shot sorts of things. I am sure that Dana would like to go to Greenland and see those glaciers and hear about that. Guyana is not far away, we can go and see what Arian is doing there. We are trying to compile a list of sort of one-shot places, sort of one tank of gas efforts, and so we welcome any of your thoughts.

I know Joe had asked me about the Paris Air Show. I do not expect that we will be taking that trip for a variety of reasons, partly we don't have time during that, but it is April 16 to 28. Joe has an emerging aviation industry developing in his district and I think it is very legitimate that he might want to go, and so let me also make available to you that if there is something around the country or around the world that you think is important to your district and to this committee, then we have the ability to be able to make a request through the State Department, and I think you can go on your own. So we will be happy to work with you on those things.

Again, I think that travel is good for the Committee. I also find that it is—and Gabrielle was just telling me, she just got back from Iraq and had a unique opportunity to talk to my new Senator, Bob

Corker, and her—one of her Senators that she didn't really know as well, and feels a new and better relationship.

Once you travel with Members under these circumstances, particularly with their spouses, it is really sort of hard to be ugly to them, you know, later. And I think we want to encourage more of that.

I had the opportunity—and I will call it an opportunity, to go to the Antarctic with Jim Sensenbrenner for two weeks. I am a better human being for that.

Mr. HALL. Maybe Jim is, too.

Chairman GORDON. So I do—I think the trip to the Antarctic is the most interesting trip that I have taken since being a Member of the Science Committee. It is a long trip in contrast to what we were talking, so it is going to take more planning, but we are going to put that together during one of the longer breaks and we will let you know more about that.

Yes, sir? The gentleman from Missouri.

Mr. AKIN. Thank you, Mr. Chairman.

First of all, on that subject, I had a chance to do the Antarctic trip as well. It is bar none the best Codel I ever took, most informative, most interesting, and this committee is, as far as I am concerned, the number one in terms of the most fascinating. It was very well-run. I agree with you on that.

If it is okay, I just wanted to also compliment Congressmen Lipinski and Ehlers for the bill that is on the aluminum and steel. I think it is one of these win/win, as you are talking about, Mr. Chairman, when you have a chance to fund something, but if it works, we are going to pay back the government for the funding. I mean, it is energy related and it is so important.

My family was in the steel industry, and it is an absolutely critical piece of legislation. I appreciate your good work.

[Whereupon, at 11:08 a.m., the Committee was adjourned.]

Appendix:

H.R. 363, Amendment Roster, Section-by-Section Summary of Substitute Amendment for H.R. 363

I

110TH CONGRESS
1ST SESSION

H. R. 363

To authorize appropriations for basic research and research infrastructure in science and engineering, and for support of graduate fellowships, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

JANUARY 10, 2007

Mr. GORDON of Tennessee introduced the following bill; which was referred to the Committee on Science and Technology

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A BILL

To authorize appropriations for basic research and research infrastructure in science and engineering, and for support of graduate fellowships, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "Sowing the Seeds Through Science and Engineering Research Act".

SEC. 2. AUTHORIZATION OF APPROPRIATIONS FOR BASIC RESEARCH ACTIVITIES.

(a) NATIONAL SCIENCE FOUNDATION.—There are authorized to be appropriated to the National Science

Foundation for support of basic research activities in the physical sciences, mathematics and computer sciences, and engineering, $2,114,100,000 for fiscal year 2008, $2,325,510,000 for fiscal year 2009, $2,558,060,000 for fiscal year 2010, $2,813,870,000 for fiscal year 2011, and $3,095,260,000 for fiscal year 2012.

(b) DEPARTMENT OF ENERGY.—There are authorized to be appropriated to the Secretary of Energy for the Office of Science for support of basic research activities in the physical sciences, mathematics and computer sciences, and engineering, $2,205,400,000 for fiscal year 2008, $2,425,940,000 for fiscal year 2009, $2,668,530,000 for fiscal year 2010, $2,935,380,000 for fiscal year 2011, and $3,228,920,000 for fiscal year 2012.

(c) NATIONAL AERONAUTICS AND SPACE ADMINISTRATION.—There are authorized to be appropriated to the National Aeronautics and Space Administration for support of basic research activities in the physical sciences, mathematics and computer sciences, and engineering, $1,669,700,000 for fiscal year 2008, $1,836,670,000 for fiscal year 2009, $2,020,340,000 for fiscal year 2010, $2,222,370,000 for fiscal year 2011, and $2,444,610,000 for fiscal year 2012.

(d) NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY.—There are authorized to be appropriated

to the National Institute of Standards and Technology for support of basic research activities in the physical sciences, mathematics and computer sciences, and engineering, $86,240,000 for fiscal year 2008, $94,860,000 for fiscal year 2009, $104,350,000 for fiscal year 2010, $114,780,000 for fiscal year 2011, and $126,260,000 for fiscal year 2012.

(e) DEPARTMENT OF DEFENSE.—There are authorized to be appropriated to the Secretary of Defense for support of basic research activities under budget category 6.1, $1,784,750,000 for fiscal year 2008, $1,963,220,000 for fiscal year 2009, $2,159,540,000 for fiscal year 2010, $2,375,490,000 for fiscal year 2011, and $2,613,000,000 for fiscal year 2012.

(f) HIGH-RISK RESEARCH.—Of the amounts appropriated in each of subsections (a) through (e), not less than 8 percent shall be available for high-risk, potentially high-payoff research as determined by technical program managers at the respective agencies.

SEC. 3. NATIONAL SCIENCE FOUNDATION EARLY CAREER AWARDS FOR SCIENCE AND ENGINEERING RESEARCHERS.

(a) IN GENERAL.—The Director of the National Science Foundation shall carry out a program to award grants to scientists and engineers at the early stage of

1 their careers at institutions of higher education and orga-
2 nizations described in subsection (c)(2) to conduct re-
3 search in fields relevant to the mission of the Foundation.
4 The existing Faculty Early Career Development (CA-
5 REER) Program may be designated as the mechanism for
6 awarding such grants.

7 (b) SIZE AND DURATION OF AWARD.—The duration
8 of awards under this section shall be 5 years, and the
9 amount per year shall be at least $80,000.

10 (c) ELIGIBILITY.—Award recipients shall be individ-
11 uals who are employed in a tenure-track position as an
12 assistant professor or equivalent title, or who hold an
13 equivalent position, at—

14 (1) an institution of higher education in the
15 United States; or

16 (2) an organization in the United States that is
17 a nonprofit, nondegree-granting research organiza-
18 tion such as a museum, observatory, or research lab-
19 oratory.

20 (d) SELECTION.—Award recipients shall be selected
21 on a competitive, merit-reviewed basis.

22 (e) SELECTION PROCESS AND CRITERIA FOR
23 AWARDS.—An applicant seeking funding under this sec-
24 tion shall submit a proposal to the Director at such time,
25 in such manner, and containing such information as the

1 Director may require. In evaluating the proposals sub-
2 mitted under this section, the Director shall consider, at
3 a minimum—
4 (1) the intellectual merit of the proposed work;
5 (2) the innovative or transformative nature of
6 the proposed research;
7 (3) the extent to which the proposal integrates
8 research and education, including undergraduate
9 education in science and engineering disciplines; and
10 (4) the potential of the applicant for leadership
11 at the frontiers of knowledge.
12 (f) AWARDS.—In awarding grants under this section,
13 the Director shall endeavor to ensure that the recipients
14 are from a variety of types of institutions of higher edu-
15 cation and nonprofit, nondegree-granting research organi-
16 zations. In support of this goal, the Director shall broadly
17 disseminate information about when and how to apply for
18 grants under this section, including by conducting out-
19 reach to Historically Black Colleges and Universities that
20 are part B institutions as defined in section 322(2) of the
21 Higher Education Act of 1965 (20 U.S.C. 1061(2)) and
22 minority institutions (as defined in section 365(3) of that
23 Act (20 U.S.C. 1067k(3))).
24 (g) AUTHORIZATION OF APPROPRIATION.—For each
25 of the fiscal years 2008 through 2012, the Director shall

1 allocate at least 3.5 percent of funds appropriated to the
2 National Science Foundation for Research and Related
3 Activities to the grants program under this section.

4 (h) REPORT.—Not later than 6 months after the date
5 of enactment of this Act, the Director shall transmit to
6 the Committee on Science of the House of Representatives
7 and to the Committee on Commerce, Science, and Trans-
8 portation of the Senate a report describing the distribution
9 of the institutions from which individuals have partici-
10 pated in the Faculty Early Career Development Program
11 since fiscal year 2001 among each of the categories of in-
12 stitutions of higher education defined by the Carnegie
13 Foundation for the Advancement of Teaching and the or-
14 ganizations in subsection (c)(2).

15 (i) EVALUATION.—Not later than 2 years after the
16 date of enactment of this Act, the Director shall transmit
17 to the Committee on Science of the House of Representa-
18 tives and to the Committee on Commerce, Science, and
19 Transportation of the Senate a report evaluating the im-
20 pact of the program carried out under this section on the
21 ability of young faculty to compete for National Science
22 Foundation research grants.

SEC. 4. DEPARTMENT OF ENERGY EARLY CAREER AWARDS FOR SCIENCE AND ENGINEERING RESEARCHERS.

(a) IN GENERAL.—The Director of the Office of Science of the Department of Energy shall carry out a program to award grants to scientists and engineers at the early stage of their careers at institutions of higher education and organizations described in subsection (c)(2) to conduct research in fields relevant to the mission of the Department.

(b) SIZE AND DURATION OF AWARD.—The duration of awards under this section shall be up to 5 years, and the amount per year shall be at least $80,000.

(c) ELIGIBILITY.—Award recipients shall be individuals who are employed in a tenure-track position as an assistant professor or equivalent title, or who hold an equivalent position, at—

(1) an institution of higher education in the United States; or

(2) an organization in the United States that is a nonprofit, nondegree-granting research organization such as a museum, observatory, or research laboratory.

(d) SELECTION.—Award recipients shall be selected on a competitive, merit-reviewed basis.

(e) SELECTION PROCESS AND CRITERIA FOR AWARDS.—An applicant seeking funding under this section shall submit a proposal to the Director of the Office of Science at such time, in such manner, and containing such information as the Director may require. In evaluating the proposals submitted under this section, the Director shall consider, at a minimum—

(1) the intellectual merit of the proposed work;

(2) the innovative or transformative nature of the proposed research;

(3) the extent to which the proposal integrates research and education, including undergraduate education in science and engineering disciplines; and

(4) the potential of the applicant for leadership at the frontiers of knowledge.

(f) COLLABORATION WITH NATIONAL LABORATORIES.—In awarding grants under this section, the Director shall give priority to proposals in which the proposed work includes collaboration with the Department of Energy National Laboratories.

(g) AWARDS.—In awarding grants under this section, the Director shall endeavor to ensure that the recipients are from a variety of types of institutions of higher education and nonprofit, nondegree-granting research organizations. In support of this goal, the Director shall broadly

disseminate information about when and how to apply for grants under this section, including by conducting outreach to Historically Black Colleges and Universities that are part B institutions as defined in section 322(2) of the Higher Education Act of 1965 (20 U.S.C. 1061(2)) and minority institutions (as defined in section 365(3) of that Act (20 U.S.C. 1067k(3))).

(h) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Secretary of Energy to carry out the Director's responsibilities under this section $25,000,000 for each of the fiscal years 2008 through 2012.

(i) REPORT ON RECRUITING AND RETAINING EARLY CAREER SCIENCE AND ENGINEERING RESEARCHERS AT THE NATIONAL LABORATORIES.—Not later than 3 months after the date of enactment of this Act, the Director of the Office of Science shall transmit to the Committee on Science of the House of Representatives and to the Committee on Energy and Natural Resources of the Senate a report on efforts to recruit and retain young scientists and engineers at the early stages of their careers at the Department of Energy National Laboratories. The report shall include—

(1) a description of Department of Energy and National Laboratory policies and procedures, includ-

ing financial incentives, awards, promotions, time set aside for independent research, access to equipment or facilities, and other forms of recognition, designed to attract and retain young scientists and engineers;

(2) an evaluation of the impact of these incentives on the careers of young scientists and engineers at Department of Energy National Laboratories, and also on the quality of the research at the National Laboratories and in Department of Energy programs;

(3) a description of what barriers, if any, exist to efforts to recruit and retain young scientists and engineers, including limited availability of full time equivalent positions, legal and procedural requirements, and pay grading systems; and

(4) the amount of funding devoted to efforts to recruit and retain young researchers and the source of such funds.

SEC. 5. INTEGRATIVE GRADUATE EDUCATION AND RESEARCH TRAINEESHIP PROGRAM.

(a) FUNDING.—For each of the fiscal years 2008 through 2012, the Director of the National Science Foundation shall allocate at least 1.5 percent of funds appropriated for Research and Related Activities to the Integra-

1 tive Graduate Education and Research Traineeship pro-
2 gram.
3 (b) COORDINATION.—The Director shall coordinate
4 with Federal departments and agencies, as appropriate,
5 to expand the interdisciplinary nature of the Integrative
6 Graduate Education and Research Traineeship program.
7 (c) AUTHORITY TO ACCEPT FUNDS FROM OTHER
8 AGENCIES.—The Director is authorized to accept funds
9 from other Federal departments and agencies to carry out
10 the Integrative Graduate Education and Research
11 Traineeship program.

12 **SEC. 6. PRESIDENTIAL INNOVATION AWARD.**

13 (a) ESTABLISHMENT.—The President shall periodi-
14 cally present the Presidential Innovation Award, on the
15 basis of recommendations received from the Director of
16 the Office of Science and Technology Policy or on the
17 basis of such other information as the President considers
18 appropriate, to individuals who develop one or more
19 unique scientific or engineering ideas in the national inter-
20 est at the time the innovation occurs.
21 (b) PURPOSE.—The awards under this section shall
22 be made to—
23 (1) stimulate scientific and engineering ad-
24 vances in the national interest;

1 (2) illustrate the linkage between science and
2 engineering and national needs; and
3 (3) provide an example to students of the con-
4 tribution they could make to society by entering the
5 science and engineering profession.
6 (c) CITIZENSHIP.—An individual is not eligible to re-
7 ceive the award under this section unless at the time such
8 award is made the individual—
9 (1) is a citizen or other national of the United
10 States; or
11 (2) is an alien lawfully admitted to the United
12 States for permanent residence who—
13 (A) has filed an application for naturaliza-
14 tion in the manner prescribed by section 334 of
15 the Immigration and Nationality Act (8 U.S.C.
16 1445); and
17 (B) is not permanently ineligible to become
18 a citizen of the United States.
19 (d) PRESENTATION.—The presentation of the award
20 shall be made by the President with such ceremonies as
21 he may deem proper, including attendance by appropriate
22 Members of Congress.

1 **SEC. 7. NATIONAL COORDINATION OFFICE FOR RESEARCH**
2 **INFRASTRUCTURE.**

3 (a) IN GENERAL.—The Office of Science and Tech-
4 nology Policy shall establish a National Coordination Of-
5 fice for Research Infrastructure, which shall identify and
6 prioritize deficiencies in research facilities and instrumen-
7 tation in academic institutions and in national laboratories
8 and shall make recommendations for the allocation of re-
9 sources provided under subsection (e).

10 (b) STAFFING.—The Director of the Office of Science
11 and Technology Policy shall appoint individuals to serve
12 in the office established under subsection (a) from among
13 the principal Federal agencies that support research in the
14 sciences, mathematics, and engineering, and shall at a
15 minimum include individuals from the National Science
16 Foundation and the Department of Energy.

17 (c) USE OF FUNDS.—The amounts authorized by
18 subsection (e) shall be available on a competitive, merit-
19 reviewed basis for construction and maintenance of re-
20 search facilities at institutions of higher education or na-
21 tional laboratories, including instrumentation, computing
22 and networking equipment, and other physical resources
23 necessary for performing leading-edge research.

24 (d) REPORT.—The Director of the Office of Science
25 and Technology Policy shall provide annually a report to
26 Congress at the time of the President's budget proposal

describing the research infrastructure needs identified in accordance with subsection (a) and a list of infrastructure projects proposed for funding using the resources authorized by subsection (e).

(e) AUTHORIZATION OF APPROPRIATIONS.—

(1) NATIONAL SCIENCE FOUNDATION.—There are authorized to be appropriated to the National Science Foundation for the purposes of this section, $333,000,000 for each of fiscal years 2008 through 2012.

(2) DEPARTMENT OF ENERGY.—There are authorized to be appropriated to the Secretary of Energy for the purposes of this section, $167,000,000 for each of fiscal years 2008 through 2012.

SEC. 8. RESEARCH ON INNOVATION AND INVENTIVENESS.

In carrying out its research programs on science policy and on the science of learning, the National Science Foundation may support research on the process of innovation and the teaching of inventiveness.

○

COMMITTEE ON SCIENCE AND TECHNOLOGY
FULL COMMITTEE MARKUP
FEBRUARY 28, 2007

AMENDMENT ROSTER

H.R. 363, Sowing the Seeds Through Science and Engineering Research Act

No.	Sponsor	Description	Results
1.	Mr. Gordon	Amendment in the Nature of a Substitute to H.R. 363	

AMENDMENT IN THE NATURE OF A SUBSTITUTE TO H.R. 363 OFFERED BY MR. GORDON OF TENNESSEE AND MR. HALL OF TEXAS

Strike all after the enacting clause and insert the following:

1 **SECTION 1. SHORT TITLE.**

2 This Act may be cited as the "Sowing the Seeds
3 Through Science and Engineering Research Act".

4 **SEC. 2. NATIONAL SCIENCE FOUNDATION EARLY CAREER**
5 **AWARDS FOR SCIENCE AND ENGINEERING**
6 **RESEARCHERS.**

7 (a) IN GENERAL.—The Director of the National
8 Science Foundation shall carry out a program to award
9 grants to scientists and engineers at the early stage of
10 their careers at institutions of higher education and orga-
11 nizations described in subsection (c)(2) to conduct re-
12 search in fields relevant to the mission of the Foundation.
13 The existing Faculty Early Career Development (CA-
14 REER) Program may be designated as the mechanism for
15 awarding such grants.

1 (b) SIZE AND DURATION OF AWARD.—The duration
2 of awards under this section shall be 5 years, and the
3 amount per year shall be at least $80,000.
4 (c) ELIGIBILITY.—Award recipients shall be individ-
5 uals who are employed in a tenure-track position as an
6 assistant professor or equivalent title, or who hold an
7 equivalent position, at—
8 (1) an institution of higher education in the
9 United States; or
10 (2) an organization in the United States that is
11 a nonprofit, nondegree-granting research organiza-
12 tion such as a museum, observatory, or research lab-
13 oratory.
14 (d) SELECTION.—Award recipients shall be selected
15 on a competitive, merit-reviewed basis.
16 (e) SELECTION PROCESS AND CRITERIA FOR
17 AWARDS.—An applicant seeking funding under this sec-
18 tion shall submit a proposal to the Director at such time,
19 in such manner, and containing such information as the
20 Director may require. In evaluating the proposals sub-
21 mitted under this section, the Director shall consider, at
22 a minimum—
23 (1) the intellectual merit of the proposed work;
24 (2) the innovative or transformative nature of
25 the proposed research;

1 (3) the extent to which the proposal integrates
2 research and education, including undergraduate
3 education in science and engineering disciplines; and
4 (4) the potential of the applicant for leadership
5 at the frontiers of knowledge.
6 (f) AWARDS.—In awarding grants under this section,
7 the Director shall endeavor to ensure that the recipients
8 are from a variety of types of institutions of higher edu-
9 cation and nonprofit, nondegree-granting research organi-
10 zations. In support of this goal, the Director shall broadly
11 disseminate information about when and how to apply for
12 grants under this section, including by conducting out-
13 reach to Historically Black Colleges and Universities that
14 are part B institutions as defined in section 322(2) of the
15 Higher Education Act of 1965 (20 U.S.C. 1061(2)) and
16 minority institutions (as defined in section 365(3) of that
17 Act (20 U.S.C. 1067k(3))).
18 (g) AUTHORIZATION OF APPROPRIATION.— For each
19 of the fiscal years 2008 through 2012, the Director shall
20 allocate at least 3.5 percent of funds appropriated to the
21 National Science Foundation for Research and Related
22 Activities to the grants program under this section.
23 (h) REPORT.—Not later than 6 months after the date
24 of enactment of this Act, the Director shall transmit to
25 the Committee on Science and Technology of the House

1 of Representatives and to the Committee on Commerce,
2 Science, and Transportation of the Senate a report de-
3 scribing the distribution of the institutions from which in-
4 dividuals have participated in the Faculty Early Career
5 Development Program since fiscal year 2001 among each
6 of the categories of institutions of higher education de-
7 fined by the Carnegie Foundation for the Advancement
8 of Teaching and the organizations in subsection (c)(2).

9 (i) EVALUATION.—Not later than 2 years after the
10 date of enactment of this Act, the Director shall transmit
11 to the Committee on Science and Technology of the House
12 of Representatives and to the Committee on Commerce,
13 Science, and Transportation of the Senate a report evalu-
14 ating the impact of the program carried out under this
15 section on the ability of young faculty to compete for Na-
16 tional Science Foundation research grants.

17 **SEC. 3. DEPARTMENT OF ENERGY EARLY CAREER AWARDS**
18 **FOR SCIENCE AND ENGINEERING RESEARCH-**
19 **ERS.**

20 (a) IN GENERAL.—The Director of the Office of
21 Science of the Department of Energy shall carry out a
22 program to award grants to scientists and engineers at
23 the early stage of their careers at institutions of higher
24 education and organizations described in subsection (c)(2)

1 to conduct research in fields relevant to the mission of the
2 Department.
3 (b) SIZE AND DURATION OF AWARD.—The duration
4 of awards under this section shall be up to 5 years, and
5 the amount per year shall be at least $80,000.
6 (c) ELIGIBILITY.—Award recipients shall be individ-
7 uals who are employed in a tenure-track position as an
8 assistant professor or equivalent title, or who hold an
9 equivalent position, at—
10 (1) an institution of higher education in the
11 United States; or
12 (2) an organization in the United States that is
13 a nonprofit, nondegree-granting research organiza-
14 tion such as a museum, observatory, or research lab-
15 oratory.
16 (d) SELECTION.— Award recipients shall be selected
17 on a competitive, merit-reviewed basis.
18 (e) SELECTION PROCESS AND CRITERIA FOR
19 AWARDS.—An applicant seeking funding under this sec-
20 tion shall submit a proposal to the Director of the Office
21 of Science at such time, in such manner, and containing
22 such information as the Director may require. In evalu-
23 ating the proposals submitted under this section, the Di-
24 rector shall consider, at a minimum—
25 (1) the intellectual merit of the proposed work;

(2) the innovative or transformative nature of the proposed research;

(3) the extent to which the proposal integrates research and education, including undergraduate education in science and engineering disciplines; and

(4) the potential of the applicant for leadership at the frontiers of knowledge.

(f) COLLABORATION WITH NATIONAL LABORATORIES.—In awarding grants under this section, the Director shall give priority to proposals in which the proposed work includes collaboration with the Department of Energy National Laboratories.

(g) AWARDS.—In awarding grants under this section, the Director shall endeavor to ensure that the recipients are from a variety of types of institutions of higher education and nonprofit, nondegree-granting research organizations. In support of this goal, the Director shall broadly disseminate information about when and how to apply for grants under this section, including by conducting outreach to Historically Black Colleges and Universities that are part B institutions as defined in section 322(2) of the Higher Education Act of 1965 (20 U.S.C. 1061(2)) and minority institutions (as defined in section 365(3) of that Act (20 U.S.C. 1067k(3))).

1 (h) AUTHORIZATION OF APPROPRIATIONS.—There
2 are authorized to be appropriated to the Secretary of En-
3 ergy to carry out the Director's responsibilities under this
4 section $25,000,000 for each of the fiscal years 2008
5 through 2012.

6 (i) REPORT ON RECRUITING AND RETAINING EARLY
7 CAREER SCIENCE AND ENGINEERING RESEARCHERS AT
8 THE NATIONAL LABORATORIES.—Not later than 3
9 months after the date of enactment of this Act, the Direc-
10 tor of the Office of Science shall transmit to the Com-
11 mittee on Science and Technology of the House of Rep-
12 resentatives and to the Committee on Energy and Natural
13 Resources of the Senate a report on efforts to recruit and
14 retain young scientists and engineers at the early stages
15 of their careers at the Department of Energy National
16 Laboratories. The report shall include—

17 (1) a description of Department of Energy and
18 National Laboratory policies and procedures, includ-
19 ing financial incentives, awards, promotions, time set
20 aside for independent research, access to equipment
21 or facilities, and other forms of recognition, designed
22 to attract and retain young scientists and engineers;

23 (2) an evaluation of the impact of these incen-
24 tives on the careers of young scientists and engi-
25 neers at Department of Energy National Labora-

tories, and also on the quality of the research at the National Laboratories and in Department of Energy programs;

(3) a description of what barriers, if any, exist to efforts to recruit and retain young scientists and engineers, including limited availability of full time equivalent positions, legal and procedural requirements, and pay grading systems; and

(4) the amount of funding devoted to efforts to recruit and retain young researchers and the source of such funds.

SEC. 4. INTEGRATIVE GRADUATE EDUCATION AND RESEARCH TRAINEESHIP PROGRAM.

(a) FUNDING.—For each of the fiscal years 2008 through 2012, the Director of the National Science Foundation shall allocate at least 1.5 percent of funds appropriated for Research and Related Activities to the Integrative Graduate Education and Research Traineeship program.

(b) COORDINATION.—The Director shall coordinate with Federal departments and agencies, as appropriate, to expand the interdisciplinary nature of the Integrative Graduate Education and Research Traineeship program.

(c) AUTHORITY TO ACCEPT FUNDS FROM OTHER AGENCIES.—The Director is authorized to accept funds

1 from other Federal departments and agencies to carry out
2 the Integrative Graduate Education and Research
3 Traineeship program.

4 **SEC. 5. PRESIDENTIAL INNOVATION AWARD.**

5 (a) ESTABLISHMENT.—The President shall periodi-
6 cally present the Presidential Innovation Award, on the
7 basis of recommendations received from the Director of
8 the Office of Science and Technology Policy or on the
9 basis of such other information as the President considers
10 appropriate, to individuals who develop one or more
11 unique scientific or engineering ideas in the national inter-
12 est at the time the innovation occurs.

13 (b) PURPOSE.—The awards under this section shall
14 be made to—

15 (1) stimulate scientific and engineering ad-
16 vances in the national interest;

17 (2) illustrate the linkage between science and
18 engineering and national needs; and

19 (3) provide an example to students of the con-
20 tribution they could make to society by entering the
21 science and engineering profession.

22 (c) CITIZENSHIP.—An individual is not eligible to re-
23 ceive the award under this section unless at the time such
24 award is made the individual—

1 (1) is a citizen or other national of the United
2 States; or
3 (2) is an alien lawfully admitted to the United
4 States for permanent residence who—
5 (A) has filed an application for naturaliza-
6 tion in the manner prescribed by section 334 of
7 the Immigration and Nationality Act (8 U.S.C.
8 1445); and
9 (B) is not permanently ineligible to become
10 a citizen of the United States.
11 (d) PRESENTATION.—The presentation of the award
12 shall be made by the President with such ceremonies as
13 he may deem proper, including attendance by appropriate
14 Members of Congress.

15 **SEC. 6. NATIONAL COORDINATION OFFICE FOR RESEARCH**
16 **INFRASTRUCTURE.**

17 (a) IN GENERAL.—The Office of Science and Tech-
18 nology Policy shall establish a National Coordination Of-
19 fice for Research Infrastructure. Such Office shall—
20 (1) identify and prioritize the deficiencies in re-
21 search facilities and major instrumentation located
22 at academic institutions and at national laboratories
23 that are available for use by academic researchers;
24 and