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110TH CONGRESS
1st Session

HOUSE OF REPRESENTATIVES

REPORT
110–172

10,000 TRAINED BY 2010 ACT

JUNE 6, 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. 1467]

[Including cost estimate of the Congressional Budget Office]

The Committee on Science and Technology, to whom was referred the bill (H.R. 1467) to authorize the National Science Foundation to award grants to institutions of higher education to develop and offer education and training programs, having considered the same, report favorably thereon without amendment and recommend that the bill do pass.

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59–006

Union Calendar No.

110TH CONGRESS
1ST SESSION

H. R. 1467

[Report No. 110–]

To authorize the National Science Foundation to award grants to institutions of higher education to develop and offer education and training programs.

IN THE HOUSE OF REPRESENTATIVES

MARCH 9, 2007

Mr. WU (for himself, Mr. HALL of Texas, Mr. GORDON of Tennessee, and Mr. GINGREY) introduced the following bill; which was referred to the Committee on Science and Technology

JUNE --, 2007

Committed to the Committee of the Whole House on the State of the Union, and ordered to be printed

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A BILL

To authorize the National Science Foundation to award grants to institutions of higher education to develop and offer education and training programs.

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 ''10,000 Trained by 2010 Act''.

SEC. 2. FINDINGS.

The Congress finds that—

(1) the National Science Foundation has long been a government leader in strengthening our Nation's information infrastructure;

(2) as automation and digitization reach the healthcare industry, that industry will need to draw heavily on the expertise of researchers funded by the National Science Foundation for the collection, processing, and utilization of information;

(3) the National Science Foundation's basic research, demonstrations, and curriculum development assistance are all required to help make sure the industry has the knowledge, procedures, and workforce necessary to take full advantage of advanced communications and information technology;

(4) the Bureau of Labor Statistics estimated that 136,000 Americans were employed in 2000 as information management professionals in the healthcare industry alone, with projected growth of 49 percent by 2010; and

(5) no systematic plan exists for designing and implementing systems and information tools and for ensuring that the healthcare workforce can make the transition to the information age.

SEC. 3. DEFINITIONS.

In this Act:

(1) DIRECTOR.—The term ''Director'' means the Director of the National Science Foundation.

(2) INFORMATION.—The term ''information'' means healthcare information.

(3) INSTITUTION OF HIGHER EDUCATION.—The term ''institution of higher education'' has the meaning given that term in section 101 of the Higher Education Act of 1965 (20 U.S.C. 1001).

SEC. 4. NATIONAL SCIENCE FOUNDATION RESEARCH.

(a) GRANTS.—

(1) IN GENERAL.—The Director, in consultation with the heads of other Federal agencies as appropriate, shall award grants for basic research on innovative approaches to improve information systems. Research areas may include—

(A) information studies;

(B) population informatics;

(C) translational informatics; and

(D) data security, integrity, and confidentiality.

(2) MERIT REVIEW; COMPETITION.—Grants shall be awarded under this section on a merit-reviewed, competitive basis.

(3) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the National Science Foundation to carry out this subsection—

(A) $3,500,000 for fiscal year 2008;

(B) $3,600,000 for fiscal year 2009;

(C) $3,700,000 for fiscal year 2010; and

(D) $3,800,000 for fiscal year 2011.

(b) INFORMATICS RESEARCH CENTERS.—

(1) IN GENERAL.—The Director, in consultation with the heads of other Federal agencies as appropriate, shall award multiyear grants, subject to the availability of appropriations, to institutions of higher education (or consortia thereof) to establish multidisciplinary Centers for Informatics Research. Institutions of higher education (or consortia thereof) receiving such grants may partner with one or more government laboratories, for-profit institutions, or non-profit institutions.

(2) MERIT REVIEW; COMPETITION.—Grants shall be awarded under this subsection on a merit-reviewed, competitive basis.

(3) PURPOSE.—The purpose of the Centers shall be to generate innovative approaches in information by conducting cutting-edge, multidisciplinary research, including in the research areas described in subsection (a)(1).

(4) APPLICATIONS.—An institution of higher education (or a consortium thereof) seeking funding

under this subsection shall submit an application to the Director at such time, in such manner, and containing such information as the Director may require. The application shall include, at a minimum, a description of—

(A) the research projects that will be undertaken by the Center and the contributions of each of the participating entities;

(B) how the Center will promote active collaboration among professionals from different disciplines, such as information technology specialists, health professionals, administrators, and social science researchers; and

(C) how the Center will contribute to increasing the number of information researchers and other professionals.

(5) CRITERIA.—In evaluating the applications submitted under paragraph (4), the Director shall consider, at a minimum—

(A) the ability of the applicant to generate innovative approaches to information and effectively carry out the research program;

(B) the experience of the applicant in conducting research in the information field, and the capacity of the applicant to foster new multidisciplinary collaborations;

(C) the capacity of the applicant to attract and provide adequate support for undergraduate and graduate students to pursue information research; and

(D) the extent to which the applicant will partner with government laboratories or for-profit or non-profit entities, and the role the government laboratories or for-profit or non-profit entities will play in the research undertaken by the Center.

(6) ANNUAL MEETING.—The Director shall convene an annual meeting of the Centers in order to foster collaboration and communication between Center participants.

(7) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated for the National Science Foundation to carry out this subsection—

(A) $4,500,000 for fiscal year 2008;

(B) $4,600,000 for fiscal year 2009;

(C) $4,700,000 for fiscal year 2010; and

(D) $4,800,000 for fiscal year 2011.

SEC. 5. NATIONAL SCIENCE FOUNDATION INFORMATION PROGRAMS.

(a) CAPACITY BUILDING GRANTS.—

(1) IN GENERAL.—The Director, in consultation with the heads of other Federal agencies as appropriate, shall establish a program to award grants to institutions of higher education (or consortia thereof) to establish or improve undergraduate and master's degree information programs, to increase the number of students who pursue undergraduate or master's degrees in information fields, to provide students with experience in government or industry

related to their information studies, and, to the extent practicable, to do so using distance learning.

(2) MERIT REVIEW; COMPETITION.—Grants shall be awarded under this subsection on a merit-reviewed, competitive basis.

(3) USE OF FUNDS.—Grants awarded under this subsection shall be used for activities that enhance the ability of an institution of higher education (or consortium thereof) to provide high-quality information education, including certification and undergraduate and master's degree programs, and to recruit and retain increased numbers of students to such programs. Activities may include—

(A) developing and revising curriculum to better prepare undergraduate and master's degree students for careers in the information field;

(B) establishing degree and certificate programs in the information field;

(C) creating opportunities in information research for undergraduate students;

(D) acquiring equipment necessary for student instruction in these programs, including the installation of testbed networks for student use;

(E) providing opportunities for faculty to work with State, local, or Federal Government agencies, private industry, and other academic institutions to develop new expertise or to formulate new information research directions;

(F) establishing collaborations with other academic institutions or departments that seek to establish, expand, or enhance these programs;

(G) establishing student internships for students in these programs at State, local, and Federal Government agencies or in private industry;

(H) establishing or enhancing bridge programs in information fields between community colleges and universities; and

(I) any other activities the Director, in consultation with the heads of other Federal agencies as appropriate, determines will achieve the purposes described in paragraph (1).

(4) SELECTION PROCESS.—

(A) APPLICATION.—An institution of higher education (or a consortium thereof) seeking funding under this subsection shall submit an application to the Director at such time, in such manner, and with such contents as the Director may require. The application shall include, at a minimum—

(i) a description of the applicant's relevant research and instructional capacity, and in the case of an application from a consortium of institutions of higher education, a description of the role that each member will play in implementing the proposal;

(ii) a comprehensive plan by which the institution or consortium will build instructional capacity in information fields;

(iii) a description of relevant collaborations with State, local, or Federal Government agencies or private industry that inform the instructional program;

(iv) a survey of the applicant's historic student enrollment and placement data and a study of potential enrollment and placement for students enrolled in the proposed program; and

(v) a plan to evaluate the success of the proposed program, including post-graduate assessment of graduate school and job placement and retention rates as well as the relevance of the instructional program to graduate study and to the workplace.

(B) AWARDS.—The Director shall ensure, to the extent practicable, that grants are

awarded under this subsection in a wide range of geographic areas and categories of institutions of higher education.

(5) ASSESSMENT REQUIRED.—The Director, in consultation with the heads of other Federal agencies as appropriate, shall evaluate the program established under this subsection no later than 3 years after the establishment of the program. At a minimum, the Director shall evaluate the extent to which the grants have achieved their objectives of increasing the quality and quantity of students pursuing undergraduate or master's degrees in information fields. The Director shall make this assessment publicly available.

(6) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the National Science Foundation to carry out this subsection—

(A) $9,000,000 for fiscal year 2008;

(B) $9,200,000 for fiscal year 2009;

(C) $9,400,000 for fiscal year 2010; and

1 (D) $9,600,000 for fiscal year 2011.

2 (b) SCIENTIFIC AND ADVANCED TECHNOLOGY ACT
3 OF 1992.—

4 (1) GRANTS.—The Director shall provide
5 grants under the Scientific and Advanced Tech-
6 nology Act of 1992 for the purposes of section 3(a)
7 and (b) of that Act, except that the activities sup-
8 ported pursuant to this subsection shall be limited to
9 improving education in fields related to information.

10 (2) AUTHORIZATION OF APPROPRIATIONS.—
11 There are authorized to be appropriated to the Na-
12 tional Science Foundation to carry out this sub-
13 section—

14 (A) $7,000,000 for fiscal year 2008;

15 (B) $7,200,000 for fiscal year 2009;

16 (C) $7,400,000 for fiscal year 2010; and

17 (D) $7,600,000 for fiscal year 2011.

II. PURPOSE

The purpose of this bill is to authorize the National Science Foundation to award grants to institutions of higher education to develop and offer education and training programs.

III. BACKGROUND AND NEED FOR THE LEGISLATION

Healthcare information technology ("health IT"), if properly implemented, will cut down on the estimated 44,000–98,000 annual American deaths related to medical errors and on the nearly $300 billion spent annually on inefficient and unnecessary treatments.

Electronic healthcare technology cannot be effective, however, without a workforce in place to manage the technology and unless those who will use health IT to perform their duties are properly trained.

Despite federal assistance to other areas of health IT, there is no systematic plan for training of the current healthcare workforce to use health information technology in the current jobs. Additionally, the need for individuals who specialize in managing health IT is expected to grow 49 percent from 2000 to 2010, and nearly 75 percent of health organizations say that there are not enough qualified applicants to fill open health IT management positions. Without a trained workforce, health IT cannot succeed.

IV. HEARING SUMMARY

During the 109th Congress, the House Committee on Science held one hearing relevant to H.R. 1467. On February 23, 2006, the Subcommittee on Environment, Technology and Standards held a field hearing entitled, "Health Care Information Technology: What are the Opportunities for and Barriers to Inter-operable Health Information Technology Systems?" Testimony was received from seven witnesses: (1) Mr. William Jeffrey, Director, National Institute of Standards and Technology; (2) Dr. Jody Pettit, Project Chair, Portland Health Care Quality Corporation; (3) Ms. Diane Cecchettini, President and CEO, MultiCare Health System; (4) Mr. John Kenagy, CIO, Oregon Health and Science University; (5) Dr. Homer Chin, Medical Director, Clinical Information Systems, Kaiser Permanente; (6) Mr. Luis Machuca, President and CEO, Kryptiq Corporation; and (7) Mr. Prem Urali, President and CEO, HealthUnity Corporation.

During this hearing two related issues were raised by all witnesses: (1) the lack of IT professionals with specialized training to develop appropriate health IT software and to work in healthcare settings; and (2) the lack of training for healthcare professionals to efficiently use information technology in their jobs. All of the witnesses agreed that the lack of trained professionals was a significant obstacle to the adoption of health IT systems.

V. COMMITTEE ACTIONS

As summarized in Section IV of this report, the Subcommittee on Environment, Technology and Standards heard testimony in the 109th Congress relevant to the programs authorized in H.R. 1467.

On March 9, 2007, Representative David Wu, Chairman of the Subcommittee on Technology and Innovation of the Committee on Science and Technology, for himself and Representatives Hall, Gordon and Gingrey introduced H.R. 1467, the "10,000 Trained by 2010 Act," to authorize the National Science Foundation to award grants to institutions of higher education to develop and offer education and training programs.

On May 23, 2007, the Committee on Science and Technology met to consider H.R. 1467. Mr. Hall moved that the Committee favorably report the bill, H.R. 1467 to the House with the recommendation that the bill do pass; that the staff be instructed to make necessary technical and conforming changes; and that the Chairman take all necessary steps to bring the bill before the House for consideration. The motion was agreed to by voice vote.

VI. SUMMARY OF MAJOR PROVISIONS OF THE BILL

Authorizes NSF to award grants to institutions of higher education to: carry out research on innovative approaches to enhancing healthcare informatics through hardware and software solutions; establish multidisciplinary Centers for Healthcare Informatics Research; and establish or improve undergraduate and master's degree programs, as well as certificate programs in healthcare informatics. Authorizes NSF to expand the activities of the Advanced Technological Education program to support improved education and technical training, at 2-year colleges, in fields related to healthcare informatics.

VII. SECTION-BY-SECTION ANALYSIS OF THE BILL

Sec. 1. Short Title—10,000 Trained by 2010 Act.

Sec. 2. Findings—Describes findings for this Act.

Sec. 3. Definitions—Provides definitions for this Act.

Sec. 4. National Science Foundation Research—Authorizes NSF to award grants to institutions of higher education for research on innovative approaches to enhancing healthcare informatics through hardware and software solutions. The focus of this research would be in the area of clinical/healthcare informatics, public health/population informatics, translational informatics, and privacy and confidentiality. Authorizes NSF to award grants to institutions of higher education to establish multidisciplinary Centers for Healthcare Informatics Research. Applicants may partner with government laboratories and/or for-profit institutions. These Centers are designed to advance the health IT research agenda and to train additional qualified health IT personnel and professionals, including physicians, nurses, information technology specialists, medical administrators and social scientists. Instructs NSF to convene an annual meeting of Center investigators to facilitate information exchange.

Sec. 5. National Science Foundation Information Programs—Authorizes NSF to establish a program to award grants to institutions of higher education to establish or improve undergraduate and master's degree programs, as well as certificate programs in healthcare informatics, to increase the number of students who pursue studies in fields related to health IT and to provide students with experience in government or the private sector related to their health IT studies. Funds may be used for curriculum development, faculty development, equipment acquisition, student recruitment and/or the establishment of bridge programs with two-year colleges and industry internship programs for students. The provision encourages the use of distance learning when appropriate. Finally, authorizes NSF to expand the activities of the Advanced Technological Education program (centered on two-year institutions), established under the Scientific and Advanced Technology Act of 1992, to support improved education and technical training in fields related to health IT.

VIII. COMMITTEE VIEWS

The Committee recognizes the benefits that an integrated healthcare information technology network could provide. However, the Committee believes that investment in physical infrastructure

and technology alone is not enough. In fact, the lack of a workforce with the appropriate skill sets and training can impede the adoption of technology.

H.R. 1467 is designed to fill a gap in education and training for health IT students and professionals who will design and/or use health IT systems. Given the National Science Foundation's expertise in overseeing curriculum development, training and research in the broad field of IT, NSF is uniquely positioned to bring its IT and educational expertise to bear in the specialized area of health IT.

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. 1467 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. 1467 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

JUNE 1, 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. 1467, the 10,000 Trained by 2010 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. 1467—10,000 Trained by 2010 Act

Summary: H.R. 1467 would authorize the appropriation of about $100 million over the 2008–2011 period for the National Science Foundation (NSF) to award grants to institutions of higher education to conduct basic research and improve undergraduate and graduate education in the study of information systems. Research grants would be awarded on a competitive basis to develop innovative approaches to improve the collection and management of information. Additionally, grant funds authorized by the bill would be used to develop curricula, acquire equipment, establish and expand degree programs, and undertake other activities to improve education in information-related fields.

CBO estimates that implementing H.R. 1467 would cost $83 million over the 2008–2012 period (with additional outlays after 2012),

assuming the appropriation of the specified funds. Enacting H.R. 1467 would have no effect on direct spending or revenues.

H.R. 1467 contains no intergovernmental or private-sector mandates as defined in the Unfunded Mandates Reform Act (UMRA); costs to public institutions of higher education would result from complying with conditions of federal assistance.

Estimated cost to the Federal Government: The estimated budgetary impact of H.R. 1467 is shown in the following table. The costs of this legislation fall within budget function 250 (general science, space, and technology).

	By fiscal year, in millions of dollars—				
	2008	2009	2010	2011	2012
CHANGES IN SPENDING SUBJECT TO APPROPRIATION					
Research Grants:					
Authorization Level	4	4	4	4	0
Estimated Outlays	1	2	3	4	3
Informatics Research Centers:					
Authorization Level	5	5	5	5	0
Estimated Outlays	1	3	4	4	4
Capacity Building Grants:					
Authorization Level	9	9	9	10	0
Estimated Outlays	1	5	7	9	8
Information Education and Centers:					
Authorization Level	7	7	7	8	0
Estimated Outlays	1	4	6	7	6
Total Changes:					
Authorization Level	25	25	25	27	0
Estimated Outlays	4	14	20	24	21

Basis of estimate: H.R. 1467 would authorize the appropriation of about $100 million over the next five years for the NSF to award grants to institutions of higher education for research and education programs on information systems. For this estimate, CBO assumes that the bill will be enacted in fiscal year 2007 and that the amounts authorized by the bill will be appropriated for each fiscal year. Assuming the appropriation of the specified amounts, CBO estimates that implementing H.R. 1467 would cost $4 million in 2008 and $83 million over the 2008–2012 period.

Research grants

H.R. 1467 would establish a grant program for institutions of higher education to conduct research on innovative approaches to improve information systems. The bill would authorize the appropriation of about $15 million to NSF for this activity over the 2008–2011 period. Based on the historical spending patterns of other NSF research activities, CBO estimates that implementing this grant program at the levels specified in the bill would cost $13 million over the 2008–2012 period.

Informatics research centers

H.R. 1467 would authorize the appropriation of $20 million over the next four years to establish informatics research centers. Competitive, multi-year grants would be awarded to institutions of higher education to conduct informatics research (i.e., the study of the structure, behavior and interactions of systems that store, process, and communicate information.) Assuming the appropriation of

the specified amounts, CBO estimates that implementing this provision would cost $16 million over the 2008–2012 period.

Capacity building grants

H.R. 1467 would direct NSF to award grants to institutions of higher education to improve undergraduate and graduate education in information systems. Grants could be used to establish or expand degree programs, develop curricula, acquire necessary equipment, foster relationships with the public and private sector, and provide opportunities for students to obtain practical experience in the information field. The bill would authorize the appropriation of $37 million over the 2008–2011 period for the operation of such a grant program. Based on the historical spending patterns of similar NSF programs, CBO estimates that implementing this provision would cost $30 million over the 2008–2012 period.

Information education and centers

H.R. 1467 would authorize the appropriation of $29 million over the 2008–2011 period for two grant programs originally created by the Scientific and Advanced Technology Act of 1992. Under that Act, NSF is directed to award grants to institutions of higher education that offer associate degree programs in advanced technology fields. Grants could be used to develop model instructional programs and materials, provide for the professional development of faculty members, establish partnerships with the public and private sectors, acquire necessary equipment, and establish centers that serve as information clearinghouses and models for other educational institutions. Assuming the appropriation of the specified amounts, CBO estimates that implementing this grant program would cost $24 million over the 2008–2012 period.

Intergovernmental and private-sector impact: H.R. 1467 contains no intergovernmental or private-sector mandates as defined in UMRA. Public institutions of higher education would benefit from the research and program development activities authorized in the bill. Any costs those institutions might incur would result from complying with conditions of federal assistance.

Estimate prepared by: Federal costs: Daniel Hoople. Impact on State, local, and tribal governments: Lisa Ramirez-Branum. Impact on the private sector: Amy Petz.

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

XI. COMPLIANCE WITH PUBLIC LAW 104–4

H.R. 1467 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. 1467 are to advance research and provide education and training in the area of information technology.

XIV. CONSTITUTIONAL AUTHORITY STATEMENT

Article I, section 8 of the Constitution of the United States grants Congress the authority to enact H.R. 1467.

XV. FEDERAL ADVISORY COMMITTEE STATEMENT

H.R. 1467 does not establish nor authorize the establishment of any advisory committee.

XVI. CONGRESSIONAL ACCOUNTABILITY ACT

The Committee finds that H.R. 1467 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. 1467 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 May 23, 2007, the Committee on Science and Technology favorably reported H.R. 1467 and recommended its enactment.

XXI. PROCEEDINGS OF THE FULL COMMITTEE MARKUP

XXI. PROCEEDINGS OF THE FULL COMMITTEE MARKUP ON H.R. 1467, THE 10,000 TRAINED BY 2010 ACT

WEDNESDAY, MAY 23, 2007

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

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

Chairman GORDON. Good morning everyone. The Committee on Science and Technology will come to order. Pursuant to notice, the Committee meets to consider the following measures: H.R. 364, *To provide for the establishment of the Advanced Research Projects Agency–Energy;* H.R. 1467, the *10,000 Trained by 2010 Act;* H.R. 1716, the *Green Energy Education of 2007;* and H.R. 632, the *H–Prize Act of 2007.*

Before we get started with this markup though, we have one quick piece of Committee business to attend to. The distinguished Member from California, Mr. Calvert, recently took a leave of absence from the Committee to serve on Appropriations. This left the Space and Aeronautics Subcommittee without a Ranking Member. Last week Mr. Hall announced that Representative Feeney would take over as Ranking Member of the Subcommittee, and I now ask unanimous consent that the Committee on Science and Technology ratify the selection of Mr. Feeney as Ranking Member of the Space and Aeronautics Subcommittee. Without objection——

Mr. HALL. Mr. Chairman, do you have to be present to be proposed or——

Chairman GORDON. Well, I am considering that no objection and—or may I say, I consider that a slight objection and it is so ordered. I want to congratulate Mr. Feeney.

Let me also say that Ken Calvert—I was Ranking Member of this committee and Ken did much more than I did. He made an effort to go to every facility all across the country and became very knowledgeable and we hope that he will be a continuing asset and I am sure that Mr. Feeney will also do a good job, but Ken did a particularly good job and hopefully he will be there on Appropriations to understand these issues.

We now begin with the markup and I will begin with a brief statement. Today the Committee is marking up four bills. The first bill we will consider is a bill that I introduced, H.R. 364, which establishes the Advanced Research Project Agency for Energy, and in

the Subcommittee hearing and in the markup we had a very healthy discussion that I believe pointed to the critical need for such an entity. We have worked hard with our friends from across the aisle, and while there are still a few differences, it has resulted in a better bill. It is my understanding that this discussion will continue today with a number of amendments, and I look forward to addressing those concerns.

The next bill we will take up is H.R. 1467, the *10,000 Trained by 2010 Act,* introduced by Chairman Wu. This is a good bill which I support. There has been a lot of talking in Washington about the need to push health care IT forward. Our medical system is far behind other sectors in the use of information technology. However, it is common knowledge that information technology could significantly improve patient care and reduce health care costs, and let me just collaterally say that I have just introduced H.R. 2406. It is a health care IT bill that will be in the jurisdiction of this committee. As I think Mr. Gingerich can tell you, it is going to be wildly popular within the health care area, doctors, physicians, everyone. Health care IT or IT in the health care area is one of the few areas that hasn't really matured. It is so popular that Newt Gingerich and Hillary Clinton are supporting this concept and so I would suggest to all of you to take a look at it. Don't get involved if you don't want to but I think you will find that it will be something that is going to be a good bill and will be popular for you.

And we also have H.R. 1716, the *Green Energy Education Act of 2007.* It was introduced by Mr. McCaul, and H.R. 1716 raises the profile of a very important issue, university research and education on clean energy including energy efficiency and green building design and technologies. It would bring together the Department of Energy, a emission agency, and the National Science Foundation, which has a long history with science and technological education, in a common goal to help educate the next generation of energy technology experts and green building professionals. This bill helps meet a very important need, and I thank Mr. McCaul for bringing it to the Committee, and who would have known he would have been such a greenie. But we thank you. This is a good bill.

We also will consider Mr. Lipinski's and Mr. Inglis' H.R. 362, the *H–Prize Act of 2007.* Hydrogen technology represents just the type of transformational possibilities that we are hoping to achieve with ARPA–E and may some day make an important piece of our energy puzzle, and I commend our colleagues, Mr. Inglis and Mr. Lipinski, for working together to make this a good bipartisan bill and I look forward to moving it through the Committee today.

So these are the four good bills that we have before us and I now would like to recognize Mr. Hall to present his opening remarks.

[The prepared statement of Chairman Gordon follows:]

PREPARED STATEMENT OF CHAIRMAN BART GORDON

Today the Committee is meeting to markup four bills.

The first bill we will consider today is a bill that I introduced, H.R. 364, which establishes an Advanced Research Projects Agency for Energy. In the Subcommittee hearing and markup we had a very healthy discussion that, I believe, pointed to the critical need for such an entity.

We have worked hard with our friends across the aisle. And, while there are still substantial differences, it has resulted in a better bill. It is my understanding that

this discussion will continue today with a number of amendments, and I look forward to addressing your concerns.

The next bill we will take up is H. R. 1467, the *10,000 Trained by 2010 Act* introduced by Chairman Wu. This is a good bill which I support.

There has been a lot of talk in Washington about the need to push health care IT forward. Our medical system is far behind other sectors in the use of information technology. However, it is common knowledge that information technology could significantly improve patient care and reduce health care costs.

While there has been a lot of discussion on the issue in Congress, not much has actually been done. In this case, Chairman Wu and other Members of the Committee have identified one component of the issue and how the Science and Technology Committee could make a real and positive contribution in this area.

I strongly support this legislation and would urge everyone on the Committee to do so as well.

H.R. 1716, the *Green Energy Education Act of 2007,* was reintroduced by Mr. McCaul this year after having passed the House as part of a broader bipartisan Science Committee Energy R&D bill at the end of the 109th Congress.

H.R. 1716 raises the profile of a very important issue—university research and education on clean energy, including energy efficiency and green building design and technologies. It would bring together the Department of Energy, a mission agency, and the National Science Foundation, which has a long history with science and technology education, in a common goal to help educate the next generation of energy technology experts and green building professionals.

This bill helps meet a very important need and I thank Mr. McCaul for bringing it to the Committee.

We will also consider by Mr. Lipinski, H.R. 632, the *H–Prize Act of 2007.* Hydrogen technologies represent just the type of transformational possibilities that we are hoping to achieve with ARPA–E, and may some day make up an important piece of our energy puzzle.

I commend my colleagues Mr. Inglis and Mr. Lipinski for working together and for working hard to make this a good, bipartisan bill. I look forward to moving it through Committee today.

These are four good bills, and I strongly encourage my colleagues to support all of them.

Mr. HALL. Mr. Chairman, you and I have been working together now for over 22 years and on the same side of the aisle for most of that time, and if it weren't for me switching parties you might not even be Chairman right now, and I have been talked to by 4/5 of you bunch asking me to switch back. A good group on both sides. I appreciate everybody on both sides of the Chairman here, and you can thank me later if you would like.

When you work with someone as long as we have, not only on this committee but also on the Commerce Committee—we are on that Committee together—there are bound to be some times when we are going to disagree, and as much as I dislike going against my friend from Tennessee, sometimes it just happens. As it turns out, today is one of those days. While I commend you, Bart, for your efforts on behalf of boosting energy R&D, I disagree with the way H.R. 364 does it. I have to say that I have a problem with the idea of creating a new bureaucracy within the Department of Energy that will regardless of intention fight for money with existing and future programs at DOE. With the tight budget parameters we are working with, I am not comfortable authorizing the creation of ARPA–E based on a vague recommendation that was in the *Gathering Storm* report. The facts are that DOE currently has the authority to do ARPA-type projects but DOE is woefully under-funded. I am concerned that we could be faced with the problem of having both the Office of Science and ARPA–E underfunded so that neither of them is operating at full potential if we go forward with the creation of this new agency, and before we go forward with any ARPA-type projects, I would like the Section 1821 study in EPAct

to be completed that looks at the applicability of the DARPA management practices and the advisability of creating a DARPA-type agency within DOE before we move toward this legislation, and to that end, I will be introducing an amendment that without creating a new bureaucracy would require the Secretary of Energy to identify and accelerate advanced research projects at the DOE that will address our energy needs. I along with several of my colleagues have sent a letter to the Secretary urging him to complete the study as mandated by law so that we all might benefit from its recommendations.

In addition to the letter, we also ask the Secretary to appoint a technology transfer coordinator and establish the technology transfer working group. As several of our witnesses testified to in our committee hearing, technology transfer plays a very integral part in the process from basic research to widespread commercialization. I don't think anyone would dispute that our country needs clean, affordable, reliable energy that is generated through research and development. This committee should continue to advance legislation that addresses our most critical energy needs in a fiscally responsible manner. To that end, I will be introducing legislation by the end of the week that will help accomplish these goals.

In addition to the ARPA–E legislation, we will also be marking up H.R. 1467, H.R. 1716 and H.R. 632. I am an original co-sponsor of H.R. 1467, the *10,000 Trained by 2010 Act,* and I am supportive of the primary goal it seeks to achieve. If implemented correctly and efficiently, health information technology can revolutionize our health care system but we have to have an educated workforce properly trained in health IT in order for it to be successful, and this is what H.R. 1467 is about. NSF is already doing work, yeoman's work in the IT arena but this measure will increase the focus on health IT. I encourage my colleagues to support it.

I urge my colleagues to support H.R. 1716, the *Green Energy Education Act of 2007,* introduced by my fellow Texan, Mr. McCaul. This is a good piece of legislation. It was voted out of this committee in the last Congress. The fact that it has also been included in larger packages on both sides of the aisle in this Congress indicates its overwhelming support. Simply put, this measure encourages the Department of Energy to work with the National Science Foundation to help develop the next generation of engineers and architects to work effectively together to produce buildings that will incorporate the latest in energy-efficient technologies. I commend Mr. McCaul for his fine work on this bill.

Finally, I urge my colleagues to support H.R. 632, the *H–Prize Act,* sponsored by Inglis and Lipinski. This legislation was introduced in the last Congress and passed overwhelmingly by the House of Representatives. This bill directs the Secretary of Energy to award competitive cash prizes biannually to advance the research, development, demonstration and commercial applications of hydrogen energy technologies. Categories eligible for prizes include advancements in certain hydrogen components or systems, prototypes of hydrogen-powered vehicles and transformational changes in the technologies for hydrogen distribution or production. I com-

mend Mr. Inglis and Mr. Lipinski for introducing this legislation and I encourage my colleagues to support it.

Once again, Mr. Chairman, I am happy to be supportive of these three bipartisan pieces of legislation. I look forward to working with you to advance these bills.

I yield back my time, sir.

[The prepared statement of Mr. Hall follows:]

PREPARED STATEMENT OF REPRESENTATIVE RALPH M. HALL

Mr. Chairman, you and I have been working together for over 22 years now—and on the same side of the aisle for most of that time. Why, if it weren't for me switching parties, you might not be the chairman right now! You can thank me later. . .. When you work with someone as long as we have, not only on this committee, but also on the Commerce Committee, there are bound to be times when we're going to disagree, and as much as I dislike going against my good friend from Tennessee, sometimes it just happens. As it turns out, today is one of those days. While I commend my friend for his efforts on behalf of boosting energy R&D, I disagree with the way H.R. 364 does it. I have to say that I have a problem with the idea of creating a new bureaucracy within the Department of Energy that will, regardless of intention, fight for money with existing and future programs at DOE. With the tight budget parameters we are working with, I am not comfortable authorizing the creation of ARPA–E based on a vague recommendation that was in the *Gathering Storm* report.

The facts are that DOE currently has the authority to do ARPA-type projects, but DOE is woefully under funded. I am concerned that we could be faced with the problem of having both the Office of Science and ARPA–E under funded so that neither of them is operating at its full potential if we go forward with creating this new agency. Before we go forward with any ARPA-type projects, I would like the Section 1821 study in EPACT to be completed that looks at the applicability of the DARPA management

practices and the advisability of creating a DARPA-type agency within DOE before moving forward with legislation. To that end I will be introducing an amendment that, without creating a new bureaucracy, would require the Secretary of Energy to identify and accelerate advanced research projects at the DOE that will address our energy needs. I, along with several of my colleagues, have sent a letter to the Secretary urging him to complete the study as mandated by law so that we all may benefit from its recommendations. In addition, in the letter we also ask the Secretary to appoint the Technology Transfer Coordinator and establish the Technology Transfer Working Group. As several of our witnesses testified to in our Subcommittee hearing, technology transfer plays an integral part in the process from basic research to widespread commercialization.

I don't think anyone would dispute that our country needs clean, affordable, reliable energy that is generated through research and development. This committee should continue to advance legislation that addresses our most critical energy needs in a fiscally responsible manner. To that end, I will be introducing legislation by the end of this week that will help accomplish these goals.

In addition to the ARPA–E legislation we will also be marking up H.R. 1467, H.R. 1716, and H.R. 632. I am an original co-sponsor of H.R. 1467, the *10,000 Trained by 2010 Act,* and am supportive of the primary goal it seeks to achieve. If implemented correctly and efficiently, health information technology (IT) can revolutionize our health care system. But, we must have an educated workforce, properly trained in health IT, in order for it to be successful. This is what H.R. 1467 is about. NSF is already doing work yeoman's work in the IT arena, but this measure will increase the focus on health IT. I encourage my colleagues to support it.

I urge my colleagues to support H.R. 1716, the *Green Energy Education Act of 2007,* introduced my fellow Texan, Mr. McCaul. This is a good piece of legislation that was voted out of this committee in the last Congress. The fact that it is also being included in larger energy packages on both sides of the aisle in this Congress indicates its overwhelming support. Simply put, this measure encourages the Department of Energy to work with the National Science Foundation to help develop the next generation of engineers and architects to work effectively together to produce buildings that incorporate the latest in energy efficient technologies. I commend Mr. McCaul for his fine work on this bill.

Finally, I also urge my colleagues to support H.R. 632, the *H–Prize Act* sponsored by Inglis and Lipinski. This legislation was introduced in the last Congress and

passed overwhelmingly by the House of Representatives. The bill directs the Secretary of Energy to award competitive cash prizes biennially to advance the research, development, demonstration, and commercial application of hydrogen energy technologies. Categories eligible for prizes include advancements in certain hydrogen components or systems, prototypes of hydrogen-powered vehicles, and transformational changes in technologies for hydrogen distribution or production. I commend Mr. Inglis and Mr. Lipinski for introducing this legislation, and I encourage my colleagues to support it.

Once again, Mr. Chairman, I am happy to be supportive of these three bipartisan pieces of legislation and look forward to working with you to advance these bills. I yield back the balance of my time.

Chairman GORDON. Thank you, Mr. Hall. As you have pointed out, we have had a good working relationship and I will point out that every bill that has come out of this committee has been unanimous and the only—one bill received 21 negative votes on the Floor. That is the worst we have done on the Floor. We are going to have I hope three unanimous bills today and I think the reason that we have been able to do this is, we have started with good bills. We have had extensive consultation and by making better bills. At the end of the day we are going to have our first disagreement but I think two things will happen: We are going to have amendments today that will make the bill even better and I think at the end of the day that it will be a bipartisan bill but it won't be a unanimous bill, and we will try to proceed without kicking or scratching and we will get this done. So without objection, Members may place statements in the record at this point.

[The prepared statement of Mr. Mitchell follows:]

PREPARED STATEMENT OF REPRESENTATIVE HARRY E. MITCHELL

Thank you, Mr. Chairman.

Today we are considering several bills to decrease our dependence on foreign oil and encourage renewable sources of energy.

As the world leader in emissions of greenhouse gasses, it is imperative that we as a nation actively pursue the means to reduce those emissions. We have an obligation to lead the world toward a solution. One way to accomplish this is to invest in alternative energy sources.

The bills before us today would put in place necessary components to take us where we need to be as a nation including education and training, monetary incentives, and fast acting, responsive research programs.

The United States must lead by example and invest in clean, renewable energy sources.

Today, we are considering several bills to address this issue and I look forward to working on them.

Sustainable energy is an issue that affects our environment, our economy, and our national security, and we cannot leave this problem for future generations of Americans to solve.

I yield back the balance of my time.

Chairman GORDON. We will now consider H.R. 1467, the *10,000 Trained by 2010 Act.* I yield to the Chairman of Technology and Innovation Subcommittee, Mr. Wu, five minutes to describe the bill.

Mr. WU. Thank you very much, Mr. Chairman. We have had a busy morning, and I shall be as quick as possible.

All the Members of this committee and I have been working on the issue of health care IT for two years. The genesis of H.R. 1467 was a round table I held in Oregon in August of 2005. This round table was followed by an Environment Standards and Technology Subcommittee field hearing on health care information technology in February of 2006. Representative Reichert chaired the hearing, and Ranking Member Hall also had staff in attendance.

One of the common issues raised at both of these events was the lack of training for folks who are experts in both health care and in IT. Despite the federal focus on developing a national electronic health care record system, there is no systematic plan for the training of current and prospective professionals in both health care and in IT. And without this, without folks who are expert in both fields, we run a serious risk of having boxes and software sit on desks unlit and unused. The need for individuals to manage health care IT is expected to grow 49 percent between 2000, and 2010, and nearly 75 percent of health care organizations indicate there are not enough qualified applicants to fill open health care management positions. H.R. 1467 is intended to keep the lights on at these organizations and focus on addressing the specific educational gap.

I would like to point out the Science and Technology Committee has a history of developing specific training and research programs for IT professionals. During the 107th Congress the Committee became concerned that the lack of specialized computer security training for IT students and professionals was a contributing factor in the lack of good computer security practices and software. As a result, this committee developed and moved H.R. 3394, the *Cyber Security Research and Development Act,* which vested such programs at the National Science Foundation and subsequently became Public Law 107–305.

H.R. 1467 consists of four components. It authorizes the National Science Foundation to award research grants for innovative approaches to enhancing software informatics. I want to make clear and emphasize that this provision builds upon existing NSF activities. It authorizes NSF to support multi-disciplinary health and medical informatics research centers to perform research and to train qualified health care informatics personnel and professionals.

It authorizes NSF to establish a grant program to improve undergraduate, masters, and certificate programs in health care informatics. The goal is to increase the number of students and the quality of their training in the field. This program allows both four-year and two-year institutions to participate as well as allowing for the development of continuing education curricula.

And finally, it authorizes NSF's Advanced Technology Education Program which focuses solely on two-year colleges to support improved education and technical training for health care informatics.

H.R. 1467 is a bipartisan product of this committee. Then Chairman Hall and I introduced this bill in the last Congress. This Congress we reintroduced this bill along with Chairman Gordon and Ranking Member Gingrey of the Technology and Innovation Subcommittee. I have spoken to Dr. Gingrey about health care IT, and he knows firsthand the challenges involved in integrating IT into medical settings. We all recognize the benefits that an integrated health care IT network could provide in terms of improved patient care, safety, privacy, and potential cost savings.

However, investment and physical infrastructure, software, and technology alone is not enough. We need research and to train health care and IT professionals to use and design the resulting systems well.

And with that I yield back the balance of my time.

Chairman GORDON. Thank you, Mr. Wu. It is not much, but seriously, thank you for your work in bringing this to us. I know you have been very tenacious about this, very committed to this, and we thank you.

And now I recognize Mr. Hall for any remarks.

Mr. HALL. Mr. Chairman, as Mr. Wu has stated, several of us here, I am included in that, are original co-sponsors on this. We urge the adoption of it.

And I recognize Mr. Gingrey. I yield to Mr. Gingrey the rest of my time.

Mr. GINGREY. I thank the distinguished Ranking Member for yielding.

Mr. Chairman, let me just say that Chairman Wu pretty much summarized it. This issue of health information technology, electronic medical records, the President is right in calling for fully-integrated system by the year 2014, hopefully before then, and there was a Rand study, Mr. Chairman, that estimated that $160 billion a year could be saved from health care costs. We are spending about $2 trillion I think on an annual basis for health care.

As we all know, probably 65, 70 percent of that is Federal Government spending through our military and veterans and Medicare, Medicaid, and the CHIP Program, so this is hugely important. I am proud to be a co-sponsor and working with David and you, Mr. Chairman, and Ranking Member Hall.

So I will yield back, but I just want to enthusiastically support the bill 1467.

Chairman GORDON. Thank you, Mr. Gingrey. You are correct. There can be billions of dollars of savings here, but let me point out that we can't have the savings, we won't need the technicians until we have inter-operability and until we have patient security, and that is what our bill 2406 will provide. So these are going to work good together, and I look forward to working with you on that.

Does anyone else wish to be recognized?

I ask unanimous consent that the bill is considered as read and open to amendment at any point, and that the Members proceed with the amendments in the order of the roster. Without objection so ordered.

Are there any amendments? Hearing none, the vote is on the bill, H.R. 1467. All those in favor will 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. 1467 to the House with the recommendation that the bill do pass. Furthermore, I move that staff be instructed to make necessary technical and conforming changes and that the Chairman take all the necessary steps to bring the bill before the House for consideration.

I yield back.

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 reported favorably.

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 1 of Rule 22 of the Rules of the House of Representatives that the Committee authorize the Chairman to offer such motions as may be necessary in the House to adopt and pass H.R. 1467, the *10,000 Train by 2010 Act.*

Without objection, so ordered. Congratulations, Mr. Wu and Mr. Gingrey.

Many thanks to everyone, and I want to conclude this markup.

[Whereupon, at 1:00 p.m., the Committee was adjourned.]

APPENDIX

Section-by-Section Analysis of H.R. 1467

I

110TH CONGRESS
1ST SESSION

H. R. 1467

To authorize the National Science Foundation to award grants to institutions of higher education to develop and offer education and training programs.

IN THE HOUSE OF REPRESENTATIVES

MARCH 9, 2007

Mr. WU (for himself, Mr. HALL of Texas, Mr. GORDON of Tennessee, and Mr. GINGREY) introduced the following bill; which was referred to the Committee on Science and Technology

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A BILL

To authorize the National Science Foundation to award grants to institutions of higher education to develop and offer education and training programs.

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 "10,000 Trained by 2010 Act".

SEC. 2. FINDINGS.

The Congress finds that—

(1) the National Science Foundation has long been a government leader in strengthening our Nation's information infrastructure;

(2) as automation and digitization reach the healthcare industry, that industry will need to draw heavily on the expertise of researchers funded by the National Science Foundation for the collection, processing, and utilization of information;

(3) the National Science Foundation's basic research, demonstrations, and curriculum development assistance are all required to help make sure the industry has the knowledge, procedures, and workforce necessary to take full advantage of advanced communications and information technology;

(4) the Bureau of Labor Statistics estimated that 136,000 Americans were employed in 2000 as information management professionals in the healthcare industry alone, with projected growth of 49 percent by 2010; and

(5) no systematic plan exists for designing and implementing systems and information tools and for ensuring that the healthcare workforce can make the transition to the information age.

SEC. 3. DEFINITIONS.

In this Act:

(1) DIRECTOR.—The term "Director" means the Director of the National Science Foundation.

(2) INFORMATION.—The term "information" means healthcare information.

(3) INSTITUTION OF HIGHER EDUCATION.—The term "institution of higher education" has the meaning given that term in section 101 of the Higher Education Act of 1965 (20 U.S.C. 1001).

SEC. 4. NATIONAL SCIENCE FOUNDATION RESEARCH.

(a) GRANTS.—

(1) IN GENERAL.—The Director, in consultation with the heads of other Federal agencies as appropriate, shall award grants for basic research on innovative approaches to improve information systems. Research areas may include—

(A) information studies;

(B) population informatics;

(C) translational informatics; and

(D) data security, integrity, and confidentiality.

(2) MERIT REVIEW; COMPETITION.—Grants shall be awarded under this section on a merit-reviewed, competitive basis.

(3) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Na-

tional Science Foundation to carry out this subsection—

(A) $3,500,000 for fiscal year 2008;

(B) $3,600,000 for fiscal year 2009;

(C) $3,700,000 for fiscal year 2010; and

(D) $3,800,000 for fiscal year 2011.

(b) INFORMATICS RESEARCH CENTERS.—

(1) IN GENERAL.—The Director, in consultation with the heads of other Federal agencies as appropriate, shall award multiyear grants, subject to the availability of appropriations, to institutions of higher education (or consortia thereof) to establish multidisciplinary Centers for Informatics Research. Institutions of higher education (or consortia thereof) receiving such grants may partner with one or more government laboratories, for-profit institutions, or non-profit institutions.

(2) MERIT REVIEW; COMPETITION.—Grants shall be awarded under this subsection on a merit-reviewed, competitive basis.

(3) PURPOSE.—The purpose of the Centers shall be to generate innovative approaches in information by conducting cutting-edge, multidisciplinary research, including in the research areas described in subsection (a)(1).

(4) APPLICATIONS.—An institution of higher education (or a consortium thereof) seeking funding under this subsection shall submit an application to the Director at such time, in such manner, and containing such information as the Director may require. The application shall include, at a minimum, a description of—

(A) the research projects that will be undertaken by the Center and the contributions of each of the participating entities;

(B) how the Center will promote active collaboration among professionals from different disciplines, such as information technology specialists, health professionals, administrators, and social science researchers; and

(C) how the Center will contribute to increasing the number of information researchers and other professionals.

(5) CRITERIA.—In evaluating the applications submitted under paragraph (4), the Director shall consider, at a minimum—

(A) the ability of the applicant to generate innovative approaches to information and effectively carry out the research program;

(B) the experience of the applicant in conducting research in the information field, and the capacity of the applicant to foster new multidisciplinary collaborations;

(C) the capacity of the applicant to attract and provide adequate support for undergraduate and graduate students to pursue information research; and

(D) the extent to which the applicant will partner with government laboratories or for-profit or non-profit entities, and the role the government laboratories or for-profit or non-profit entities will play in the research undertaken by the Center.

(6) ANNUAL MEETING.—The Director shall convene an annual meeting of the Centers in order to foster collaboration and communication between Center participants.

(7) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated for the National Science Foundation to carry out this subsection—

(A) $4,500,000 for fiscal year 2008;

(B) $4,600,000 for fiscal year 2009;

(C) $4,700,000 for fiscal year 2010; and

(D) $4,800,000 for fiscal year 2011.

SEC. 5. NATIONAL SCIENCE FOUNDATION INFORMATION PROGRAMS.

(a) CAPACITY BUILDING GRANTS.—

(1) IN GENERAL.—The Director, in consultation with the heads of other Federal agencies as appropriate, shall establish a program to award grants to institutions of higher education (or consortia thereof) to establish or improve undergraduate and master's degree information programs, to increase the number of students who pursue undergraduate or master's degrees in information fields, to provide students with experience in government or industry related to their information studies, and, to the extent practicable, to do so using distance learning.

(2) MERIT REVIEW; COMPETITION.—Grants shall be awarded under this subsection on a merit-reviewed, competitive basis.

(3) USE OF FUNDS.—Grants awarded under this subsection shall be used for activities that enhance the ability of an institution of higher education (or consortium thereof) to provide high-quality information education, including certification and undergraduate and master's degree programs, and

to recruit and retain increased numbers of students to such programs. Activities may include—

(A) developing and revising curriculum to better prepare undergraduate and master's degree students for careers in the information field;

(B) establishing degree and certificate programs in the information field;

(C) creating opportunities in information research for undergraduate students;

(D) acquiring equipment necessary for student instruction in these programs, including the installation of testbed networks for student use;

(E) providing opportunities for faculty to work with State, local, or Federal Government agencies, private industry, and other academic institutions to develop new expertise or to formulate new information research directions;

(F) establishing collaborations with other academic institutions or departments that seek to establish, expand, or enhance these programs;

(G) establishing student internships for students in these programs at State, local, and

Federal Government agencies or in private industry;

(H) establishing or enhancing bridge programs in information fields between community colleges and universities; and

(I) any other activities the Director, in consultation with the heads of other Federal agencies as appropriate, determines will achieve the purposes described in paragraph (1).

(4) SELECTION PROCESS.—

(A) APPLICATION.—An institution of higher education (or a consortium thereof) seeking funding under this subsection shall submit an application to the Director at such time, in such manner, and with such contents as the Director may require. The application shall include, at a minimum—

(i) a description of the applicant's relevant research and instructional capacity, and in the case of an application from a consortium of institutions of higher education, a description of the role that each member will play in implementing the proposal;

(ii) a comprehensive plan by which the institution or consortium will build instructional capacity in information fields;

(iii) a description of relevant collaborations with State, local, or Federal Government agencies or private industry that inform the instructional program;

(iv) a survey of the applicant's historic student enrollment and placement data and a study of potential enrollment and placement for students enrolled in the proposed program; and

(v) a plan to evaluate the success of the proposed program, including post-graduate assessment of graduate school and job placement and retention rates as well as the relevance of the instructional program to graduate study and to the workplace.

(B) AWARDS.—The Director shall ensure, to the extent practicable, that grants are awarded under this subsection in a wide range of geographic areas and categories of institutions of higher education.

(5) ASSESSMENT REQUIRED.—The Director, in consultation with the heads of other Federal agencies as appropriate, shall evaluate the program established under this subsection no later than 3 years after the establishment of the program. At a minimum, the Director shall evaluate the extent to which the grants have achieved their objectives of increasing the quality and quantity of students pursuing undergraduate or master's degrees in information fields. The Director shall make this assessment publicly available.

(6) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the National Science Foundation to carry out this subsection—

(A) $9,000,000 for fiscal year 2008;

(B) $9,200,000 for fiscal year 2009;

(C) $9,400,000 for fiscal year 2010; and

(D) $9,600,000 for fiscal year 2011.

(b) SCIENTIFIC AND ADVANCED TECHNOLOGY ACT OF 1992.—

(1) GRANTS.—The Director shall provide grants under the Scientific and Advanced Technology Act of 1992 for the purposes of section 3(a) and (b) of that Act, except that the activities sup-

1 ported pursuant to this subsection shall be limited to
2 improving education in fields related to information.
3 (2) AUTHORIZATION OF APPROPRIATIONS.—
4 There are authorized to be appropriated to the Na-
5 tional Science Foundation to carry out this sub-
6 section—
7 (A) $7,000,000 for fiscal year 2008;
8 (B) $7,200,000 for fiscal year 2009;
9 (C) $7,400,000 for fiscal year 2010; and
10 (D) $7,600,000 for fiscal year 2011.

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SECTION-BY-SECTION ANALYSIS OF H.R. 1467,
10,000 TRAINED BY 2010 ACT

SEC. 1. SHORT TITLE—10,000 Trained by 2010 Act.

SEC. 2. FINDINGS—Describes findings for this Act.

SEC. 3. DEFINITIONS—Provides definitions for this Act.

SEC. 4. NATIONAL SCIENCE FOUNDATION RESEARCH—Authorizes NSF to award grants to institutions of higher education for research on innovative approaches to enhancing health care informatics through hardware and software solutions. The focus of this research would be in the area of clinical/health care informatics, public health/population informatics, translational informatics, and privacy and confidentiality. Authorizes NSF to award grants to institutions of higher education to establish multi-disciplinary centers for Health and Medical Informatics Research Centers. Applicants may partner with government laboratories and/or for-profit institutions. These centers are designed to advance the research agenda and to train additional qualified health care informatics personnel and professionals—which would include physicians, nurses, information technology specialists, medical administrators and social scientists. Instructs NSF to convene an annual meeting of Center investigators to facilitate information exchange.

SEC. 5. NATIONAL SCIENCE FOUNDATION INFORMATION PROGRAMS— Authorizes NSF to establish a program to award grants to institutions of higher education to establish or improve undergraduate and Master's degree programs, as well as certificate programs in health care informatics, to increase the number of students who pursue studies in fields related to health care informatics and to provide students with experience in government or the private sector related to their health care informatics studies. Funds may be used for curriculum development, faculty development, equipment acquisition, student recruitment and/or the establishment of bridge programs with two-year colleges and industry internship programs for students. The provision encourages the use of distance learning when appropriate. Finally, authorizes NSF to expand the activities of the Advanced Technological Education program (centered on two-year institutions), established under the *Scientific and Advanced Technology Act of 1992,* to support improved education and technical training in fields related to health care informatics.