

GREEN ENERGY EDUCATION ACT OF 2007

JUNE 5, 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. 1716]

[Including cost estimate of the Congressional Budget Office]

The Committee on Science and Technology, to whom was referred the bill (H.R. 1716) to authorize higher education curriculum development and graduate training in advanced energy and green building technologies, having considered the same, reports favorably thereon with an amendment and recommends that the bill as amended do pass.

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I. AMENDMENT

The amendment is as follows:

Strike all after the enacting clause and insert the following:

SECTION 1. SHORT TITLE.

This Act may be cited as the “Green Energy Education Act of 2007”.

SEC. 2. DEFINITION.

For the purposes of this Act:

(1) **DIRECTOR.**—The term “Director” means the Director of the National Science Foundation.

(2) **HIGH PERFORMANCE BUILDING.**—The term “high performance building” has the meaning given that term in section 914(a) of the Energy Policy Act of 2005 (42 U.S.C. 16194(a)).

(3) **SECRETARY.**—The term “Secretary” means the Secretary of Energy.

SEC. 3. GRADUATE TRAINING IN ENERGY RESEARCH AND DEVELOPMENT.

(a) **FUNDING.**—In carrying out research, development, demonstration, and commercial application activities authorized for the Department of Energy, the Secretary may contribute funds to the National Science Foundation for the Integrative Graduate Education and Research Traineeship program to support projects that enable graduate education related to such activities.

(b) **CONSULTATION.**—The Director shall consult with the Secretary when preparing solicitations and awarding grants for projects described in subsection (a).

SEC. 4. CURRICULUM DEVELOPMENT FOR HIGH PERFORMANCE BUILDING DESIGN.

(a) **FUNDING.**—In carrying out advanced energy technology research, development, demonstration, and commercial application activities authorized for the Department of Energy related to high performance buildings, the Secretary may contribute funds to curriculum development activities at the National Science Foundation for the purpose of improving undergraduate or graduate interdisciplinary engineering and architecture education related to the design and construction of high performance buildings, including development of curricula, of laboratory activities, of training practicums, or of design projects. A primary goal of curriculum development activities supported under this section shall be to improve the ability of engineers, architects, landscape architects, and planners to work together on the incorporation of advanced energy technologies during the design and construction of high performance buildings.

(b) **CONSULTATION.**—The Director shall consult with the Secretary when preparing solicitations and awarding grants for projects described in subsection (a).

(c) **PRIORITY.**—In awarding grants with respect to which the Secretary has contributed funds under this section, the Director shall give priority to applications from departments, programs, or centers of a school of engineering that are partnered with schools, departments, or programs of design, architecture, and city, regional, or urban planning.

II. PURPOSE

The purpose of this bill is to authorize higher education curriculum development and graduate training in advanced energy and green building technologies.

III. BACKGROUND AND NEED FOR THE LEGISLATION

Affordable, clean energy is essential to the Nation’s continued prosperity. The legislation addresses a significant opportunity for energy savings and greenhouse gas emissions reductions: energy consumption in buildings. According to Department of Energy (DOE) 2003 statistics, buildings consume more energy than any other sector of the economy, including industrial processes and transportation. Buildings consume 39 percent of primary energy in the United States and 70 percent of electricity. Innovations in high-performance building technologies, materials, techniques and systems, combined with advances in photovoltaic and other distributed clean energy technologies, have the potential to dramatically transform the pattern of energy consumption associated with buildings. These building systems and components—coupled with a whole building approach that optimizes the interactions among building systems and components—enable buildings to use considerably less energy, while also helping to meet national goals for sustainable

development, environmental protection, and energy security. But achieving this depends on architects, engineers, contractors and other buildings professionals working together from the earliest stages of planning. The legislation would provide interdisciplinary education and training in high-performance building design and construction to the next generation of architects and engineers.

IV. HEARING SUMMARY

On November 2, 2005, the Subcommittee on Energy of the Committee on Science held a hearing on “Winning Teams and Innovative Technologies from the 2005 Solar Decathlon”. Appearing as witnesses were (1) Mr. Richard F. Moorer, Deputy Assistant Secretary for Technology Development, Office of Energy Efficiency and Renewable Energy, DOE; (2) Mr. David G. Schieren, Graduate Student and Energy Team Leader, Energy Management, New York Institute of Technology; (3) Mr. Jeffrey R. Lyng, Graduate Student and Team Project Manager, Civil, Environmental, and Architectural Engineering, University of Colorado; (4) Mr. Jonathan R. Knowles, Professor and Team Advisor, Department of Architecture, Rhode Island School of Design; and (5) Mr. Robert P. Schubert, Professor and Team Advisor, Department of Architecture, Virginia Polytechnic Institute. The Solar Decathlon brings together architecture and engineering students to design and build a house that is scored for both its energy consumption and its aesthetics and functionality. One of the topics discussed by the panel, which included both architects and engineers, was the need for institutionalizing such collaboration between architecture and engineering departments on university campuses.

V. COMMITTEE ACTIONS

As summarized in Section IV of this report, the Subcommittee on Energy heard testimony in the 109th Congress relevant to the programs authorized in H.R. 1716.

On March 9, 2007, Representative Michael McCaul, for himself and Representatives Hill, Ehlers, Schwartz and McCotter, introduced H.R. 1716, the “Green Energy Education Act of 2007,” to authorize higher education curriculum development and graduate training in advanced energy and green building technologies.

On May 23, 2007, the Committee on Science and Technology met to consider H.R. 1716 and ordered the bill reported favorably.

VI. SUMMARY OF MAJOR PROVISIONS OF THE BILL

Authorizes the Department of Energy and the National Science Foundation to collaborate on the solicitation and funding of grants to institutions of higher education for education and training in clean energy and high-performance building design.

VII. SECTION-BY-SECTION ANALYSIS OF THE BILL

Sec. 1. Short Title.—“Green Energy Education Act of 2007.”

Sec. 2. Definitions.—Provides definitions for terms used in this Act.

Sec. 3. Graduate Training in Energy Research and Development.—Authorizes Department of Energy (DOE) to contribute funds to the National Science Foundation’s (NSF) Integrative Grad-

uate Education and Research Traineeship (IGERT) program in support of projects related to energy research, development, demonstration and commercial application. IGERT awards prepare doctoral students by integrating research and education in innovative ways that are tailored to the unique requirements of newly emerging interdisciplinary fields and new career options.

Sec. 4. Curriculum Development for High Performance Building Design.—Authorizes DOE's high performance buildings technologies programs to contribute to NSF's ongoing curriculum development activities for the purpose of improving undergraduate and graduate interdisciplinary engineering and architecture education related to the design and construction of high performance buildings. Requires the Director of NSF to consult with the Secretary of Energy in awarding grants for this purpose. Gives priority to applications for schools, departments, or programs of engineering that are partnered with schools, departments or programs of design, architecture and city, regional, or urban planning.

VIII. COMMITTEE VIEWS

The Committee intends this bill to promote broad collaboration between universities and DOE applied energy technology programs. The Committee expects that the funding DOE provides to NSF for IGERT grants under this Act will come primarily from the fossil, nuclear, electricity delivery and energy reliability, and energy efficiency and renewable energy programs. The Committee does not intend for the energy technology offices to shift their responsibility for partnering with universities to cultivate the next generation of energy technology experts to the Office of Science.

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. 1716 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. 1716 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

H.R. 1716—Green Energy Education Act of 2007

H.R. 1716 would authorize the Secretary of Energy to transfer funds to the National Science Foundation (NSF) for undergraduate and graduate education programs related to energy research and development and the design and construction of high-performance buildings. High-performance buildings, as defined by the Energy Policy Act of 2005, are those that optimize energy efficiency, durability, life-cycle performance, and occupants' productivity. CBO estimates that implementing H.R. 1716 would have no significant cost

over the next five years. Enacting this legislation would not affect revenues and would have no significant impact on direct spending.

Section 3 would authorize the Secretary to transfer funds to NSF's 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 students in science and engineering. Currently, NSF plans to allocate about \$67 million to IGERT in 2007. Under the bill, any funds transferred to IGERT would be used for activities related to energy research and development.

Section 4 would provide similar authority to the Secretary of Energy to transfer funds to NSF programs that improve undergraduate and graduate education in engineering and architecture. Funds transferred under this authority would be used to develop curricula, implement laboratory activities and training, and design projects related to the design and construction of high-performance buildings.

While H.R. 1716 would provide the authority to transfer funds from the Department of Energy to NSF, the bill would not authorize any additional appropriations and thus would not affect the total amount available to be spent. CBO expects that the transfer of any funds under the legislation would not significantly change the rate of expenditure of those funds—either of funds already appropriated (which would be direct spending) or of sums that would be appropriated in the future. As such, CBO estimates that implementing H.R. 1716 would have no significant effect on outlays over the next five years.

H.R. 1716 contains no intergovernmental or private-sector mandates as defined in the Unfunded Mandates Reform Act. The bill would benefit public institutions of higher education that participate in activities to develop undergraduate and graduate curricula for interdisciplinary engineering and architecture education. Any costs those institutions might incur would result from complying with conditions of federal assistance.

The CBO staff contact for this estimate is Daniel Hoople. This estimate was approved by Robert A. Sunshine, Assistant Director for Budget Analysis.

XI. COMPLIANCE WITH PUBLIC LAW 104-4

H.R. 1716 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. 1716 are to support higher education curriculum development and graduate training in advanced energy and green building technologies.

XIV. CONSTITUTIONAL AUTHORITY STATEMENT

Article I, section 8 of the Constitution of the United States grants Congress the authority to enact H.R. 1716.

XV. FEDERAL ADVISORY COMMITTEE STATEMENT

H.R. 1716 does not establish nor authorize the establishment of any advisory committee.

XVI. CONGRESSIONAL ACCOUNTABILITY ACT

The Committee finds that H.R. 1716 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. 1716 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. 1716 and recommended its enactment.

XXI. PROCEEDINGS OF THE FULL COMMITTEE MARKUP ON H.R. 1716, THE GREEN ENERGY EDUCATION ACT OF 2007

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 Gingrich 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 underfunded. 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. 1716, the *Green Energy Education Act of 2007*.

I recognize Mr. McCaul for five minutes to describe the bill.

Mr. McCAUL. Thank you, Mr. Chairman. I want to first thank you for including my bill in today's markup and commend you for your bipartisan leadership on this committee. And I also want to thank Mr. Hill for working on this legislation.

My hometown of Austin, Texas, is a green energy kind of town, and I am proud of that. Like many other Members of this committee I am concerned about America's dependence on foreign sources of energy. One of the ways that we can reduce the need for energy imports is to use our energy more efficiently. Buildings con-

sume more energy than any other sector of the economy, including industry and transportation. According to the U.S. Department of Energy U.S. buildings consume 39 percent of our nation's primary energy and 70 percent of electricity.

However, energy efficient building practices are still at the fringes of the building sector, in part because of the lack of awareness about energy efficient technologies and design practices among building professionals. That is why I introduced the *Green Energy Education Act*. This legislation authorizes the Department of Energy to partner with the National Science Foundation to support graduate education and curriculum development to advance DOE's broad energy technology development mission.

Working through NSF, DOE will help develop the next generation of engineers and architects to produce buildings incorporating the latest in energy efficient technologies. In order to reduce the likelihood of duplicative and wasteful programs, this bill allows the Department of Energy and National Science Foundation to combine their efforts to find workable solutions to the issues surrounding building efficiency that can be transferred to the marketplace.

Specifically, H.R. 1716 will authorize DOE's Office of Science and Applied Energy Technology Programs to contribute funds to NSF's successful Integrative Graduate Education and Research Training Program, which is already doing great work in this area.

This bill also authorizes the Department of Energy to contribute to NSF's curriculum development activities in order to improve the ability of engineers and architects to design and construct more efficient and durable buildings.

I urge my colleagues to support this important step towards increasing America's energy independence, and I yield back.

[The prepared statement of Mr. McCaul follows:]

PREPARED STATEMENT OF REPRESENTATIVE MICHAEL T. MCCAUL

I would like to thank you for including this bill in today's markup and would also like to thank Mr. Hill for working with me on this legislation.

Like many other Members of this committee, I am concerned about America's dependence on foreign sources of energy. One of the ways that we can reduce the need for energy imports is to use our energy more efficiently.

Buildings consume more energy than any other sector of the economy, including industry and transportation. According to U.S. Department of Energy, U.S. buildings consume 39 percent of our nation's primary energy and 70 percent of electricity. However, energy efficient building practices are still at the fringes of the building sector, in part because of a lack of awareness about energy efficient technologies and design practices among building professionals.

This is why I introduced the *Green Energy Education Act*. This legislation authorizes DOE to partner with the National Science Foundation to support graduate education and curriculum development to advance DOE's broad energy technology development mission. Working through NSF, DOE will help develop the next generation of engineers and architects to produce buildings incorporating the latest in energy efficient technologies.

In order to reduce the likelihood of duplicative and wasteful programs, this bill allows the Department of Energy and National Science Foundation to combine their efforts to find workable solutions to the issues surrounding building efficiency that can be transferred to the marketplace.

Specifically, H.R. 1716 will authorize DOE's Office of Science and applied energy technology programs to contribute funds to NSF's successful Integrative Graduate Education and Research Traineeship program, which is already doing good work in this area.

This bill also authorizes the DOE to contribute to NSF's curriculum development activities, in order to improve the ability of engineers and architects to design and construct more efficient and durable buildings.

I urge my colleagues to support this important step towards increasing America's energy independence.

I yield back.

Chairman GORDON. Thank you, Mr. McCaul, and thank you for bringing us a good bill. We will get this to the Floor at the earlier possible time.

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.

The first amendment on the roster is offered by the gentleman from Texas, Mr. McCaul. Are you ready to proceed with your amendment?

Mr. McCAUL. I am, Mr. Chairman. I have an amendment at the desk.

Chairman GORDON. The Clerk will report the amendment.

The CLERK. Amendment to H.R. 1716 offered by Mr. McCaul of Texas.

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

The gentleman is recognized for five minutes to explain the amendment.

Mr. McCAUL. I won't take nearly that amount of time. It is a very simple amendment that clarifies that landscape architects will be eligible for the programs created in this bill. By designing the environment around a building with the goal of energy efficiency in mind, landscape architects have helped find new and innovative ways of reducing energy consumption. Landscape architects clearly have an important role to play in the research that the *Green Energy Education Act* promotes.

So I urge the adoption of this amendment, and I yield back the balance of my time.

[The prepared statement of Mr. McCaul follows:]

PREPARED STATEMENT OF REPRESENTATIVE MICHAEL T. McCAUL

This is a very simple amendment that clarifies that landscape architects will be eligible for the programs created in this bill. By designing the environment around a building with the goal of energy efficiency in mind, landscape architects have helped find new and innovative ways of reducing energy consumption.

Landscape architects clearly have an important role to play in the research that the *Green Energy Education Act* promotes, and so I urge the adoption of this amendment.

I yield back the balance of my time.

Chairman GORDON. Is there further discussion on the amendment? If not, the vote occurs on the amendment. All in favor, say aye. Those opposed, no. The ayes have it, and the amendment is agreed to.

Are there other amendments? Hearing none, the vote is on the bill, H.R. 1716 as amended. 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. 1716 as amended to the House with the recommenda-

tion that the bill do pass. Furthermore, I move that the 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 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. 1716, the *Green Energy Education Act of 2007*, as amended.

Without objection, so ordered. Let me again, I want to thank the hard core for staying here. We have one more to go. We are going to have votes about 1:00. We are going to be right under the gun here.

Many thanks to everyone, and I want to conclude this markup. [Whereupon, at 1:00 p.m., the Committee was adjourned.]

Appendix:

H.R. 1716, SECTION-BY-SECTION ANALYSIS OF H.R. 1716,
AMENDMENT ROSTER

110TH CONGRESS
1ST SESSION

H. R. 1716

To authorize higher education curriculum development and graduate training
in advanced energy and green building technologies.

IN THE HOUSE OF REPRESENTATIVES

MARCH 27, 2007

Mr. McCAUL of Texas (for himself, Mr. HILL, Mr. EHLERS, Mr. SCHWARTZ,
and Mr. McCOTTER) introduced the following bill; which was referred to
the Committee on Science and Technology

A BILL

To authorize higher education curriculum development and
graduate training in advanced energy and green building
technologies.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3 SECTION 1. SHORT TITLE.

4 This Act may be cited as the “Green Energy Edu-
5 cation Act of 2007”.

6 SEC. 2. DEFINITION.

7 For the purposes of this Act:

8 (1) DIRECTOR.—The term “Director” means
9 the Director of the National Science Foundation.

1 (2) HIGH PERFORMANCE BUILDING.—The term
2 “high performance building” has the meaning given
3 that term in section 914(a) of the Energy Policy Act
4 of 2005 (42 U.S.C. 16194(a)).

5 (3) SECRETARY.—The term “Secretary” means
6 the Secretary of Energy.

7 **SEC. 3. GRADUATE TRAINING IN ENERGY RESEARCH AND**
8 **DEVELOPMENT.**

9 (a) FUNDING.—In carrying out research, develop-
10 ment, demonstration, and commercial application activi-
11 ties authorized for the Department of Energy, the Sec-
12 retary may contribute funds to the National Science Foun-
13 dation for the Integrative Graduate Education and Re-
14 search Traineeship program to support projects that en-
15 able graduate education related to such activities.

16 (b) CONSULTATION.—The Director shall consult with
17 the Secretary when preparing solicitations and awarding
18 grants for projects described in subsection (a).

19 **SEC. 4. CURRICULUM DEVELOPMENT FOR HIGH PERFORM-**
20 **ANCE BUILDING DESIGN.**

21 (a) FUNDING.—In carrying out advanced energy
22 technology research, development, demonstration, and
23 commercial application activities authorized for the De-
24 partment of Energy related to high performance buildings,
25 the Secretary may contribute funds to curriculum develop-

1 ment activities at the National Science Foundation for the
2 purpose of improving undergraduate or graduate inter-
3 disciplinary engineering and architecture education related
4 to the design and construction of high performance build-
5 ings, including development of curricula, of laboratory ac-
6 tivities, of training practicums, or of design projects. A
7 primary goal of curriculum development activities sup-
8 ported under this section shall be to improve the ability
9 of engineers, architects, and planners to work together on
10 the incorporation of advanced energy technologies during
11 the design and construction of high performance buildings.

12 (b) CONSULTATION.—The Director shall consult with
13 the Secretary when preparing solicitations and awarding
14 grants for projects described in subsection (a).

15 (c) PRIORITY.—In awarding grants with respect to
16 which the Secretary has contributed funds under this sec-
17 tion, the Director shall give priority to applications from
18 departments, programs, or centers of a school of engineer-
19 ing that are partnered with schools, departments, or pro-
20 grams of design, architecture, and city, regional, or urban
21 planning.

SECTION-BY-SECTION ANALYSIS OF H.R. 1716,
GREEN ENERGY EDUCATION ACT OF 2007

SEC. 1. SHORT TITLE—‘Green Energy Education Act of 2007’

SEC. 2. DEFINITIONS—Provides definitions for terms used in this Act.

SEC. 3. GRADUATE TRAINING IN ENERGY RESEARCH AND DEVELOPMENT—Authorizes Department of Energy (DOE) to contribute funds to the National Science Foundation’s (NSF) Integrative Graduate Education and Research Traineeship (IGERT) program in support of projects related to energy research, development, demonstration and commercial application.

SEC. 4. CURRICULUM DEVELOPMENT FOR HIGH PERFORMANCE BUILDING DESIGN—Authorizes DOE’s high performance buildings technologies programs to contribute to NSF’s ongoing curriculum development activities for the purpose of improving undergraduate and graduate interdisciplinary engineering and architecture education related to the design and construction of high performance buildings. Requires the Director of NSF to consult with the Secretary of Energy in awarding grants for this purpose. Gives priority to applications for schools, departments, or programs of engineering that are partnered with schools, departments or programs of design, architecture and city, regional, or urban planning.

**COMMITTEE ON SCIENCE AND TECHNOLOGY
FULL COMMITTEE MARKUP
MAY 23, 2007**

AMENDMENT ROSTER

H.R. 1716 – The Green Energy Education Act of 2007

No.	Sponsor	Description	Results
1	Mr. McCaul	Manager's amendment to section 4 adds "landscape architects" to the list of persons who are the focus of curriculum development activities under the section.	Agreed to by voice vote.

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ILL.C

AMENDMENT TO H.R. 1716
OFFERED BY MR. MCCAUL OF TEXAS

Page 3, line 9, insert "landscape architects," after
"engineers, architects,".