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111TH CONGRESS, 1st Session } HOUSE OF REPRESENTATIVES { REPORT 111–75

ELECTRONIC DEVICE RECYCLING RESEARCH AND DEVELOPMENT ACT

APRIL 21, 2009.—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

together with

ADDITIONAL VIEWS

[To accompany H.R. 1580]

[Including cost estimate of the Congressional Budget Office]

The Committee on Science and Technology, to whom was referred the bill (H.R. 1580) to authorize the Administrator of the Environmental Protection Agency to award grants for electronic waste reduction research, development, and demonstration projects, and for other purposes, having considered the same, report favorably thereon with amendments and recommend that the bill as amended do pass.

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I. AMENDMENT

The amendments are as follows:

Strike all after the enacting clause and insert the following:

SECTION 1. SHORT TITLE.

This Act may be cited as the "Electronic Device Recycling Research and Development Act".

SEC. 2. FINDINGS.

Congress finds the following:

(1) The volume of electronic devices in the United States is substantial and will continue to grow. The Environmental Protection Agency estimates that over 2 billion computers, televisions, wireless devices, printers, gaming systems, and other devices have been sold since 1980, generating 2 million tons of unwanted electronic devices in 2005 alone.

(2) Electronic devices can be refurbished or recycled to recover and conserve valuable materials, such as gold, copper, and platinum. However, according to the Environmental Protection Agency, only 15 to 20 percent of household generated electronic devices reach recyclers.

(3) The electronic device recycling industry in the United States is growing; however, challenges remain for the recycling of electronic devices generated by households and other small generators. Collection of the electronic devices is expensive, and separation and proper recycling of some of the materials recovered, like lead from cathode-ray tube televisions, is costly.

(4) The export of electronic devices to developing countries also presents a serious challenge. The crude methods of many of the recycling operations in these countries can expose workers to harmful chemicals, jeopardizing their health and polluting the environment.

(5) Some of the challenges to increasing the recyclability of electronic devices can be addressed by improving the logistics and technology of the collection and recycling process, designing electronic devices to avoid the use of hazardous materials and to be more easily recycled, and encouraging the use of recycled materials in more applications.

(6) The public currently does not take full advantage of existing electronic device recycling opportunities. Studying factors that influence behavior and educating consumers about responsible electronic recycling could help communities and private industry develop recycling programs that draw more participation.

(7) The development of tools and technologies to increase the lifespan of electronic devices and to promote their safe re-use would decrease the impact of the production of electronic devices on the environment and likely increase the recyclability of such devices.

(8) Accurately assessing the environmental impacts of the production of electronic devices and the recycling of such devices is a complex task. Data, tools, and methods to better quantify these impacts would help policymakers and others determine the best end-of-life management options for electronic devices.

SEC. 3. ELECTRONIC DEVICE ENGINEERING RESEARCH, DEVELOPMENT, AND DEMONSTRATION PROJECTS.

(a) IN GENERAL.—The Administrator shall award multiyear grants to consortia to conduct research to create innovative and practical approaches to reduce the volume and manage the environmental impacts of electronic devices and, through the conduct of this research, to contribute to the professional development of scientists, engineers, and technicians in the fields of electronic device manufacturing, design, refurbishing, and recycling. The grants awarded under this section shall support research to—

(1) increase the efficiency of and improve electronic device collection and recycling;

(2) expand the uses and applications for materials recovered from electronic devices;

(3) develop and demonstrate environmentally friendly alternatives to the use of hazardous and potentially hazardous materials in electronic devices and the production of such devices;

(4) develop methods to identify, separate, and remove hazardous and potentially hazardous materials from electronic devices and to re-use, recycle, or dispose of such materials in a safe manner;

(5) reconsider product design and assembly to facilitate and improve refurbishment, re-use, and recycling of electronic devices, including an emphasis on design for recycling;

(6) conduct lifecycle analyses of electronic devices, including developing tools and methods to assess the environmental impacts of the production, use, and end-of-life management of electronic devices and electronic device components;

(7) develop product design, tools, and techniques to extend the lifecycle of electronic devices, including methods to promote their upgrade and safe re-use; and

(8) identify the social, behavioral, and economic barriers to recycling and re-use for electronic devices and develop strategies to increase awareness, consumer acceptance, and the practice of responsible recycling and re-use for such devices.

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

(c) APPLICATIONS.—A consortium shall submit an application for a grant under this section to the Administrator at such time, in such manner, and containing such information and assurances as the Administrator may require. The application shall include a description of—

(1) the research project that will be undertaken by the consortium and the contributions of each of the participating entities, including the for-profit entity;

(2) the applicability of the project to reduce impediments to electronic recycling in the electronic device design, manufacturing, refurbishing, or recycling industries;

(3) the potential for and feasibility of incorporating the research results into industry practice; and

(4) how the project will promote collaboration among scientists and engineers from different disciplines, such as electrical engineering, materials science, and social science.

(d) DISSEMINATION OF RESEARCH RESULTS.—Research results shall be made publicly available through—

(1) development of best practices or training materials for use in the electronics manufacturing, design, refurbishing, or recycling industries;

(2) dissemination at conferences affiliated with such industries;

(3) publication on the Environmental Protection Agency's website;

(4) demonstration projects; or

(5) educational materials for the public produced in conjunction with State governments, local governments, or nonprofit organizations on problems and solutions related to electronic waste.

(e) FUNDING CONTRIBUTION FROM FOR-PROFIT MEMBER OF CONSORTIUM.—The for-profit entity participating in the consortium shall contribute at least 10 percent of the total research project cost, either directly or with in-kind contributions.

(f) PROTECTION OF PROPRIETARY INFORMATION.—The Administrator—

(1) shall not disclose any proprietary information or trade secrets provided by any person or entity pursuant to this section;

(2) shall ensure that, as a condition of receipt of a grant under this section, each member of the consortium has in place proper protections to maintain proprietary information or trade secrets contributed by other members of the consortium; and

(3) if any member of the consortium breaches the conditions under paragraph (2) or discloses proprietary information or trade secrets, may require the return of any funds received under this section by such member.

(g) BIENNIAL REPORT.—Within 2 years after the date of enactment of this Act, and every 2 years thereafter, the Administrator shall transmit a report to Congress that provides—

(1) a list of the grants awarded under this section;

(2) the entities participating in each consortium receiving a grant;

(3) a description of the research projects carried out in whole or in part with funds made available under such a grant;

(4) the results of such research projects; and

(5) a description of the rate and success of the adoption or integration of such research results into the manufacturing processes, management practices, and products of the electronics industry.

(h) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Administrator to carry out this section:

(1) $18,000,000 for fiscal year 2010.

(2) $20,000,000 for fiscal year 2011.

(3) $22,000,000 for fiscal year 2012.

SEC. 4. NATIONAL ACADEMY OF SCIENCES REPORT ON ELECTRONIC DEVICE RECYCLING.

(a) IN GENERAL.—In order to better recognize gaps and opportunities in the research and training programs established in this Act, the Administrator shall enter into an arrangement with the National Academy of Sciences for a report, to be transmitted to Congress not later than 1 year after the date of enactment of this Act, on—

(1) opportunities for and barriers to—

(A) increasing the recyclability of electronic devices, specifically addressing—

(i) recycling or safe disposal of electronic devices and low value materials recovered from such devices;

(ii) designing electronic devices to facilitate re-use and recycling; and

(iii) the re-use of electronic devices; and

(B) making electronic devices safer and more environmentally friendly, specifically addressing reducing the use of hazardous materials and potentially hazardous materials in electronic devices;

(2) the environmental and human health risks posed by the storage, transport, recycling, and disposal of electronic devices;

(3) the current status of research and training programs to promote the environmental design of electronic devices to increase the recyclability of such devices; and

(4) any regulatory or statutory barriers that may prevent the adoption or implementation of best management practices or technological innovations that may arise from the research and training programs established in this Act.

(b) RECOMMENDATIONS.—The report under subsection (a) shall identify gaps in the current research and training programs in addressing the opportunities, barriers, and risks relating to electronic device recycling, and the report shall recommend areas where additional research and development resources are needed to reduce the impact of electronic devices on the environment.

SEC. 5. ENGINEERING CURRICULUM DEVELOPMENT GRANTS.

(a) GRANT PROGRAM.—The Administrator, in consultation with the Director of the National Science Foundation, shall award grants to institutions of higher education to develop curricula that incorporates the principles of environmental design into the development of electronic devices—

(1) for the training of electrical, mechanical, industrial, manufacturing, materials, and software engineers and other students at the undergraduate and graduate level; and

(2) to support the continuing education of professionals in the electronic device manufacturing, design, refurbishing, or recycling industries.

(b) ELIGIBLE ENTITIES.—The term "institution of higher education", as such term is used with respect to eligibility to receive a grant under subsection (a)(2), includes any institution of higher education under section 101(b) of the Higher Education Act of 1965 (20 U.S.C. 1001(b)).

(c) OUTREACH TO MINORITY SERVING INSTITUTIONS.—The Administrator shall conduct outreach to minority serving institutions for the purposes of providing information on the grants available under this section and how to apply for such grants.

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

(e) USE OF FUNDS.—Grants awarded under this section shall be used for activities that enhance the ability of an institution of higher education to broaden the undergraduate and graduate-level engineering curriculum or professional continuing education curriculum to include environmental engineering design principles and consideration of product life cycles related to electronic devices and increasing the recyclability of such devices. Activities may include—

(1) developing and revising curriculum to include multidisciplinary elements;

(2) creating research and internship opportunities for students through partnerships with industry, nonprofit organizations, or government agencies;

(3) creating and establishing certificate programs; and

(4) developing curricula for short courses and continuing education for professionals in the environmental design of electronic devices to increase the recyclability of such devices.

(f) APPLICATION.—An institution of higher education seeking a grant under this section shall submit an application to the Administrator at such time, in such manner, and with such information and assurances as the Administrator may require.

(g) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Administrator to carry out this section:

(1) $5,000,000 for fiscal year 2010.
(2) $5,150,000 for fiscal year 2011.
(3) $5,304,000 for fiscal year 2012.

SEC. 6. ENVIRONMENTALLY FRIENDLY ALTERNATIVE MATERIALS PHYSICAL PROPERTY DATABASE.

(a) IN GENERAL.—The Director shall establish an initiative to develop a comprehensive physical property database for environmentally friendly alternative materials for use in electronic devices.

(b) PRIORITIES.—The Director, working with the electronic device design, manufacturing, or recycling industries, shall develop a strategic plan to establish priorities and the physical property characterization requirements for the database described in subsection (a).

(c) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Administrator to carry out this section:

(1) $3,000,000 for fiscal year 2010.
(2) $3,000,000 for fiscal year 2011.
(3) $3,000,000 for fiscal year 2012.

SEC. 7. DEFINITIONS.

For the purposes of this Act:

(1) ADMINISTRATOR.—The term "Administrator" means the Administrator of the Environmental Protection Agency.

(2) CONSORTIUM.—The term "consortium" means a grant applicant or recipient under section 3(a) that includes—

(A) at least one institution of higher education, nonprofit research institution, or government laboratory; and

(B) at least one for-profit entity, including a manufacturer, designer, refurbisher, or recycler of electronic devices or the components of such devices.

(3) DIRECTOR.—The term "Director" means the Director of the National Institute of Standards and Technology.

(4) ELECTRONIC DEVICE.—The term "electronic device" may include computers, computer monitors, televisions, laptops, printers, wireless devices, copiers, fax machines, stereos, video gaming systems, and the components of such devices.

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

(6) MINORITY SERVING INSTITUTION.—The term "minority serving institution" means an institution that is an eligible institution under section 371(a) of the Higher Education Act of 1965 (20 U.S.C. 1067q(a)).

Amend the title so as to read:

A bill to authorize the Administrator of the Environmental Protection Agency to award grants for electronic device recycling research, development, and demonstration projects, and for other purposes.

II. PURPOSE OF THE BILL

The purpose of the bill is to authorize the Administrator of the Environmental Protection Agency to award grants to reduce the volume of discarded electronic products in the United States through research, development, and demonstration projects for product design, recycling and re-use.

III. BACKGROUND AND NEED FOR THE LEGISLATION

The growing volume of unwanted electronic devices

The growing number of unwanted televisions, computers, cell phones, monitors, and other electronic devices ready for discard is

a growing problem in the United States and worldwide. The Environmental Protection Agency (EPA) estimated that between 1980 and 2004, 2 billion electronic products were sold in the U.S. Of these, it estimated about half were still in use, while 42 percent were discarded. Further estimates revealed that only 11 percent of those discarded devices reached recyclers. Most were disposed of in landfills.[1] Electronics are bulky and contain hazardous materials that pose concerns for disposal in landfills.

Due to the engagement of state and local governments, environmental groups, and electronics producers, more of these products now reach recyclers. However, there are still many hurdles to cost-effective, nationwide electronics recycling. Additionally, the resources- and energy-intensive production phase of electronic devices is as important as their end-of-life management. Approximately 80 percent of the energy consumed over the lifecycle of a computer is through the production process. Enabling consumers to use (or re-use) these products longer could reduce the environmental impact of production.

Challenges for electronic device end of life management and opportunities for research and development

Electronics recycling is increasing in the United States, but the industry faces a number of challenges. These challenges include convincing consumers to recycle, the logistics of collecting unwanted electronic devices, efficiently disassembling products, safely removing hazardous substances, efficiently processing materials, and recovering value from all of the materials found in the electronic devices. For example, the more commingled a stream of plastics becomes as casings and components from electronic products are mixed together in processing, the less value the plastic has for re-use. Focused research and development to develop solutions to improve the technologies that sort these plastics, or develop new processes and materials that can use non-homogenous plastics, will make electronic devices recycling less costly and will reduce the volume of discarded electronic devices.

The design of electronic products could also aid in making recycling more cost efficient. Many products are difficult to disassemble and the location of hazardous materials varies (i.e., mercury lamps in some flat panel displays). Greater use of materials recycled from old electronics in the manufacturing of new products would help make recycling more profitable. A research and development program could examine the feasibility of different design schemes and recycled materials usage to help electronic product development become more of a closed loop process.

Scores of different chemicals and materials comprise computers, televisions, cell phones and other electronics. Some of the substances used in electronics, like lead and hexavalent chromium, have raised enough health and environmental concerns that the European Union adopted a measure to ban their use in electronics products sold in Europe.[2] Manufacturers have been able to comply with these requirements for most consumer electronics, but the

[1] EPA Fact Sheet: Management of Electronic Waste in the U.S., http://www.epa.gov/epawaste/conserve/materials/ecycling/docs/fact7-08.pdf.

[2] The Restrictions on Hazardous Substances (ROHS) directive, adopted by the European Union in 2003.

process to ban substances sensitive to the environment and human health is on-going. For example, the risk to human health posed by certain types of brominated flame retardants used in electronics and other products has created a controversy over their continued use. Comprehensive data on the physical properties of substitutes for harmful materials would enable electronics designers to change their products more quickly in response to concerns raised about different materials. The availability of this type of comprehensive data, provided by the National Institute of Standards and Technology, enabled manufacturers to quickly meet the challenge of eliminating ozone-layer depleting chlorofluorocarbons (CFCs) from their products in the 1980s.

Increasing the amount of electronics sent to responsible recyclers is essential to reducing the impacts of electronic device disposal. Of equal importance, though, is prolonging the use, and re-use, of these devices. Estimates of the total amount of energy required over a computer's lifecycle show that roughly 80 percent goes into the computer's production phase, and only 20 percent into the use phase.[3] Extending the amount of time a product is in use could not only reduce the volume of discarded electronic devices, but also lessen the impact of the production of these complex and sophisticated products on the environment. Often consumers buy new cell phones, laptops, or other devices because they want the functionality or "look" of a new model, not because their current device is broken. Consumers are often wary of purchasing used electronics because they are unsure of a used product's value or they are afraid it will not meet their needs. Developing re-use markets that aid consumers in evaluating used devices could help keep these devices in the hands of consumers for a longer period of time. Prolonging a device's use could also be accomplished by developing ways for consumers to easily upgrade their current products.

Education

Consumers need to be better educated about electronics recycling. In addition, the training of future and current engineers, and others in the fields of electronics production and recycling, could be improved to incorporate environmental considerations in to the design of electronics and the practice of recycling.

IV. SUMMARY OF HEARINGS

The Committee on Science and Technology held two hearings on the issue of safe disposal of electronic devices.

The Committee held the first hearing in the 110th Congress on Wednesday, April 30, 2008. The hearing, entitled Electronic Waste: Can the Nation Manage Refuse in the Digital Age?, discussed the growing volume of discarded electronic devices, the challenges confronting recyclers, and the opportunities for research and development to address these challenges. The witnesses were: Dr. Eric Williams, Assistant Professor of Civil and Environmental Engineering, Arizona State University; Mr. Gerardo Castro, Director of Contracts and Environmental Services, Goodwill Industries of Southern California; Ms. Renee St. Denis, Director of America's Product Take-Back and Recycling, Hewlett Packard Co. (HP); Mr. Eric Har-

[3] E. Williams (2002), "The 1.7 Kg Microchip".

ris, Associate Counsel and Director of Government and International Affairs, Institute of Scrap Recycling Industries (ISRI); Mr. Ted Smith, Chair, Electronics Take-Back Coalition; and Mr. Michael Williams, Executive Vice President and General Counsel, Sony Electronics Inc. The witnesses discussed strides made by state and local governments, and industry, toward better end of life management of electronic devices, but they cited the many challenges that remain, including the growing volume of products headed to landfills, consumer reluctance to recycle, and the unregulated export of discarded electronics for unsafe disassembly abroad. The hearing identified the need for research and development to help address these challenges.

The Committee held a second hearing in the 111th Congress on February 11, 2009. The purpose of the hearing, entitled Electronic Waste: Investing in Research and Innovation to Reuse, Reduce, and Recycle, was to hear testimony on draft legislation entitled The Electronic Waste Research and Development Act. The witnesses were: Dr. Valerie Thomas, Anderson Interface Associate Professor, Georgia Institute of Technology; Dr. Paul Anastas, Teresa and H. John Heinz III Professor in the Practice of Chemistry for the Environment and Director of the Center for Green Chemistry and Green Engineering, Yale University; Mr. Philip Bond, President, TechAmerica; Mr. Jeff Omelchuck, Executive Director, Green Electronic Council and Electronic Product Environmental Assessment Tool (EPEAT); and Mr. Willie Cade, Chief Executive Officer, PC Rebuilders and Recyclers. The witnesses discussed areas of opportunity where research and development could help manage, and reduce the number of, discarded electronic devices and gave their comments and views on the draft legislation. The witnesses unanimously supported the legislation.

V. COMMITTEE ACTIONS

On March 18, 2009, Representative Bart Gordon of Tennessee, for himself and Representatives Thompson of California, Baird, Carnahan, Johnson of Texas, Wu and Luján, introduced H.R. 1580, the Electronic Waste Research and Development Act. The bill was referred to the Committee on Science and Technology.

The Committee on Science and Technology met to consider H.R. 1580, the Electronic Waste Research and Development Act, on March 25, 2009. The Committee considered the following amendments:

1. Mr. Gordon offered a manager's amendment. The manager's amendment replaced the word "waste" with "devices"; the word "disposal" with "recycling" and the words "cell phones" with "wireless devices". The manager's amendment also clarified that the Director of the National Science Foundation should be consulted by the Administrator of the Environmental Protection Agency in awarding grants under Section 5. The amendment was agreed to by voice vote.

2. Mr. Ehlers amended the bill to add "design for recycling" as a factor in product design and assembly under Section 3. He also amended Section 4 to replace "the risks posed by disposal of electronic waste" with "the environmental and human health risks posed by the storage, transport, recycling, and disposal of electronic devices" and to add "any regulatory barriers or statutory barriers

that may prevent the adoption or implementation of best management practices or technological innovations that may arise from the research and training programs." The amendment was agreed to by voice vote.

3. Mr. Baird amended Section 3 of the bill to include the "social, behavioral, and economic barriers to recycling and re-use for electronic devices" to the areas of research supported by the grants. The amendment was agreed to by voice vote.

4. Ms. Giffords offered an amendment to the bill to add "developing environmentally friendly alternatives to the use of hazardous and potentially hazardous materials in solar panels and methods to recycle, re-use, and dispose of the panels and their components in a safe manner" to the areas of research supported by the grants. Ms. Giffords withdrew her amendment.

5. Ms. Johnson amended Section 3 of the bill to include the Environmental Protection Agency's website to the ways by which the results of the research are made publicly available. The amendment was agreed to by voice vote.

6. Ms. Johnson amended Section 5 of the bill to require the Administrator of the Environmental Protection Agency to conduct outreach to minority serving institutions to provide information on grants. The amendment was agreed to by voice vote.

7. Mr. Bilbray amended Section 3 of the bill to add provisions to protect the proprietary information or trade secrets of for-profit members of the research consortia receiving grants. The amendment was agreed to by voice vote.

8. Mr. Neugebauer amended Section 3 of the bill to add "a description of the rate and success of the adoption or integration of such research results into the manufacturing processes, management practices, and products of the electronics industry" to the areas to be covered in the biennial report to Congress from the Administrator of the EPA. The amendment was agreed to by voice vote.

H.R. 1580, as amended, was agreed to by voice vote.

Mr. Gordon moved that the Committee favorably report H.R. 1580, as amended, to the House with the recommendation that the bill do pass. The motion was agreed to by voice vote.

VI. SUMMARY OF MAJOR PROVISIONS OF THE BILL

H.R. 1580, *the Electronic Device Recycling Research and Development Act,* authorizes the Environmental Protection Agency to award grants for electronic device recycling research, development, and demonstration projects. The bill directs the Administrator to provide grants through a competitive, merit-based process to consortia, including institutions of higher education, non-profit research institutions, government laboratories, and at least one for-profit entity (i.e., manufacturers, designers, refurbishers, or recyclers), for the purpose of addressing the end of life management of electronic devices. The findings of the research must be made available to the public. The Administrator must report to Congress within 2 years after enactment, and every two years thereafter, on the grants awarded through the bill, and the results of the funded research. The bill also requires a report by the National Academy of Sciences on the opportunities and barriers to reducing the volume of discarded electronic devices through better recycling, re-use,

and safe design for recycling. The bill further requires the Administrator, in consultation with the Director of the National Science Foundation, to award grants to institutions of higher education for the development of curricula that will incorporate environmental considerations into the training of engineering students to enable the design and development of electronic devices for recycling, longer use, and refurbishing. Finally, the bill directs the Director of the National Institute of Standards and Technology (NIST) to develop a comprehensive database for environmentally friendly alternative materials to be used in electronic devices. H.R. 1580 authorizes $18 million, $20 million, and $22 million for fiscal years 2010, 2011, and 2012, respectively, to EPA for the electronic device recycling engineering research, development, and demonstration projects; and $5 million, $5.15 million, and $5.304 million for fiscal years 2010, 2011, and 2012, respectively, to EPA for the curriculum development grants; and $3 million for each of fiscal year 2010, 2011, and 2012 to NIST for the development of the materials database.

VII. SECTION-BY-SECTION ANALYSIS

Section 1. Short title

The Electronic Device Recycling Research and Development Act.

Section 2. Findings

Outlines the current background information on electronic waste and summarizes the challenges and concerns addressed by the legislation.

Section 3. Electronic waste engineering research, development, and demonstration projects

Directs the Administrator to provide grants through a competitive, merit-based process to be performed jointly with institutes of higher education, non-profit research institutions, or government laboratories, and at least one for-profit entity (i.e. manufacturers, designers, refurbishers, or recyclers) to find ways to manage discarded and unwanted electronic devices through reduction, re-use, and recycling, and make the findings of the research available to the public. The section requires a report to Congress within two years after enactment, and every two years thereafter, of the grants awarded and a list of the projects and their findings.

For the activities in Section 3, the bill authorizes $18,000,000 for FY2010; $20,000,000 for FY2011; and $22,000,000 for FY2012.

Section 4. National Academy of Sciences report on electronic waste

Directs the Administrator to arrange a study by the National Academy of Sciences to look at the barriers and opportunities available to reduce the volume of discarded and unwanted electronic devices, reduce the use of hazardous materials in electronic products, and enable product design for efficient re-use and recycling.

Section 5. Engineering curriculum development grants

Directs the Administrator to provide grants through a competitive, merit-based process to institutions of higher education and community colleges to develop curriculum and other training for

relevant engineering undergraduate students to introduce them to topics related to end of life management for electronic devices, recycling, and environmentally friendly product design. Also directs the Administrator to offer grants to institutions of higher education and community colleges to provide continuing education of professionals in the electronics manufacturing, design, refurbishing, or recycling industries to educate them about new technologies, techniques, or best practices related to electronic device re-use, recycling, and environmentally friendly design of electronic products.

For these activities, the bill authorizes $5,000,000 for FY2010; $5,150,000 for FY2011; and $5,304,000 for FY2012.

Section 6. Environmentally friendly alternative materials physical property database

Directs the Director of the National Institute of Standards and Technology to establish a physical property database for green alternative materials for use in electronic products.

For this activity, the bill authorizes $3,000,000 for FY2010; $3,000,000 for FY2011; and $3,000,000 for FY2012.

Section 7. Definitions

Defines the terms Administrator, a consortium, electronic waste, an institution of higher education, and Director.

VIII. COMMITTEE VIEWS

H.R. 1580, the *Electronic Device Recycling Research and Development Act,* will help decrease the volume of discarded electronic devices in the United States through research, development, and innovation. The Committee regards this legislation as a foundational step toward addressing the factors that contribute to a high volume of unwanted electronic devices and a low rate of electronics recycling. While there are many components to this issue, such as consumer and producer responsibility for used electronics and their irresponsible export, research and development can make recycling easier and more cost effective, and enable more environmentally friendly products that can be used longer. It is the Committee's intention that the results of this research be adopted by the relevant industries in a timely fashion.

The amended version of H.R. 1580 replaces "electronic waste" with "electronic devices recycling". This is to reflect the view of the Committee, the witnesses who testified before the Committee, and stakeholders that the word "waste" reflects something with no value to be discarded without consequences. Electronic devices contain gold, silver, and other valuable materials, as well as hazardous materials, that should not go to a landfill. Moreover, witnesses testifying before the Committee stated that environmental benefit could be gained by enabling the prolonged use of these sophisticated devices. The Committee believes that, for the purposes of this bill, the term "electronic device" broadly covers obsolete, broken, stored, or discarded computers, computer monitors, televisions, laptops, printers, wireless devices ("cell phones"), fax machines, stereos, video gaming systems, the components of these devices, or any other similar electronic device. The Committee notes that these are the same items that are also commonly termed "electronic waste."

The Committee believes the research, development, and demonstration project grants awarded to support the research outlined in H.R. 1580 should examine recycling, product design, product lifecycle, consumer behavior, and collection logistics in a variety of settings. The Committee intends that the research influence design and manufacturing practice to reduce the environmental impact of electronic devices, particularly through enabling cost-effective recycling, re-use, and refurbishment. The Committee believes the purpose of requiring a 10 percent contribution by a for-profit entity in the electronic device manufacturing, design, recycling, or refurbishing industries is to encourage research that applies directly to the challenges these industries face. Further, the required contribution promotes adoption of research results. Should there be more than one for-profit participant in a consortium, the Committee believes the Administrator should use his or her discretion in requiring a contribution over 10 percent.

The Committee also believes that the research results should be made publicly available to educate and develop best practices and training materials through at least one of the specified mediums, including training materials, dissemination at conferences, educational materials for the public, and on the EPA website. However, the Committee intends for EPA to provide to the public a readily accessible summary of the outcomes of EPA-sponsored research projects related to electronic devices recycling. While citations to journal publications and research project summaries are appropriate and encouraged, the Committee does not intend for EPA to make available on its website any copyrighted or otherwise proprietary information unless an agreement to do so is reached with the appropriate entities or individuals.

When the EPA Administrator distributes the grants in Section 5 to institutions of higher education, he/she should consult with the Director for the National Science Foundation. The NSF has an extensive history of providing grants for curriculum development at all levels of education. The Committee also believes that institutions of higher education should include community colleges and vocational programs to train and certify students and/or continuing education courses that companies may use to keep their current workforce educated on current technology and practices. In addition, the Committee intends for minority serving institutions to be well aware of the opportunities to apply for these grants and the process to successfully do so.

The Committee also believes the National Institute of Standards and Technology plays an essential role in the development of environmentally safe electronic devices in characterizing the materials used, or potentially used, in electronics. Therefore, the Administrator of EPA shall work with the Director of NIST to utilize and disseminate the data developed in Section 6 of this legislation.

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. 1580 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. 1580 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. 1580—Electronic Device Recycling Research and Development Act

Summary: H.R. 1580 would authorize specified appropriations for the Environmental Protection Agency to provide grants to consortia and institutions of higher education to support research and projects related to the recycling of electronic devices, such as computers, printers, and copiers. This legislation also would authorize appropriations for the National Institute of Standards and Technology (NIST) to develop a database of alternative materials for use in electronic devices.

CBO estimates that implementing H.R. 1580 would cost $10 million in 2010 and $84 million over the 2010–2014 period, assuming appropriation of the authorized amounts. Enacting the bill would not affect direct spending or revenues.

H.R. 1580 contains no intergovernmental or private-sector mandates as defined in the Unfunded Mandates Reform Act (UMRA). Any costs to state, local, or tribal governments would result from complying with conditions of assistance.

Estimated cost to the Federal Government: The estimated budgetary impact of H.R. 1580 is shown in the following table. The costs of this legislation fall within budget functions 300 (natural resources and environment) and 370 (commerce and housing credit). Estimated outlays are based on historical spending patterns for similar programs.

	By fiscal year, in millions of dollars—					
	2010	2011	2012	2013	2014	2010–2014
CHANGES IN SPENDING SUBJECT TO APPROPRIATION						
Grants to Consortia to Address Environmental Impact of Electronic Devices:						
Authorization Level	18	20	22	0	0	60
Estimated Outlays	7	16	21	13	3	60
Grants to Develop Engineering Curriculum:						
Authorization Level	5	5	5	0	0	15
Estimated Outlays	2	4	5	3	1	15
NIST Database Development:						
Authorization Level	3	3	3	0	0	9
Estimated Outlays	1	3	3	2	0	9
Total Proposed Changes:						
Authorization Level	26	28	30	0	0	84
Estimated Outlays	10	23	29	18	4	84

Note: NIST = National Institute of Standards and Technology.

Intergovernmental and private-sector impact: H.R. 1580 contains no intergovernmental or private-sector mandates as defined in UMRA. The bill would provide grants to institutions of higher education, including public colleges and universities, to conduct research and develop curricula related to improving the recycling of

electronic devices. Any costs to state, local, or tribal governments would result from complying with conditions of assistance.

Estimate prepared by: Federal Costs: Susanne S. Mehlman; Impact on State, Local, and Tribal Governments: Ryan Miller; Impact on the Private Sector: Amy Petz.

Estimate approved by: Theresa Gullo, Deputy Assistant Director for Budget Analysis.

XI. COMPLIANCE WITH PUBLIC LAW 104–4

H.R. 1580 contains no unfunded mandates.

XII. COMMITTEE OVERSIGHT FINDINGS AND RECOMMENDATIONS

The Committee on Science and Technology's oversight findings and recommendations 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 goal of H.R. 1580 is to authorize the Administrator of the Environmental Protection Agency to award grants for electronic waste reduction research, development, and demonstration projects.

XIV. CONSTITUTIONAL AUTHORITY STATEMENT

Article I, section 8 of the Constitution of the United States grants Congress the authority to enact H.R. 1580.

XV. FEDERAL ADVISORY COMMITTEE STATEMENT

H.R. 1580 does not establish nor authorize the establishment of any advisory committee.

XVI. CONGRESSIONAL ACCOUNTABILITY ACT

The Committee finds that H.R.1580 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. 1580 does not contain any congressional earmarks, limited tax benefits, or limited tariff benefits as defined in House Rule XXI, clause 9(d), 9(e), or 9(f).

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

H.R. 1580, as reported, makes no changes in existing law.

XX. COMMITTEE RECOMMENDATIONS

On March 25, 2009, the Committee on Science and Technology favorably reported the Electronic Device Recycling Research and Development Act by voice vote, and recommended its enactment.

XXI. ADDITIONAL VIEWS

ADDITIONAL VIEWS OF REPRESENTATIVES RALPH HALL, JAMES SENSENBRENNER, ROSCOE BARTLETT, BRIAN BILBRAY, VERNON EHLERS, MICHAEL McCAUL, BOB INGLIS, MARIO DIAZ-BALART, AND ADRIAN SMITH

We are pleased that this bill has been introduced and we are happy to see that this Committee continues to be on the forefront of technology policy for this nation. Although we endorse the concept behind H.R. 1580 and believe we should be encouraging better designs for electronic devices to increase their life-span and to make them easier to recycle, there are aspects of this bill that may be improved upon. If this bill becomes law, it will be the first of its kind to address the issue of obsolete and discarded electronic devices, thus setting a precedent on further legislation. While the Chairman's amendment alleviated many concerns raised in Committee, a few outstanding issues remain that should be addressed prior to moving forward.

One concern raised comes from an amendment offered in Committee requiring the Environmental Protection Agency to publish the results of research and development projects authorized by this bill on its website. Our concern here is that the copyright protections of the research published on the website may not be preserved. One area of the bill in need of clarity is the language regarding for-profit participation in a consortium. It is unclear the way the current language is written if the total contribution from all for-profit entities is to be at least ten (10) percent, or if each for-profit member is to contribute at least ten (10) percent. This point gets particularly muddled when the for-profit entity contribution is made in kind rather than through monetary funding. This language should be reviewed prior to further consideration.

While we supported reporting this bill to the House, we look to work together to address these concerns.

RALPH M. HALL.
JIM SENSENBRENNER.
ROSCOE BARTLETT.
BRIAN P. BILBRAY.
VERNON J. EHLERS.
MICHAEL T. MCCAUL.
BOB INGLIS.
MARIO DIAZ-BALART.
ADRIAN SMITH.

XXII: PROCEEDINGS OF THE FULL COMMITTEE MARKUP ON H.R. 1580, THE ELECTRONIC WASTE RESEARCH AND DEVELOPMENT ACT

WEDNESDAY, MARCH 25, 2009

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

The Committee met, pursuant to call, at 10:08 a.m., in Room 2318 of the Rayburn House Office Building, Hon. Bart Gordon [Chair of the Committee] presiding.

Chair GORDON. Good morning. The Committee will come to order. Pursuant to notice, the Committee on Science and Technology meets to consider the following measures: H.R. 1580, the *Electronic Waste Research Development Act,* and H.R. 1145, the *National Water Research Development Initiative Act of 2009.*

Before we get started with the markup, we have a little Committee business to take care of, and I recognize Mr. Hall for unanimous consent.

Mr. HALL. Mr. Chair, thank you, Mr. Chair, and I ask unanimous consent to officially remove Representative Adrian Smith as a Member of the Research and Science Education Subcommittee and to officially recognize Representative Bob Inglis as a Member of the Research and Science Education Subcommittee of the Committee on Science and Technology, and I would ask that the official Committee roster be modified to reflect this change. And I yield back.

Chair GORDON. Without objection, so ordered. We will now proceed with the markup. We are going to try to move along today. In the past, we have gotten caught with votes, so we don't want that to happen.

This morning the Committee will consider H.R. 1580, the *Electronic Waste Research and Development Act,* and H.R. 1145, the *National Water Research and Development Initiative Act of 2009.*

Billions of cell phones, computers, televisions, and other electronic products, once the latest technology, are now being thrown into landfills or in Mr. Hall's and our country, sometimes on the side of the road. This is a waste of valuable resources, and it is a growing environmental problem. We need to do more to make recycling easy and affordable and to make sure that the electronic products manufactured in the future are as environmentally sound as they can be.

If we are going to address this issue, we need research and development, and we need to train present and future designers of this equipment to think about the entire life cycle of their products. That is what H.R. 1580 is all about.

The second bill we will consider this morning is H.R. 1145, which will ensure that the water research and development programs

that are spread across over 20 federal agencies are coordinated to make maximum use of funding resources.

There is no resource more valuable than water. It is essential to all of us, every day, for everything we do. For too long we have ignored the warning signs that our water supplies are in trouble.

We must do more to conserve water and to maintain its quality. We must make a more strategic approach at the federal level and we must ensure the Federal Government supports our State, local and tribal governments, the entities that are the stewards of these resources on a day-to-day basis.

I thank the Members for their participation this morning, and I look forward to this productive markup.

[The prepared statement of Chair Gordon follows:]

PREPARED STATEMENT OF CHAIR BART GORDON

This morning the Committee will consider H.R. 1580, the *Electronic Waste Research and Development Act,* and H.R. 1145, the *National Water Research and Development Initiative.*

Billions of cell phones, computers, televisions, and other electronic products, once the latest technology, are now being thrown into landfills. This is a waste of valuable resources, and it is a growing environmental problem. We need to do more to make recycling easy and affordable and to make sure the electronic products manufactured in the future are as environmentally sound as they can be.

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There is no resource more valuable than water. It is essential to all of us, everyday, for everything we do. For too long we have ignored the warning signs that our water supplies are in trouble. We must do more to conserve water and maintain its quality. We must take a more strategic approach at the federal level and we must ensure the Federal Government supports our State, local and tribal governments—the entities that are the stewards of these resources on a day-to-day basis.

I thank the Members for their participation this morning and I look forward to a productive markup.

Chair GORDON. I now recognize Mr. Hall to present his opening remarks.

Mr. HALL. Mr. Chair, thank you. Each of these bills address issues that are of national importance, so I thank you for holding this markup, and because you have so very ably covered it, I will make my opening remarks brief.

H.R. 1580 authorizes EPA to establish consortiums with private industries and academia to conduct research, development and demonstration projects to increase electronics recycling, reduce the environmental impacts of manufacturing electronics and to develop ways to increase the usable lifespan of new electronics. It also promotes crosscutting of education for engineers by providing grants to higher-learning institutions to encourage the development of curricula that combines electrical, mechanical, industrial, material, and software engineering disciplines. These two efforts will be the first step that we can take to start addressing the problem associated with discarded electronic equipment.

Secondly, H.R. 1145, the *National Water Research and Development Initiative Act of 2009,* organizes the Federal Government's approach to research of water resources. The bill would require perhaps for the first time every government agency involved in re-

search of water resources to collaborate and create a Research and Assessment plan that will chart the course of U.S. research and development for years to come. Furthermore, it directs the Office of Science and Technology Policy and the Office of Management and Budget to work with these agencies to coordinate their annual budgets to avoid duplicative efforts. These suggestions come from recommendations that National Science and Technology Council and the National Academy of Sciences have offered for years. I commend the Chair, I commend you, sir, on moving a bill that is critical to our nation's health and well-being.

Mr. Chair, that is the first time I read this. I didn't know it was so long or I wouldn't have said I was going to make a brief statement. I would like to thank you, and I yield back to you.

[The prepared statement of Mr. Hall follows:]

PREPARED STATEMENT OF REPRESENTATIVE RALPH M. HALL

Thank you, Mr. Chairman. Each of these bills address issues that are of national importance so thank you for holding this markup today to advance them. I will keep my opening remarks brief.

H.R. 1580 authorizes EPA to establish consortiums with private industry and academia to conduct research, development and demonstration projects to increase electronics recycling, reduce the environmental impacts of manufacturing electronics and to develop ways to increase the usable lifespan of new electronics.

It also promotes crosscutting education for engineers by providing grants to higher-learning institutions to encourage the development of curricula that combines electrical, mechanical, industrial, material, and software engineering disciplines. These two efforts will be the first step that we can take to start addressing the problems associated with discarded electronic equipment.

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I commend the Chairman on moving a bill that is critical to our nation's health and well-being.

Mr. Chairman, I would like to thank you and your staff for working with us on these bills before us today.

I yield back the balance of my time.

Chair GORDON. Thank you, Mr. Hall. As always, you are eloquent, and the Minority staff and Members made this a better bill, and we thank you for that.

Members may place statements in the record at this time.

[The prepared statement of Mr. Luján follows:]

PREPARED STATEMENT OF REPRESENTATIVE BEN R. LUJÁN

Thank you Mr. Chairman and fellow Members of the Committee, and thank you for allowing me the opportunity to highlight this important issue.

Whether it's the computers we use at work, the televisions we watch at home, or the iPods we listen to on our daily commute, there is no doubt about it: electronic products are increasingly becoming an integral part of our everyday life. Because of this, electronic waste continues to increase in volume and it is imperative that we invest in developing technologies and methods to best handle these products when the time comes to dispose of them.

The challenges we face on how to best handle electronic waste exist in states across the Nation. In 2008, New Mexico passed the Senate Joint Memorial 11,

which requested that the Secretary of the New Mexico Environment Department appoint a task force to assess the problem of electronic waste in New Mexico and make recommendations for the development of a statewide disposal and recycling program. Like my home state, many other states are acting on this issue and it is important that our Federal Government make electronic product disposal and recycling a priority as well. We need to focus on reducing the volume of electronic waste. We must invest in developing green materials for use in electronic product manufacturing, and we must employ recycling methods that are environmentally friendly and safe. We must also educate our students about these topics and equip them with the professional skills and knowledge they need to become leaders in electronics design and recycling industries.

The *Electronic Waste Research and Development Act* takes an important and fundamental step toward solving these challenges by supporting research and development in electronic waste management. Through electronic waste engineering, research, development and education, we can discover new and innovative ways to design, reuse and recycle electronic products.

[The prepared statement of Mr. Mitchell follows:]

PREPARED STATEMENT OF REPRESENTATIVE HARRY E. MITCHELL

Thank you, Mr. Chairman.

Today we will mark up the *Electronic Waste Research and Development Act,* H.R. 1580, and the *National Water Research and Development Initiative Act,* H.R. 1145.

As American consumers attempt to keep up with the latest technology trends by purchasing the newest cell phones and laptops, the number of discarded electronic products is rapidly increasing.

When electronic products are properly handled, these products can transform into a valuable source for reusable equipment.

However, if these products are not disposed of properly, they are potentially harmful to both human health and the environment.

H.R. 1580 would establish an electronic waste engineering research, development, and demonstration program at the Environmental Protection Agency to identify ways to manage electronic waste through reduction, reuse, and recycling.

I support both H.R. 1580 and H.R. 1145, and I urge my colleagues to support these pieces of legislation.

I would also like to commend Chairman Gordon for once again following regular order leading up to this markup.

I yield back.

[The prepared statement of Ms. Biggert follows:]

PREPARED STATEMENT OF REPRESENTATIVE JUDY BIGGERT

Thank you, Chairman Gordon, for the chance to speak briefly on H.R. 1580.

As you know, I support the idea of recycling abandoned electronic equipment. Like many of my colleagues on this panel, I have old computers stored in the back of a closet at home that I now know can be refurbished for good use by someone who needs them.

The legislation before us takes a good first step to address the prospects and concerns for abandoned electronics and their components stream. As we heard at our February 11th hearing, coordinated research and education efforts are needed to address disposal, product design, and in general, raise awareness of what opportunities consumers have to recycle unused or what they consider "obsolete" equipment.

On that note, I would like to thank you, Chairman Gordon, for working with me to include changes to the term "waste" in your managers amendment. While the term "E-Waste" resonates well, it sets a tone of disposal, instead of reuse. The legislation before us will attempt to change behavior as an obstacle to recycling and doing that must involve terms we can all identify with, like "scrap" or "devices."

Another important reason the word 'waste' should not be included is its legal connotations. If we are looking for ways to recycle and reuse old electronics, the last thing we want to do is impede consumer or re-manufacturing efforts. The term "waste" could invoke legal or regulatory hurdles to the very recycling and refurbishment process that we are trying to advance. It bears repeating that every dollar spent on refurbishment stays in the U.S.; every dollar spent on new products does not.

Mr. Chairman, I appreciate your cooperation on this issue and look forward to supporting the underlying bill.

Chair GORDON. We will now consider H.R. 1580, the *Electronic Waste Research and Development Act,* and I will recognize myself to describe the bill. H.R. 1580 comes out of the recommendations of two Science and Technology Committee hearings. We have asked for and received a lot of input from electronics producers, recyclers, refurbishers, and environmental advocates throughout the drafting of the bill. This bill reflects the guidance of those experts. The Majority staff has consulted with Minority staff every step of the way, and I am pleased that a number of Members have joined me in co-sponsorship of this bill. And I will note that all Members have two weeks from today to co-sponsor either of these bills. I think you will find that they are going to be beneficial to both your community and the country, and you should take credit for it.

The main purpose of H.R. 1580 is to reduce our e-way stream. To do this, it directs the Environmental Protection Agency (EPA) administrator to fund peer-reviewed, competitive grants that will fund research in a variety of topics with the goal of reducing the amount of e-waste, be it through more efficient recycling, better materials selection, or designating products to be easily disassembled.

Additionally, the research will examine the entire life cycle to help researchers, manufacturers, policy-makers, and consumers alike understand the entire environmental cost of electronic products. And as a related research endeavor, the bill directs the National Institutes of Standards and Technology (NIST) to develop a database of the properties and materials used, or potentially used, in electronic devices. NIST compiled similar information in the 1990's to help manufacturers find alternatives to ozone-depleting chlorofluorocarbons (CFCs). For electronics, this data will help designers and manufacturers more easily find alternatives to environmental problematic substances.

H.R. 1580 also authorizes the EPA in consultation with the National Science Foundation to fund grants that will give engineering students the tools and knowledge to incorporate environmental consideration into their future engineering endeavors. We need our future engineers to understand that whatever they put together will eventually have to be taken apart. The bill also authorizes grants for continuing education of workers in the electronics and recycling industries so that they can use the latest environmental information relevant to designing, recycling or refurbishing electronics. The bill includes community colleges as eligible to receive grants.

Lastly, H.R. 1580 authorizes a study by the National Academy of Sciences that will help to inform the path of research. Broadly, the study will look at opportunities and barriers to reducing the volume of electronic waste and making electronic products that are more environmentally friendly. This bill has been endorsed by a number of different groups, a few of which are the Consumer Electronics Retailers Coalition, Best Buy, Consumer Electronics Association, the Electronics Take-back Coalition, the Institute of Scrap Metal Industries, the National Center for Electronics Recycling, CTIA—The Wireless Association, and AT&T, among others.

[The prepared statement of Chair Gordon follows:]

PREPARED STATEMENT OF CHAIR BART GORDON

We have asked for and received a lot of input from electronics producers, recyclers, refurbishers, and environmental advocates throughout the drafting of the bill. This bill reflects the guidance of those experts. The Majority staff has consulted with Minority staff every step of the way, and I am pleased that a number of Members have joined me in co-sponsorship of this bill. And I will note that all Members have two weeks from today to co-sponsor either of these bills. I think you will find that they are going to be beneficial to both your community and the country, and you should take credit for it.

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I urge my colleagues to support H.R. 1580, and I now recognize Mr. Hall to present any remarks on the bill.

Mr. HALL. Mr. Chair, if passed into law, the *Electronic Waste Research and Development Act* will be the very first piece of legislation to address the increasing national problem of electronic waste, and I am happy to see this committee continues to be on the forefront of technology policy for this nation, and there are many aspects of the e-waste dilemma. The definition of e-waste, refuse and recycling and reuse of electronics, landfill disposal and hazardous waste, regulatory issues and export economies. With each new technological advance and model replacement, we are faced with the question of disposal of the older products. The complexity creates a vast array of opinions on possible solutions to these problems. However, dealing with this problem is not insurmountable. With the right type of research and development, we can institute new ways of tracking, sorting, recycling and reusing discarded electronics and by making them less hazardous from the design stage and allow them to do less harm in the disposal stage.

At our hearing, we learned of many companies that are seeking to find new uses for these products that will reduce the number that will end up in the landfills, and I am grateful to the Chair for introducing this legislation and holding special hearings on this im-

portant topic. I am a little concerned that we still have not yet had the new Administration officially weigh in on this bill, but I am pleased that your staff and mine have been able to work together on the number of amendments that will be offered here today.

I hope before the bill moves to the Floor, we will have an opportunity to hear from the Administration and agree together to incorporate any necessary changes into the bill, and I thank you and yield back the balance of my time.

[The prepared statement of Mr. Hall follows:]

PREPARED STATEMENT OF REPRESENTATIVE RALPH M. HALL

Thank you, Mr. Chairman. About a month ago, this committee held a hearing to address what to do with electronic products when they become obsolete. Sixty-three years ago this week, when the United States Army unveiled the world's first general-purpose electronic computer, we never considered the question of how we would dispose of it or what parts of it could be reused or what it would do to our landfills or our environment. We have come a long way since the unveiling of "The Electronic Numerical Integrator and Computer," or ENIAC (in-e-ack). However, this is an issue we definitely need to address now as electronic products have become much more prevalent throughout our society, and much more disposable.

We are constantly seeking new devices and new faster products. Blackberry devices, iPods, cell phones and other small electronics are rapidly replaced by newer models with more gadgets. Consumers are even buying cell phones that are designed to be thrown away after short-term use. Computers and laptops with the latest capabilities are highly sought after in the marketplace. The next generation of television, with high definition capabilities, is replacing the older models as we move closer to the deadline for transition to digital signals. With each new technological advance and model replacement, we are faced with the question of disposal of the older products.

I was very hopeful at our hearing last month that we would discover the perfect solution to address this problem; however, I fear this legislation may create the unintended consequence of creating a new regulatory regime for the very folks who are engaged in the laudable goal of recycling electronic products.

There are many aspects of the e-waste dilemma: the definition of e-waste; reuse and recycling of electronics; landfill disposal and hazardous waste; regulatory issues and export economies. At our hearing, we learned of many companies that are seeking to find new uses for these products that will reduce the number that will end up in the landfills.

I am grateful to the Chairman for introducing this legislation to bring this topic to the forefront. I am concerned that some provisions in the bill may force those entities who seek to reuse, recycle and refurbish these electronic products into existing regulatory regimes at EPA. Clearly, none of us wants to hamper efforts already underway to try to effectively and efficiently deal with this challenge.

I look forward to working with the Chairman to address these concerns moving forward. I yield back the balance of my time.

Chair GORDON. Thank you, Mr. Hall. I am glad to hear you are so considerate of the Administration. We do need to contact them and see what they have to say. I am sure they have been contacted. We need to contact them again to be sure——

Mr. HALL. Yes, I talk to them every day——

Chair GORDON. Does anyone else wish to be recognized?

Mr. HALL.—and pray for them every night.

Chair GORDON. Your hand signal is—you're okay.

[The prepared statement of Ms. Biggert follows:]

Chair GORDON. 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 on the roster. Without objection, so ordered.

First amendment on the roster is a manager's amendment. The Clerk will report the amendment.

The CLERK. Amendment to H.R. 1580 offered by Mr. Gordon of Tennessee.

Chair GORDON. I ask unanimous consent to dispense with the reading. Without objection, so ordered. I recognize myself for five minutes to explain the amendment.

This amendment makes several technical changes to the bill. The changes have been suggested to us by stakeholders, and I believe the changes create a stronger bill. The first change strikes the word "waste" from the bill. The world knows this issue is e-waste, electronics that original owners no longer want. But as we heard in the hearing, an old computer isn't waste. They can be reused, refurbished, or recycled to recapture its components and materials.

The amendment also replaces the word "cell phones" with "wireless devices." Cell phones are a particular technology, but we want to make sure that we are capturing everything from the first cell phones to the latest hand-held devices.

The last two changes make some minor clarification. The first is to add the word "Director" before the National Science Foundation, and in Section 5 replace the word "and" with "or" and in Section 3 to make it clear that the EPA has the discretion to disseminate the research generated from this bill in the manner it thinks is most appropriate.

Is there further discussion on the amendment? If no, the vote occurs on the amendment. All in favor say aye, opposed no. The ayes have it, and the amendment is agreed to.

The second amendment on the roster is an amendment offered by the gentleman from Michigan, Mr. Ehlers. Are you ready to proceed with your amendment?

Mr. EHLERS. Yes, Mr. Chair. I have an amendment at the desk.

Chair GORDON. The Clerk will report the amendment.

The CLERK. Amendment to H.R. 1580 offered by Mr. Ehlers of Michigan.

Chair GORDON. I ask unanimous consent to dispense with the reading. Without objection, so ordered. I recognize the gentleman for five minutes to explain his amendment.

Mr. EHLERS. Thank you, Mr. Chair. First of all, my amendment, due to a clerical error, includes exactly the same amendment you included in yours regarding naming the Director of the NSF. That is something we can clear up later.

Aside from that, my amendment, and it is a friendly amendment, amends the bill to add the words "design for recycling" as a factor in product design and assembly. Most modern engineering schools are emphasizing this in their curricula, and it doesn't matter whether it is a computer or washing machine or dryer or any other item of general use. If you design it for recycling, when you first design it and then manufacture it, it greatly aids recycling and reduces the cost of recycling greatly. So I wanted to make sure that this, you know, is mentioned in there as a factor.

It also amends Section 4 to replace the phrase "the risks posed by disposal of electronic waste" with the following, "the environmental and human health risks posed by the storage, transport, recycling, and disposal of electronic devices." It just makes it more all-inclusive and makes it clear that we are worried about all the aspects of e-waste and not just the disposal of the electronic waste.

It also adds, deals with "any regulatory barriers or statutory barriers that may prevent the adoption or implementation of best management practices or technological innovations that may arise from the research and training programs." This again is an attempt at clarification and will improve the operation of the bill.

It does alter one of the three existing topics to be addressed by the National Academies study. We have checked with the National Academies, and they would be happy to see this change. It changes the second topic from "looking at risks posed by disposal of electronic waste" to "the environmental and human health risks posed by the storage, transport, recycling, and disposal of electronic scrap." Once again, it just expands it and makes it clear what we are trying to accomplish here.

And as the fourth topic for the National Academies Studies requiring the NSC and NAS to look at the regulatory or statutory barriers and again, they have said that they would regard this within the purview of their study.

With that, Mr. Chair, I ask for adoption of the amendment.

[The prepared statement of Mr. Ehlers follows:]

PREPARED STATEMENT OF REPRESENTATIVE VERNON J. EHLERS

My amendment does four main things:

- **Includes language inserting an emphasis on "design for recycling" in the research grants supported by the bill.** I believe that as we research ways to reduce e-waste, recycling should be at the forefront of initial design consideration for electronic equipment.
- **Alters one of the three existing topics to be addressed by the National Academies study.** It changes the second topic from looking at risks posed by disposal of electronic waste to "the environmental and human health risks posed by the storage, transport, recycling and disposal of electronic scrap." The amendment clarifies what type of risks we want the Academies to examine, and to look at the entire e-waste supply chain.
- **Adds a fourth topic for the National Academies study to address, requiring NAS to look at any "regulatory or statutory barriers that would prevent any of the results generated from the research projects from being adopted or implemented."** This would allow Congress to make any necessary changes to clear up such discrepancies in current law with desired policy. (We have confirmed with Academies staff that it could complete this type of assessment as a part of the required study.)
- Lastly, the amendment would make a technical correction that would insert "the Director of" before naming the National Science Foundation to clarify that the Administrator should deal with the director, and not with the entire agency.

Chair GORDON. Thank you, Dr. Ehlers. As usual, you bring value added with your amendment and more clarity. Is there further discussion on the amendment?

Mr. BILBRAY. Mr. Chair?

Chair GORDON. Yes, Mr. Bilbray from California.

Mr. BILBRAY. Let me just speak in the highest regard for this amendment. We keep talking about private sector needs to think out of the box if we are going to have a clean, prosperous future. This is a classic example of thinking out of the box. One of the greatest breakthroughs we are going to have is the unforeseen concept of pre-engineering specifically so that the material that is used for the e-product will be designed from the beginning to be ready to be reused as the doctor has pointed out, and that not only elimi-

nates and avoids the environmental and cost of disposal but also engineers into the original manufacturing ability to take old products and use them instead of virgin material having to be constantly reintroduced into the e-industry. So this is one of those things that we ought to be really looking at and something that sort of hasn't been tapped anywhere close to its potential.

So I strongly support this because I think that is where we are going to really find a breakthrough here. It is not looking at how to take a product that has been thrown away and find a practical use to it but finding a product that was designed from the beginning to be reused again and again and again. And I appreciate the amendment.

Chair GORDON. Thank you, Mr. Bilbray. That was the intention of the original bill, and Dr. Ehlers makes it even better.

Is there further discussion on the amendment? If no, the vote occurs on the amendment. All in favor say aye, opposed no. The ayes have it. The amendment is agreed to.

The third amendment on the roster is the amendment offered by the gentleman from Washington State, Mr. Baird. Are you ready to proceed?

Mr. BAIRD. Yes, Mr. Chair. I have an amendment at the desk.

Chair GORDON. The Clerk will report the amendment.

The CLERK. Amendment to H.R. 1580 offered by Mr. Baird of Washington.

Chair GORDON. I ask unanimous consent to dispense with the reading. Without objection, so ordered. The gentleman is recognized for five minutes.

Mr. BAIRD. I thank the Chair. I will be very brief. I commend the Chair for bringing this bill to the Committee. All of the engineering things that Mr. Ehlers just alluded to are absolutely necessary, but at the same time, if people don't engage in the behaviors necessary to recycle e-scrap, our best intentions will go for naught. And so what my bill does is include research to address the social, behavioral and economic barriers to recycling and reuse for electronic devices. The sense is let us look at the social and behavioral aspects of reducing e-scrap, and I would urge passage of the amendment.

Chair GORDON. Is there anyone else that would like to comment on the amendment? If there is no further discussion, the vote occurs on the amendment. All in favor say aye, opposed no. The ayes have it. The amendment is agreed to.

The fourth amendment on the roster is an amendment offered by the gentlelady from Arizona, Ms. Giffords. Are you ready to proceed?

Ms. GIFFORDS. Yes, Mr. Chair. I have got an amendment at the desk.

Chair GORDON. The Clerk will report the amendment.

The CLERK. Amendment to H.R. 1580 offered by Ms. Giffords of Arizona.

Chair GORDON. I ask unanimous consent to dispense with the reading. Without objection, so ordered. I recognize the gentlelady for five minutes to explain her amendment.

Ms. GIFFORDS. Thank you, Mr. Chair. My amendment would expand eligibility under the grant program in Section 3 to research and development of environmentally friendly alternatives to haz-

ardous materials and solar panels as well as methods to recycle, reuse, and dispose of solar panels in a safe manner.

In addition to the environmental benefits of pursuing such R&D, it would contribute to the professional development and training of scientists, engineers, and technicians in the solar industry.

The solar industry, as we all know on this committee, is growing rapidly today, in part because it offers a clean, emissions-free source of power. However, one of the less-publicized aspects of photovoltaic (PV) technology is that it often utilizes toxic substances during its manufacturing process. In addition, like other forms of electronic waste, PV technologies must be properly disposed of at the end of their lives to avoid contaminating people or the environment.

To truly enjoy the significant benefits of solar energy, we have to minimize the drawbacks, and in order to do that we need to address total life-cycle impacts. If we invest in research to develop new materials for solar panels now, we can avoid the use of hazardous materials in future solar products. We can also develop safe disposal strategies for the current generation of solar technologies.

I know that for various reasons, some Members of this committee do not feel that solar panels should be included in this bill, and I disagree. Solar panels are not just another electrical appliance. Many of the same manufacturing and disposal concerns that apply to consumer electronics today also apply to solar panels. The Silicon Valley Toxics Coalition is an advocacy organization that specializes in e-waste issues. The Coalition recently just issued a report that examines the PV industry, and in that report the Coalition talks about the fact that because solar PV semiconductor manufacturing processes have roots in the microelectronics industry, many of the chemicals found in e-waste are also found in solar PV, including lead, brominated flame retardants, cadmium and chromium. Most of the end-of-life hazards for emerging solar PV technologies have not yet been analyzed. In some cases, emerging products simply combine existing semiconductors or advanced forms of existing semiconductors, and they will therefore carry the hazardous waste issues of all the technologies employed. For example, the multi-junction cell of amorphous silicon and gallium arsenide will entail hazards posed by all of the materials and processes used.

So in my view, solar panels definitely belong in this e-waste bill. If we act to address this waste issue now while the industry is still yet young, we can avoid getting to the same situation that we currently face with consumer electronics, when we have an enormous waste stream that we see before us and we are forced to play catch-up to develop adequate strategies to deal with it. Nevertheless, in interest of fully taking the time to address my colleagues' concern, I will withdraw this amendment but I look forward to working with you, Mr. Chair, and Members of this committee, so many Members that have spent a lot of time trying to promote the solar energy industry, to make sure that we address this critical concern as the industry continues to grow.

So with that, Mr. Chair, I withdraw my amendment and I yield back.

Chair GORDON. Thank you, Ms. Giffords, and thank you more importantly for raising these important and very legitimate issues. As you know, this committee takes solar energy very seriously. We will be working on this in a comprehensive way as we go through. So obviously you will be a very important part of that. So without objection, the amendment is——

Mr. HALL. Mr. Chair?

Chair GORDON. Yes, Mr. Hall?

Mr. HALL. Yes, I would like to be heard on that. The gentlelady, I am sorry she withdrew it because I always like to support her amendments. As a matter of fact, I flew all the way to Phoenix for a hearing she held on——

Ms. GIFFORDS. Tucson.

Mr. HALL.—the very subject. Very good. And I would ask an hour, really, to explain my support for this amendment and for this Member.

Chair GORDON. You can put that in the record, and thank you, Mr. Hall.

Mr. HALL. I yield back my time.

Chair GORDON. Without objection, the amendment is withdrawn. The fifth amendment on the roster is an amendment offered by the gentlelady from Texas, Ms. Johnson. Are you ready with your amendment?

Ms. JOHNSON. Thank you, Mr. Chair. I have an amendment at the desk.

Chair GORDON. The Clerk will report the amendment.

The CLERK. Amendment to H.R. 1580, amendment number 033, offered by Ms. Eddie Bernice Johnson of Texas.

Chair GORDON. I ask unanimous consent to dispense with the reading. Without objection, so ordered. I recognize the gentlelady for five minutes to explain her amendment.

Ms. JOHNSON. Thank you very much, Mr. Gordon, and Ranking Member Hall and Members of the Committee for considering my amendment to 1580. This is a very simple amendment that is designed to make research results on electronic waste more publicly accessible.

On page 6 of the bill is the section called Dissemination of Research Results. The section outlines ways in which research results on electronic waste will be shared with the public. It includes items such as developing training materials for use in electronic manufacturing industry. It states that the research findings will be disseminated at industry conferences and through demonstration projects and education materials for the public.

My amendment would simply add that these results will be shared as well on the Environmental Protection Agency's (EPA's) website.

Often the public looks to federal agency websites for trends and information on issues of national importance. A section on the EPA website regarding methods for better management of electronic waste could be helpful to a variety of stakeholders. In this area of greater government transparency, we should consider federal science agency websites as the medium for communicating with the public. The better we do at disseminating these research results,

the faster and more significant will be the positive impacts of our environment.

I want to thank the Committee for considering it, and I urge its adoption. I yield back my time.

Chair GORDON. Thank you, Ms. Johnson, for this good amendment. Is there further discussion on the amendment?

Mr. EHLERS. Mr. Chair?

Chair GORDON. Dr. Ehlers is recognized for five minutes.

Mr. EHLERS. Thank you, Mr. Chair. I am not at all opposed to what Ms. Bernice Johnson is trying to do, but there are a lot of complications here which we are encountering at National Institutes of Health (NIH) in regard to publication rights, copyrights, and so forth. This has turned into a very major, complicated, contentious issue in scientific publication as to what is the role of the Federal Government on putting things on our websites, and I would just ask that the Committee staff examine this and see how the current discussions on that relate to this amendment and whether or not the amendment would have to be modified once we go to the Floor.

Chair GORDON. Dr. Ehlers, you are correct. We are going to be trying to have a roundtable discussion with the parties involved on this issue.

Mr. EHLERS. Okay.

Chair GORDON. I have talked with some of them individually, and I am hopeful that we are going to, you know, reach some common denominators, and we will certainly, under that spectrum in working with Ms. Johnson, review this again and we will see. I think that we are in good shape here, but we will review it and we will, you know, all work together for the best bill. Is there further discussion? If no, the vote occurs on the amendment. All in favor say aye, opposed no. The ayes have it. The amendment is agreed to.

The sixth amendment on the roster is an amendment offered by the gentlelady from Texas. Ms. Johnson, are you ready to proceed?

Ms. JOHNSON. Yes. Thank you.

Chair GORDON. The Clerk will report the amendment.

The CLERK. Amendment to H.R. 1580, amendment number 034, offered by Ms. Eddie Bernice Johnson of Texas.

Chair GORDON. I ask unanimous consent to dispense with the reading. Without objection, so ordered. I recognize the gentlelady for five minutes to explain the amendment.

Ms. JOHNSON. Thank you, Mr. Chair, and Ranking Member Hall. This amendment pertains to the Engineering Curriculum Development Grants that are described again on page 9 of the bill. The bill states that the Administrator of the Environmental Protection Agency will consult with the National Science Foundation to award grants to colleges and universities to improve curriculum and to design electronics that are less detrimental to the environment.

My amendment would simply include a directive to the Administrators that he or she should conduct outreach to minority serving institutions for the purpose of providing information about the grants. The outreach may also include providing information on how to apply these grants.

My amendment also adds a definition for minority serving institutions in the appropriate section of the bill. As a founder of the House Diversity and Innovation Caucus, I believe that the Federal Government must play a role in increasing the diversity of our science and technology workforce. I invite my colleagues on this committee to join me as a member of the Diversity and Innovation Caucus. We are an active group of about 60 members, and we are continually engaged in the process of advocating that federal science and education programs help foster a more diverse workforce. It is important for grant program officials to conduct outreach to minority serving institutions. Many of these institutions are disadvantaged in terms of winning research and education grants, but when we encourage minority serving institutions to apply for these grants, we empower them to provide better educational opportunities to the students.

These institutions train a significant portion of the minorities in our science and engineering workforce. They really are powerhouses in this respect and are deserving of our support. Again, my amendment simply directs the Administrator to reach out to them to provide information about Engineering Curriculum Development Grants, and I thank you for this consideration, urge this adoption, and yield back.

Chair GORDON. Thank you, Ms. Johnson. Please sign me up for that caucus. When we think about bringing more people into science, mathematics, and engineering, women and minorities really are our best place to get a bump. So sign me up.

Is there further discussion on the amendment? If no, the vote occurs on the amendment. All in favor say aye, opposed no. The ayes have it. The amendment is agreed to.

The seventh amendment on the roster is an amendment offered by the gentleman from California, Mr. Bilbray. Are you ready with your amendment?

Mr. BILBRAY. Thank you, Mr. Chair.

Chair GORDON. The Clerk will report the amendment.

The CLERK. Amendment to H.R. 1580, amendment number 130 offered by Mr. Bilbray of California.

Chair GORDON. I ask unanimous consent to dispense with the reading. Without objection, so ordered. I recognize the gentleman for five minutes to explain his amendment.

Mr. BILBRAY. Yes, Mr. Chair. First, let me clarify. San Diego has a real vested interest here. Some of you may know, we got a lot of old Chargers we need to get rid of, and so we would appreciate the fact that you pushed on recycling.

The language that I have is quite clear. It just points out that for-profit companies will continue to choose to participate in nonmonetary contributions to the fund but will receive protection from piracy from competitors. I think we have seen the problems before. My amendment just basically creates an environment that will assure those who want to participate that their participation will not come back and get them by their competitors' pirating the information and then using it against them. It is very clear. I appreciate your support on this, Mr. Chair, and ask for its passage.

Chair GORDON. Thank you, Mr. Bilbray. Is there further discussion on the amendment?

Mr. HALL. Mr. Chair?

Chair GORDON. Yes, Mr. Hall is recognized.

Mr. HALL. I support the amendment because I think it is necessary to any successful research project to ensure the protection of the proprietary information of the participants. As a committee of good ideas, we must also recognize the importance that the protection of good ideas has in the development of innovative new products for the marketplace, and I believe this amendment helps to ensure the participants in these research projects that they will have a chance to benefit from their own good ideas. I urge my colleagues to support the amendment and yield back my time.

[The prepared statement of Mr. Hall follows:]

PREPARED STATEMENT OF REPRESENTATIVE RALPH M. HALL

I support this amendment because I believe it is necessary to any successful research project to ensure the protection of proprietary information of its participants. As the Committee of good ideas, we must also recognize the importance that the protection of good ideas has in the development of innovative new products for the marketplace. I believe this amendment helps to ensure the participants in these research projects will have a chance to benefit from their good ideas.

I urge my colleagues to support this amendment and yield back the balance of my time.

Chair GORDON. Is there further discussion of the amendment? If no, the vote occurs on the amendment. All in favor say aye, opposed nay. The ayes have it. The amendment is agreed to.

The eighth amendment on the roster is an amendment offered by the gentleman from Texas, Mr. Neugebauer. Are you ready with your amendment?

Mr. NEUGEBAUER. Thank you, Mr. Chair. I do have an amendment at the desk.

Chair GORDON. The Clerk will report the amendment.

The CLERK. Amendment to H.R. 1580, amendment number 126, offered by Mr. Neugebauer of Texas.

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

Mr. NEUGEBAUER. Thank you, Mr. Chair. My amendment would require EPA to include a description of the rate and success of results of research projects adopted or integrated into the electronics industry in their biannual report. The legislation we are marking requires EPA to transmit through this biannual report a list of grants awarded, the entities participating in each, consortiums receiving a grant, and a description of the projects and the results of these projects.

I believe including additional requirements that would improve EPA's ability to ensure that the projects they are awarding taxpayers' dollars to actual provide tangible results in the industry which is the further purpose of this bill. Through this legislation, we are working to help the industry develop tools and technologies to make the electronics industry greener from cradle to grave, and I believe this amendment will go toward that effort. And I urge passage and adoption of this amendment.

[The prepared statement of Mr. Neugebauer follows:]

PREPARED STATEMENT OF REPRESENTATIVE RANDY NEUGEBAUER

Thank you Mr. Chairman, my amendment would require the EPA to include a description of the rate and success of the results of the research projects adopted or integrated into the electronics industry in their biennial report.

The legislation we're marking today up requires the EPA to transmit through a biennial report a list of the grants awarded, the entities participating in each consortium receiving a grant, a description of the projects, and the results of these projects.

I believe including some additional information would improve the EPA's ability to ensure that the projects they are awarding tax dollars to actually provide tangible results in the industry that furthers the purpose of the bill.

My amendment would further inspect these projects to learn not just what the projects were and their costs, but in addition a description of the rate and success of the adoption or integration of the research results into the manufacturing processes, management practices, and products of the electronics industry.

Through this legislation, we are working to help industry develop tools and technologies to make the electronics industry greener from cradle-to-grave; I believe this amendment would go towards that effort.

Chair GORDON. Is there further discussion on the amendment?

Mr. HALL. Mr. Chair?

Chair GORDON. Yes, sir, Mr. Hall?

Mr. HALL. This amendment would help Congress determine the success of these grants by asking EPA to provide information about the success of the research projects established under the bill. This additional information will be required in the report by EPA that will help EPA and Congress to track whether the projects receiving grants are actually developing tools and technologies that will result in less waste in the electronics industry. I urge my colleagues to support it, and I yield back.

[The prepared statement of Mr. Hall follows:]

PREPARED STATEMENT OF REPRESENTATIVE RALPH M. HALL

The amendment would help Congress determine the success of these grants by asking EPA to provide information about the success of the research projects established under this bill. This additional information that will be required in the report by EPA will help EPA and Congress to track whether the projects receiving grants are actually developing tools and technologies that will result in less waste in the electronics industry.

I urge my colleagues to support this amendment and yield back the balance of my time.

Chair GORDON. Is there further discussion? If no, the vote occurs on the amendment. All in favor say aye, opposed no. The ayes have it. The amendment is agreed to.

Are there other amendments? If no, then the vote is on the bill, H.R. 1580, as amended. All in favor say aye, those opposed, no. In the opinion of the Chair, the ayes have it.

I now recognize myself for a motion. I move that the Committee favorably report H.R. 1580 as amended to the House with the recommendation that the bill do pass. Furthermore, I move that the staff be instructed to prepare the legislative report and make necessary technical and conforming changes and that the Chair take all necessary steps to bring the bill before the House for consideration.

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, and the bill is favorably reported. Without objection, the motion to reconsider is laid upon the table. Members will have

two subsequent calendar days in which to submit supplemental, Minority, or additional views on the measure.

Let me just quickly say thank you to all those that have participated today, and let me also say particularly for our newer Members, although today went relatively smoothly, it wasn't because these were inconsequential bills. Just to the contrary. They are very important bills, there was a lot of work put into it, a lot of consultation with the Minority, a variety of hearings beforehand, and I think because of that it does go smoothly.

I want to also remind you that if you have not co-sponsored the bills, you will have two weeks to do so. I would suggest if you want to, do it and go home and tell them it is your bill because they are two good one.

Once again, I thank our Members for being here, and this markup is concluded.

[Whereupon, at 11:15 a.m., the Committee was adjourned.]

Appendix:

H.R. 1580, Section-by-Section Analysis, Amendment Roster

I

111TH CONGRESS
1ST SESSION

H. R. 1580

To authorize the Administrator of the Environmental Protection Agency to award grants for electronic waste reduction research, development, and demonstration projects, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

MARCH 18, 2009

Mr. GORDON of Tennessee (for himself, Mr. THOMPSON of California, Mr. BAIRD, Mr. CARNAHAN, Ms. EDDIE BERNICE JOHNSON of Texas, Mr. WU, and Mr. LUJÁN) introduced the following bill; which was referred to the Committee on Science and Technology

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A BILL

To authorize the Administrator of the Environmental Protection Agency to award grants for electronic waste reduction research, development, and demonstration projects, and for other purposes.

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

SECTION 1. SHORT TITLE.

This Act may be cited as the ''Electronic Waste Research and Development Act''.

SEC. 2. FINDINGS.

Congress finds the following:

(1) The volume of obsolete, broken, stored, or discarded electronic devices, known as electronic waste, is substantial and will continue to grow. The Environmental Protection Agency estimates that over 2 billion computers, televisions, cell phones, printers, gaming systems, and other devices have been sold since 1980, generating 2 million tons of unwanted electronic devices in 2005 alone.

(2) Electronic waste can be refurbished or recycled to recover and conserve valuable materials, such as gold, copper, and platinum. However, according to the Environmental Protection Agency, only 15 to 20 percent of household generated electronic waste reaches recyclers.

(3) The electronic waste recycling industry in the United States is growing; however, challenges remain for the recycling of electronic waste generated by households and other small generators. Collection of the electronic waste is expensive, and separation and proper disposal of some of the materials recovered, like lead from cathode-ray tube televisions, is costly.

(4) The export of electronic waste to developing countries also presents a serious challenge. The crude methods of many of the recycling operations

in these countries can expose workers to harmful chemicals, jeopardizing their health and polluting the environment.

(5) Some of the challenges to increasing the volume of electronic waste that is recycled can be addressed by improving the logistics and technology of the collection and recycling process, designing electronic devices to avoid the use of hazardous materials and to be more easily recycled, and encouraging the use of recycled materials in more applications.

(6) The public currently does not take full advantage of existing electronic waste recycling opportunities. Studying factors that influence behavior and educating consumers about electronic waste could help communities and private industry develop recycling programs that draw more participation.

(7) The development of tools and technologies to increase the lifespan of electronic devices and to promote their safe re-use would decrease the impact of the production and disposal of electronic devices on the environment.

(8) Accurately assessing the environmental impacts of the production of electronic devices and the recycling of electronic waste is a complex task. Data,

tools, and methods to better quantify these impacts would help policymakers and others determine the best end-of-life management options for electronic devices.

SEC. 3. ELECTRONIC WASTE ENGINEERING RESEARCH, DEVELOPMENT, AND DEMONSTRATION PROJECTS.

(a) IN GENERAL.—The Administrator shall award multiyear grants to consortia to conduct research to create innovative and practical approaches to reduce the volume and manage the environmental impacts of electronic waste and, through the conduct of this research, to contribute to the professional development of scientists, engineers, and technicians in the fields of electronic device manufacturing, design, refurbishing, and recycling. The grants awarded under this section shall support research to—

(1) increase the efficiency of and improve electronic waste collection and recycling;

(2) expand the uses and applications for materials recovered from electronic waste;

(3) develop and demonstrate environmentally friendly alternatives to the use of hazardous and potentially hazardous materials in electronic devices and the production of such devices;

(4) develop methods to identify, separate, and remove hazardous and potentially hazardous materials from electronic waste and to re-use, recycle, or dispose of such materials in a safe manner;

(5) reconsider product design and assembly to facilitate and improve refurbishment, re-use, and recycling of electronic devices;

(6) conduct lifecycle analyses of electronic devices, including developing tools and methods to assess the environmental impacts of the production, use, and end-of-life management of electronic devices and electronic device components;

(7) develop product design, tools, and techniques to extend the lifecycle of electronic devices, including methods to promote their upgrade and safe re-use; and

(8) develop strategies to increase awareness, consumer acceptance, and the practice of responsible recycling and re-use for electronic waste.

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

(c) APPLICATIONS.—A consortium shall submit an application for a grant under this section to the Administrator at such time, in such manner, and containing such

information and assurances as the Administrator may require. The application shall include a description of—

(1) the research project that will be undertaken by the consortium and the contributions of each of the participating entities, including the for-profit entity;

(2) the applicability of the project to reduce electronic waste in the electronic device design, manufacturing, refurbishing, or recycling industries;

(3) the potential for and feasibility of incorporating the research results into industry practice; and

(4) how the project will promote collaboration among scientists and engineers from different disciplines, such as electrical engineering, materials science, and social science.

(d) DISSEMINATION OF RESEARCH RESULTS.—Research results shall be made publicly available through—

(1) development of best practices or training materials for use in the electronics manufacturing, design, refurbishing, or recycling industries;

(2) dissemination at conferences affiliated with such industries;

(3) demonstration projects; and

(4) educational materials for the public produced in conjunction with State governments, local governments, or nonprofit organizations on problems and solutions related to electronic waste.

(e) FUNDING CONTRIBUTION FROM FOR-PROFIT MEMBER OF CONSORTIUM.—The for-profit entity participating in the consortium shall contribute at least 10 percent of the total research project cost, either directly or with in-kind contributions.

(f) BIENNIAL REPORT.—Within 2 years after the date of enactment of this Act, and every 2 years thereafter, the Administrator shall transmit a report to Congress that provides a list of the grants awarded under this section, the entities participating in each consortium receiving a grant, a description of the research projects carried out in whole or in part with funds made available under such grant, and the results of such projects.

(g) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Administrator to carry out this section:

(1) $18,000,000 for fiscal year 2010.

(2) $20,000,000 for fiscal year 2011.

(3) $22,000,000 for fiscal year 2012.

SEC. 4. NATIONAL ACADEMY OF SCIENCES REPORT ON ELECTRONIC WASTE.

(a) IN GENERAL.—In order to better recognize gaps and opportunities in the research and training programs established in this Act, the Administrator shall enter into an arrangement with the National Academy of Sciences for a report, to be transmitted to Congress not later than 1 year after the date of enactment of this Act, on—

(1) opportunities for and barriers to—

(A) reducing the volume of electronic waste, specifically addressing—

(i) recycling or safe disposal of electronic waste and low value materials recovered from such waste;

(ii) designing electronic devices to facilitate re-use and recycling; and

(iii) the re-use of electronic devices; and

(B) making electronic devices safer and more environmentally friendly, specifically addressing reducing the use of hazardous materials and potentially hazardous materials in electronic devices;

(2) the risks posed by disposal of electronic waste; and

(3) the current status of research and training programs to promote the environmental design of electronic devices to reduce electronic waste.

(b) RECOMMENDATIONS.—The report under subsection (a) shall identify gaps in the current research and training programs in addressing the opportunities, barriers, and risks relating to electronic waste, and the report shall recommend areas where additional research and development resources are needed to reduce the impact of electronic waste on the environment.

SEC. 5. ENGINEERING CURRICULUM DEVELOPMENT GRANTS.

(a) GRANT PROGRAM.—The Administrator, in consultation with the National Science Foundation, shall award grants to institutions of higher education to develop curricula that incorporates the principles of environmental design into the development of electronic devices—

(1) for the training of electrical, mechanical, industrial, manufacturing, materials, and software engineers and other students at the undergraduate and graduate level; and

(2) to support the continuing education of professionals in the electronic device manufacturing, design, refurbishing, or recycling industries.

(b) ELIGIBLE ENTITIES.—The term ''institution of higher education'', as such term is used with respect to eligibility to receive a grant under subsection (a)(2), includes any institution of higher education under section 101(b) of the Higher Education Act of 1965 (20 U.S.C. 1001(b)).

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

(d) USE OF FUNDS.—Grants awarded under this section shall be used for activities that enhance the ability of an institution of higher education to broaden the undergraduate and graduate-level engineering curriculum or professional continuing education curriculum to include environmental engineering design principles and consideration of product life cycles related to electronic devices and the reduction of electronic waste. Activities may include—

(1) developing and revising curriculum to include multidisciplinary elements;

(2) creating research and internship opportunities for students through partnerships with industry, nonprofit organizations, or government agencies;

(3) creating and establishing certificate programs; and

(4) developing curricula for short courses and continuing education for professionals in the environmental design of electronic devices to reduce electronic waste.

(e) APPLICATION.—An institution of higher education seeking a grant under this section shall submit an application to the Administrator at such time, in such manner, and with such information and assurances as the Administrator may require.

(f) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Administrator to carry out this section:

(1) $5,000,000 for fiscal year 2010.

(2) $5,150,000 for fiscal year 2011.

(3) $5,304,000 for fiscal year 2012.

SEC. 6. ENVIRONMENTALLY FRIENDLY ALTERNATIVE MATERIALS PHYSICAL PROPERTY DATABASE.

(a) IN GENERAL.—The Director shall establish an initiative to develop a comprehensive physical property database for environmentally friendly alternative materials for use in electronic devices.

(b) PRIORITIES.—The Director, working with the electronic device design, manufacturing, or recycling industries, shall develop a strategic plan to establish prior-

ities and the physical property characterization requirements for the database described in subsection (a).

(c) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Administrator to carry out this section:

(1) $3,000,000 for fiscal year 2010.

(2) $3,000,000 for fiscal year 2011.

(3) $3,000,000 for fiscal year 2012.

SEC. 7. DEFINITIONS.

For the purposes of this Act:

(1) ADMINISTRATOR.—The term ''Administrator'' means the Administrator of the Environmental Protection Agency.

(2) CONSORTIUM.—The term ''consortium'' means a grant applicant or recipient under section 3(a) that includes—

(A) at least one institution of higher education, nonprofit research institution, or government laboratory; and

(B) at least one for-profit entity, including a manufacturer, designer, refurbisher, or recycler of electronic devices or the components of such devices.

(3) DIRECTOR.—The term ''Director'' means the Director of the National Institute of Standards and Technology.

(4) ELECTRONIC WASTE.—The term ''electronic waste'' means obsolete, broken, stored, or discarded electronic devices, including computers, computer monitors, televisions, laptops, printers, cellular phones, copiers, fax machines, stereos, video gaming systems, and the components of such devices.

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

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SECTION-BY-SECTION ANALYSIS OF H.R. 1580, ELECTRONIC WASTE RESEARCH AND DEVELOPMENT ACT

Section 1. Short Title

Provides the short title of the legislation, the Electronic Waste Research and Development Act.

Section 2. Findings

Outlines the current background information on electronic waste and summarizes the challenges and concerns addressed by the legislation.

Section 3. Electronic Waste Engineering Research, Development, and Demonstration Projects

Directs the Administrator to provide grants through a competitive, merit-based process to be performed jointly with institutes of higher education, non-profit research institutions, or government laboratories, and at least one for-profit entity (i.e., manufacturers, designers, refurbishers, or recyclers) to find ways to manage electronic waste through reduction, reuse, and recycling, and make the findings of the research available to the public. The section requires a report to Congress within two years after enactment and every two years thereafter of the grants awarded and a list of the projects and their findings.

Section 4. National Academy of Sciences Report on Electronic Waste

Directs the Administrator to arrange a study by the National Academy of Sciences to look at the barriers and opportunities available to reduce electronic waste, reduce the use of hazardous materials in electronic products, and enable product design for efficient reuse and recycling.

Section 5. Engineering Curriculum Development Grants

Directs the Administrator to provide grants through a competitive, merit-based process to institutions of higher education and community colleges to develop curriculum and other training for relevant engineering undergraduate students to introduce them to topics related to electronic waste, recycling, and environmentally friendly design of electronic products. Also directs the Administrator to offer grants to institutions of higher education and community colleges to provide continuing education of professionals in the electronics manufacturing, design, refurbishing, or recycling industries to educate them about new technologies, techniques, or best practices related to electronic waste, recycling, and environmentally friendly design of electronic products.

Section 6. Environmentally Friendly Alternative Materials Physical Property Database

Directs the Director of the National Institute of Standards and Technology to establish a physical property database for green alternative materials for use in electronic products.

Section 7. Definitions

Defines the terms Administrator as the Administrator of the Environmental Protection Agency; a consortium; the term electronic waste; an institution of higher learning; and the Director as the Director of the National Institute of Standards and Technology.

COMMITTEE ON SCIENCE AND TECHNOLOGY
FULL COMMITTEE MARKUP
MARCH 25, 2009

AMENDMENT ROSTER

H.R. 1580, the Electronic Waste Research and Development Act

No.	Sponsor	Description	Results
1	Mr. Gordon	Manager's amendment replaces "waste" with "devices," "disposal" with "recycling," and "cell phones" with "wireless devices." Clarifies that the Director of NSF should be consulted by the Administrator of EPA in awarding grants under Section 5.	Agreed to by voice vote
2	Mr. Ehlers	Amends the bill to add "design for recycling" as a factor in product design and assembly research under Section 3. Amends Section 4 to replace "the risks posed by disposal of electronic waste" with "the environmental and human health risks posed by the storage, transport, recycling, and disposal of electronic devices," and adds "any regulatory barriers or statutory barriers that may prevent the adoption or implementation of best management practices or technological innovations that may arise from the research and training programs established in this Act."	Agreed to by voice vote
3	Mr. Baird	Amends Section 3 to include "social, behavioral, and economic barriers to recycling and re-use for electronic devices" to the areas of research supported by grants.	Agreed to by voice vote
4	Ms. Giffords	Amends Section 3 to add "develop environmentally friendly alternatives to the use of hazardous and potentially hazardous materials in solar panels and methods to recycle, reuse, and dispose of the panels and their components in a safe manner" to the areas of research	Withdrawn

		supported by grants.	
5	**Ms. Johnson**	**Amends Section 3 to add the Environmental Protection Agency's website to the ways/methods by which results of research shall be made publicly available.**	**Agreed to by voice vote**
6	**Ms. Johnson**	**Amends Section 5 to require the Administrator of the Environmental Protection Agency to conduct outreach to minority serving institutions to provide information on grants.**	**Agreed to by voice vote**
7	**Mr. Bilbray**	**Amends Section 3 to add provisions to protect the proprietary information or trade secrets of for-profit members of research consortia receiving grants.**	**Agreed to by voice vote**
8	**Mr. Neugebauer**	**Amends Section 3 to add "a description of the rate and success of the adoption or integration of such research results into the manufacturing processes, management practices, and products of the electronics industry" to the areas to be covered in the biennial report to Congress from the Administrator of the EPA.**	**Agreed to by voice vote**

AMENDMENT TO H.R. 1580

OFFERED BY MR. GORDON OF TENNESSEE

Page 1, line 4, strike "Waste" and insert "Device Recycling".

Page 2, beginning on line 1, strike "obsolete," and all that follows through "waste," and insert "electronic devices in the United States".

Page 2, line 5, strike "cell phones" and insert "wireless devices".

Page 2, line 9, strike "waste" and insert "devices".

Page 2, line 13, strike "waste" and insert "devices".

Page 2, line 14, strike "reaches" and insert "reach".

Page 2, line 15, strike "waste" and insert "device".

Page 2, line 17, strike "waste" and insert "devices".

Page 2, line 19, strike "waste" and insert "devices".

Page 2, line 20, strike "disposal" and insert "recycling".

Page 2, line 23, strike "waste" and insert "devices".

Page 3, line 5, strike "volume of" and all that follows through "recycled" and insert "recyclability of electronic devices".

Page 3, line 13, strike "waste" and insert "device".

Page 3, line 15, strike "electronic waste" and insert "responsible electronic recycling".

Page 3, line 21, strike "and disposal".

Page 3, line 22, before the period insert "and likely increase the recyclability of such devices".

Page 3, line 25, strike "electronic waste" and insert "such devices".

Page 4, line 5, strike "**WASTE**" and insert "**DEVICE**".

Page 4, line 11, strike "waste" and insert "devices".

Page 4, line 18, strike "waste" and insert "device".

Page 4, line 20, strike "waste" and insert "devices".

Page 5, line 3, strike "waste" and insert "devices".

Page 5, line 19, strike "waste" and insert "devices".

Page 6, line 8, strike "electronic waste" and insert "impediments to electronic recycling".

Page 6, line 24, strike "and" and insert "or".

Page 8, line 2, strike "**WASTE**" and insert "**DEVICE RECYCLING**".

Page 8, beginning on line 10, strike "reducing the volume or electronic waste" and insert "increasing the recyclability of electronic devices".

Page 8, line 13, strike "waste" and insert "devices".

Page 8, line 14, strike "waste" and insert "devices".

Page 8, line 25, strike "waste" and insert "devices".

Page 9, line 3, strike "reduce electronic waste" and insert "increase the recyclability of such devices".

Page 9, line 7, strike "waste" and insert "device recycling".

Page 9, line 10, strike "waste" and insert "devices".

Page 9, line 14, strike "with" and insert "with the Director of".

Page 10, line 17, strike "the reduction of electronic waste" and insert "increasing the recyclability of such devices".

Page 11, beginning on line 3, strike "reduce electronic waste" and insert "increase the recyclability of such devices".

Page 13, line 4, strike "WASTE" and insert "DEVICE".

Page 13, line 5, strike "waste" and insert "device".

Page 13, beginning on line 5, strike "means" and all that follows through "including" and insert "may include".

Page 13, beginning on line 7, strike "cellular phones" and insert "wireless devices".

Amend the title so as to read: "A bill to authorize the Administrator of the Environmental Protection Agency to award grants for electronic device recycling research, development, and demonstration projects, and for other purposes.".

AMENDMENT TO H.R. 1580

OFFERED BY MR. EHLERS OF MICHIGAN

Page 5, line 7, strike "electronic devices" and insert "electronic devices, including an emphasis on design for recycling".

Page 8, strike lines 24 through 25 and insert the following:

1 (2) the environmental and human health risks
2 posed by the storage, transport, recycling, and dis-
3 posal of electronic devices;

Page 9, line 3, strike the period at the end and insert "; and".

Page 9, after line 3, add the following new paragraph:

4 (4) any regulatory or statutory barriers that
5 may prevent the adoption or implementation of best
6 management practices or technological innovations
7 that may arise from the research and training pro-
8 grams established in this Act.

Page 9, line 14, strike "with" and insert "with the Director of".

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AMENDMENT TO H.R. 1580

OFFERED BY MR. BAIRD OF WASHINGTON

Page 5, beginning on line 17, amend paragraph (8) to read as follows:

1 (8) identify the social, behavioral, and economic
2 barriers to recycling and re-use for electronic devices
3 and develop strategies to increase awareness, con-
4 sumer acceptance, and the practice of responsible re-
5 cycling and re-use for such devices.

AMENDMENT TO H.R. 1580

OFFERED BY MS. GIFFORDS OF ARIZONA

Page 5, beginning on line 17, amend paragraph (8) to read as follows:

1 (8) develop environmentally friendly alternatives
2 to the use of hazardous and potentially hazardous
3 materials in solar panels and methods to recycle,
4 reuse, and dispose of the panels and their compo-
5 nents in a safe manner.

AMENDMENT TO H.R. 1580
OFFERED BY MS. EDDIE BERNICE JOHNSON OF TEXAS

Page 6, after line 23, insert the following new paragraph (and redesignate subsequent paragraphs accordingly):

1 (3) publication on the Environmental Protection
2 Agency's website;

AMENDMENT TO H.R. 1580
OFFERED BY MS. EDDIE BERNICE JOHNSON OF TEXAS

Page 10, after line 6, insert the following new subsection (and redesignate subsequent provision designations accordingly):

1 (c) OUTREACH TO MINORITY SERVING INSTITU-
2 TIONS.—The Administrator shall conduct outreach to mi-
3 nority serving institutions for the purposes of providing
4 information on the grants available under this section and
5 how to apply for such grants.

Page 13, after line 13, insert the following new paragraph:

6 (6) MINORITY SERVING INSTITUTION.—The
7 term "minority serving institution" means an insti-
8 tution that is an eligible institution under section
9 371(a) of the Higher Education Act of 1965 (20
10 U.S.C. 1067q(a)).

AMENDMENT TO H.R. 1580

OFFERED BY MR. BILBRAY OF CALIFORNIA

Page 7, after line 9, insert the following (and redesignate subsequent subsections accordingly):

1 (f) PROTECTION OF PROPRIETARY INFORMATION.—
2 The Administrator—
3 (1) shall not disclose any proprietary informa-
4 tion or trade secrets provided by any person or enti-
5 ty pursuant to this section;
6 (2) shall ensure that, as a condition of receipt
7 of a grant under this section, each member of the
8 consortium has in place proper protections to main-
9 tain proprietary information or trade secrets contrib-
10 uted by other members of the consortium; and
11 (3) if any member of the consortium breaches
12 the conditions under paragraph (2) or discloses pro-
13 prietary information or trade secrets, may require
14 the return of any funds received under this section
15 by such member.

AMENDMENT TO H.R. 1580

OFFERED BY MR. NEUGEBAUER OF TEXAS

Page 7, line 13, strike "provides" and all that follows through line 17 and insert the following:

1 provides—

2 (1) a list of the grants awarded under this sec-
3 tion;

4 (2) the entities participating in each consortium
5 receiving a grant;

6 (3) a description of the research projects car-
7 ried out in whole or in part with funds made avail-
8 able under such a grant;

9 (4) the results of such research projects; and

10 (5) a description of the rate and success of the
11 adoption or integration of such research results into
12 the manufacturing processes, management practices,
13 and products of the electronics industry.