

111<sup>TH</sup> CONGRESS  
1<sup>ST</sup> SESSION

# H. R. 1580

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IN THE SENATE OF THE UNITED STATES

APRIL 23, 2009

Received; read twice and referred to the Committee on Environment and  
Public Works

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## AN ACT

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.

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

1 **SECTION 1. SHORT TITLE.**

2 This Act may be cited as the “Electronic Device Re-  
3 cycling Research and Development Act”.

4 **SEC. 2. FINDINGS.**

5 Congress finds the following:

6 (1) The volume of electronic devices in the  
7 United States is substantial and will continue to  
8 grow. The Environmental Protection Agency esti-  
9 mates that over 2 billion computers, televisions,  
10 wireless devices, printers, gaming systems, and other  
11 devices have been sold since 1980, generating 2 mil-  
12 lion tons of unwanted electronic devices in 2005  
13 alone.

14 (2) Electronic devices can be recycled or refur-  
15 bished to recover and conserve valuable materials,  
16 such as gold, copper, and platinum. However, ac-  
17 cording to the Environmental Protection Agency,  
18 only 15 to 20 percent of electronic devices discarded  
19 from households reach recyclers.

20 (3) The electronic device recycling industry in  
21 the United States is growing; however, challenges re-  
22 main for the recycling of electronic devices by house-  
23 holds and other small generators. Collection of such  
24 electronic devices is expensive, and separation and  
25 proper recycling of some of the materials recovered,  
26 like lead from cathode-ray tube televisions, is costly.

1           (4) The export of unwanted electronic devices  
2           to developing countries also presents a serious chal-  
3           lenge. The crude methods of many of the recycling  
4           operations in these countries can expose workers to  
5           harmful chemicals, jeopardizing their health and pol-  
6           luting the environment.

7           (5) Some of the challenges to increasing the  
8           recyclability of electronic devices can be addressed  
9           by improving the logistics and technology of the col-  
10          lection and recycling process, designing electronic  
11          devices to avoid the use of hazardous materials and  
12          to be more easily recycled, and encouraging the use  
13          of recycled materials in more applications.

14          (6) The public currently does not take full ad-  
15          vantage of existing electronic device recycling oppor-  
16          tunities. Studying factors that influence behavior  
17          and educating consumers about responsible elec-  
18          tronic device recycling could help communities and  
19          private industry develop recycling programs that  
20          draw more participation.

21          (7) The development of tools and technologies  
22          to increase the lifespan of electronic devices and to  
23          promote their safe reuse would decrease the impact  
24          of the production of electronic devices on the envi-

1       ronment and likely increase the recyclability of such  
2       devices.

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

10 **SEC. 3. ELECTRONIC DEVICE ENGINEERING RESEARCH,**  
11                   **DEVELOPMENT, AND DEMONSTRATION**  
12                   **PROJECTS.**

13       (a) IN GENERAL.—The Administrator shall award  
14       multiyear grants to consortia to conduct research to create  
15       innovative and practical approaches to manage the envi-  
16       ronmental impacts of electronic devices and, through the  
17       conduct of this research, to contribute to the professional  
18       development of scientists, engineers, and technicians in  
19       the fields of electronic device manufacturing, design, re-  
20       furbishing, and recycling. The grants awarded under this  
21       section shall support research to—

22               (1) increase the efficiency of and improve elec-  
23       tronic device collection and recycling;

24               (2) expand the uses and applications for mate-  
25       rials recovered from electronic devices;

1           (3) develop and demonstrate environmentally  
2 friendly alternatives to the use of hazardous and po-  
3 tentially hazardous materials in electronic devices  
4 and the production of such devices;

5           (4) develop methods to identify, separate, and  
6 remove hazardous and potentially hazardous mate-  
7 rials from electronic devices and to reuse, recycle, or  
8 dispose of such materials in a safe manner;

9           (5) reconsider product design and assembly to  
10 facilitate and improve refurbishment, reuse, and re-  
11 cycling of electronic devices, including an emphasis  
12 on design for recycling;

13           (6) conduct lifecycle analyses of electronic de-  
14 vices, including developing tools and methods to as-  
15 sess the environmental impacts of the production,  
16 use, and end-of-life management of electronic devices  
17 and electronic device components;

18           (7) develop product design, tools, and tech-  
19 niques to extend the lifecycle of electronic devices,  
20 including methods to promote their upgrade and  
21 safe reuse; and

22           (8) identify the social, behavioral, and economic  
23 barriers to recycling and reuse for electronic devices  
24 and develop strategies to increase awareness, con-

1       sumer acceptance, and the practice of responsible re-  
2       cycling and reuse for such devices.

3       (b) MERIT REVIEW; COMPETITION.—Grants shall be  
4       awarded under this section on a merit-reviewed, competi-  
5       tive basis.

6       (c) APPLICATIONS.—A consortium shall submit an  
7       application for a grant under this section to the Adminis-  
8       trator at such time, in such manner, and containing such  
9       information and assurances as the Administrator may re-  
10      quire. The application shall include a description of—

11           (1) the research project that will be undertaken  
12           by the consortium and the contributions of each of  
13           the participating entities, including the for-profit en-  
14           tity;

15           (2) the applicability of the project to reduce im-  
16           pediments to electronic device recycling in the elec-  
17           tronic device design, manufacturing, refurbishing, or  
18           recycling industries;

19           (3) the potential for and feasibility of incor-  
20           porating the research results into industry practice;  
21           and

22           (4) how the project will promote collaboration  
23           among scientists and engineers from different dis-  
24           ciplines, such as electrical engineering, materials  
25           science, and social science.

1 (d) DISSEMINATION OF RESEARCH RESULTS.—Re-  
2 search results shall be made publicly available through—

3 (1) development of best practices or training  
4 materials for use in the electronic device manufac-  
5 turing, design, refurbishing, or recycling industries;

6 (2) dissemination at conferences affiliated with  
7 such industries;

8 (3) publication on the Environmental Protection  
9 Agency’s Web site;

10 (4) demonstration projects; or

11 (5) educational materials for the public pro-  
12 duced in conjunction with State governments, local  
13 governments, or nonprofit organizations on problems  
14 and solutions related to electronic device recycling  
15 and reuse.

16 (e) FUNDING CONTRIBUTION FROM FOR-PROFIT  
17 MEMBER OF CONSORTIUM.—The for-profit entity partici-  
18 pating in the consortium shall contribute at least 10 per-  
19 cent of the total research project cost, either directly or  
20 with in-kind contributions.

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

23 (1) shall not disclose any proprietary informa-  
24 tion or trade secrets provided by any person or enti-  
25 ty pursuant to this section;

1           (2) shall ensure that, as a condition of receipt  
2 of a grant under this section, each member of the  
3 consortium has in place proper protections to main-  
4 tain proprietary information or trade secrets contrib-  
5 uted by other members of the consortium; and

6           (3) if any member of the consortium breaches  
7 the conditions under paragraph (2) or discloses pro-  
8 prietary information or trade secrets, may require  
9 the return of any funds received under this section  
10 by such member.

11       (g) BIENNIAL REPORT.—Within 2 years after the  
12 date of enactment of this Act, and every 2 years there-  
13 after, the Administrator shall transmit a report to Con-  
14 gress that provides—

15           (1) a list of the grants awarded under this sec-  
16 tion;

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

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

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

23           (5) a description of the rate and success of the  
24 adoption or integration of such research results into



1 the manufacturing processes, management practices,  
2 and products of the electronics industry.

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

6 (1) \$18,000,000 for fiscal year 2010.

7 (2) \$20,000,000 for fiscal year 2011.

8 (3) \$22,000,000 for fiscal year 2012.

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

11 (a) IN GENERAL.—In order to better recognize gaps  
12 and opportunities in the research and training programs  
13 established in this Act, the Administrator shall enter into  
14 an arrangement with the National Academy of Sciences  
15 for a report, to be transmitted to Congress not later than  
16 1 year after the date of enactment of this Act, on—

17 (1) opportunities for and barriers to—

18 (A) increasing the recyclability of elec-  
19 tronic devices, specifically addressing—

20 (i) recycling or safe disposal of elec-  
21 tronic devices and low value materials re-  
22 covered from such devices;

23 (ii) designing electronic devices to fa-  
24 cilitate reuse and recycling; and

1 (iii) the reuse of electronic devices;

2 and

3 (B) making electronic devices safer and  
4 more environmentally friendly, specifically ad-  
5 dressing reducing the use of hazardous mate-  
6 rials and potentially hazardous materials in  
7 electronic devices;

8 (2) the environmental and human health risks  
9 posed by the storage, transport, recycling, and dis-  
10 posal of unwanted electronic devices;

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

15 (4) any regulatory or statutory barriers that  
16 may prevent the adoption or implementation of best  
17 management practices or technological innovations  
18 that may arise from the research and training pro-  
19 grams established in this Act.

20 (b) RECOMMENDATIONS.—The report under sub-  
21 section (a) shall identify gaps in the current research and  
22 training programs in addressing the opportunities, bar-  
23 riers, and risks relating to electronic device recycling, and  
24 the report shall recommend areas where additional re-  
25 search and development resources are needed to reduce

1 the impact of unwanted electronic devices on the environ-  
2 ment.

3 **SEC. 5. ENGINEERING CURRICULUM DEVELOPMENT**  
4 **GRANTS.**

5 (a) GRANT PROGRAM.—The Administrator, in con-  
6 sultation with the Director of the National Science Foun-  
7 dation, shall award grants to institutions of higher edu-  
8 cation to develop curricula that incorporates the principles  
9 of environmental design into the development of electronic  
10 devices—

11 (1) for the training of electrical, mechanical, in-  
12 dustrial, manufacturing, materials, and software en-  
13 gineers and other students at the undergraduate and  
14 graduate level; and

15 (2) to support the continuing education of pro-  
16 fessionals in the electronic device manufacturing, de-  
17 sign, refurbishing, or recycling industries.

18 (b) ELIGIBLE ENTITIES.—The term “institution of  
19 higher education”, as such term is used with respect to  
20 eligibility to receive a grant under subsection (a)(2), in-  
21 cludes any institution of higher education under section  
22 101(b) of the Higher Education Act of 1965 (20 U.S.C.  
23 1001(b)).

24 (c) OUTREACH TO MINORITY SERVING INSTITU-  
25 TIONS.—The Administrator shall conduct outreach to mi-

1 nority serving institutions for the purposes of providing  
2 information on the grants available under this section and  
3 how to apply for such grants.

4 (d) MERIT REVIEW; COMPETITION.—Grants shall be  
5 awarded under this section on a merit-reviewed, competi-  
6 tive basis.

7 (e) USE OF FUNDS.—Grants awarded under this sec-  
8 tion shall be used for activities that enhance the ability  
9 of an institution of higher education to broaden the under-  
10 graduate and graduate-level engineering curriculum or  
11 professional continuing education curriculum to include  
12 environmental engineering design principles and consider-  
13 ation of product lifecycles related to electronic devices and  
14 increasing the recyclability of such devices. Activities may  
15 include—

16 (1) developing and revising curriculum to in-  
17 clude multidisciplinary elements;

18 (2) creating research and internship opportuni-  
19 ties for students through partnerships with industry,  
20 nonprofit organizations, or government agencies;

21 (3) creating and establishing certificate pro-  
22 grams; and

23 (4) developing curricula for short courses and  
24 continuing education for professionals in the envi-



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

4 (1) \$3,000,000 for fiscal year 2010.

5 (2) \$3,000,000 for fiscal year 2011.

6 (3) \$3,000,000 for fiscal year 2012.

7 **SEC. 7. DEFINITIONS.**

8 For the purposes of this Act:

9 (1) ADMINISTRATOR.—The term “Adminis-  
10 trator” means the Administrator of the Environ-  
11 mental Protection Agency.

12 (2) CONSORTIUM.—The term “consortium”  
13 means a grant applicant or recipient under section  
14 3(a) that includes—

15 (A) at least one institution of higher edu-  
16 cation, nonprofit research institution, or govern-  
17 ment laboratory; and

18 (B) at least one for-profit entity, including  
19 a manufacturer, designer, refurbisher, or recy-  
20 cler of electronic devices or the components of  
21 such devices.

22 (3) DIRECTOR.—The term “Director” means  
23 the Director of the National Institute of Standards  
24 and Technology.

