

112TH CONGRESS  
1ST SESSION

# H. R. 952

To develop an energy critical elements program, to amend the National Materials and Minerals Policy, Research and Development Act of 1980, and for other purposes.

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## IN THE HOUSE OF REPRESENTATIVES

MARCH 8, 2011

Mr. MILLER of North Carolina introduced the following bill; which was referred to the Committee on Science, Space, and Technology

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## A BILL

To develop an energy critical elements program, to amend the National Materials and Minerals Policy, Research and Development Act of 1980, 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,*

3 **SECTION 1. SHORT TITLE; TABLE OF CONTENTS.**

4 (a) SHORT TITLE.—This Act may be cited as the  
5 “Energy Critical Elements Renewal Act of 2011”.

6 (b) TABLE OF CONTENTS.—The table of contents for  
7 this Act is as follows:

- Sec. 1. Short title; table of contents.
- Sec. 2. Definitions.

TITLE I—ENERGY CRITICAL ELEMENTS

- Sec. 101. Energy critical elements program.  
 Sec. 102. Policy Coordination Committee.  
 Sec. 103. Rare earth materials loan guarantee program.

TITLE II—NATIONAL MATERIALS AND MINERALS POLICY,  
 RESEARCH, AND DEVELOPMENT

- Sec. 201. Amendments to National Materials and Minerals Policy, Research  
 and Development Act of 1980.  
 Sec. 202. Repeal.

1 **SEC. 2. DEFINITIONS.**

2 In this Act:

3 (1) APPROPRIATE CONGRESSIONAL COMMIT-  
 4 TEES.—The term “appropriate Congressional com-  
 5 mittees” means the Committee on Science, Space,  
 6 and Technology of the House of Representatives and  
 7 the Committee on Commerce, Science, and Trans-  
 8 portation and the Committee on Energy and Natural  
 9 Resources of the Senate.

10 (2) CENTER.—The term “Center” means the  
 11 Research and Development Information Center es-  
 12 tablished in section 101(b).

13 (3) DEPARTMENT.—The term “Department”  
 14 means the Department of Energy.

15 (4) ENERGY CRITICAL ELEMENT.—The term  
 16 “energy critical element” means any of a class of  
 17 chemical elements that are critical to one or more  
 18 new, energy-related technologies such that a short-  
 19 age of such element would significantly inhibit large-  
 20 scale deployment of technologies that produce, trans-  
 21 mit, store, or conserve energy.

1           (5) RARE EARTH MATERIALS.—The term “rare  
2 earth materials” means any of the following chem-  
3 ical elements in any of their physical forms or chem-  
4 ical combinations:

5           (A) Scandium.

6           (B) Yttrium.

7           (C) Lanthanum.

8           (D) Cerium.

9           (E) Praseodymium.

10          (F) Neodymium.

11          (G) Promethium.

12          (H) Samarium.

13          (I) Europium.

14          (J) Gadolinium.

15          (K) Terbium.

16          (L) Dysprosium.

17          (M) Holmium.

18          (N) Erbium.

19          (O) Thulium.

20          (P) Ytterbium.

21          (Q) Lutetium.

22           (6) SECRETARY.—The term “Secretary” means  
23 the Secretary of Energy.

1           **TITLE I—ENERGY CRITICAL**  
2                           **ELEMENTS**

3   **SEC. 101. ENERGY CRITICAL ELEMENTS PROGRAM.**

4           (a) ESTABLISHMENT OF PROGRAM.—

5                 (1) IN GENERAL.—There is established in the  
6           Department a program of research, development,  
7           demonstration, and commercial application to assure  
8           the long-term, secure, and sustainable supply of en-  
9           ergy critical elements sufficient to satisfy the na-  
10          tional security, economic well-being, and industrial  
11          production needs of the United States.

12                (2) PROGRAM ACTIVITIES.—The program shall  
13          support activities to—

14                    (A) better characterize and quantify virgin  
15                    stocks of energy critical elements using theo-  
16                    retical geochemical research;

17                    (B) explore, discover, and recover energy  
18                    critical elements using advanced science and  
19                    technology;

20                    (C) improve methods for the extraction,  
21                    processing, use, recovery, and recycling of en-  
22                    ergy critical elements;

23                    (D) improve the understanding of the per-  
24                    formance, processing, and adaptability in engi-  
25                    neering designs of energy critical elements;

1 (E) identify and test alternative materials  
2 that can be substituted for energy critical ele-  
3 ments in particular applications; and

4 (F) engineer and test applications that—

5 (i) use recycled energy critical ele-  
6 ments;

7 (ii) use alternative materials; or

8 (iii) seek to minimize energy critical  
9 element content.

10 (3) IMPROVED PROCESSES AND TECH-  
11 NOLOGIES.—To the maximum extent practicable, the  
12 Secretary shall support new or significantly im-  
13 proved processes and technologies as compared to  
14 those currently in use in the energy critical elements  
15 industry.

16 (4) EXPANDING PARTICIPATION.—The Sec-  
17 retary shall encourage multidisciplinary collabora-  
18 tions of participants, extensive opportunities for stu-  
19 dents at institutions of higher education, or both.

20 (5) CONSISTENCY.—The program shall be con-  
21 sistent with the policies and programs in the Na-  
22 tional Materials and Minerals Policy, Research and  
23 Development Act of 1980 (30 U.S.C. 1601 et seq.).

24 (6) INTERNATIONAL COLLABORATION.—In car-  
25 rying out the program, the Secretary may collabo-

1 rate, to the extent practicable, on activities of mu-  
2 tual interest with the relevant agencies of foreign  
3 countries with interests relating to energy critical  
4 elements.

5 (b) RESEARCH AND DEVELOPMENT INFORMATION  
6 CENTER.—

7 (1) IN GENERAL.—To collect, catalogue, dis-  
8 seminate, and archive information on energy critical  
9 elements, the Secretary shall establish, through a  
10 competitive process, a Research and Development  
11 Information Center.

12 (2) CENTER ACTIVITIES.—

13 (A) IN GENERAL.—The Center shall—

14 (i) serve as the repository for sci-  
15 entific and technical data generated by the  
16 research and development activities funded  
17 under this section;

18 (ii) assist scientists and engineers in  
19 making the fullest possible use of the Cen-  
20 ter's data holdings;

21 (iii) seek and incorporate other infor-  
22 mation on energy critical elements to en-  
23 hance the Center's utility for program par-  
24 ticipants and other users;

1 (iv) provide advice to the Secretary  
2 concerning the research and development  
3 program under subsection (a); and

4 (v) host conferences, at least annually,  
5 for participants in the energy critical ele-  
6 ments program and other interested par-  
7 ties to promote information sharing and  
8 encourage new collaborative activities.

9 (B) RESTRICTION.—Not more than 2.5  
10 percent of the amounts made available pursuant  
11 to this section may be used for hosting con-  
12 ferences under subparagraph (A)(v).

13 (c) PLAN.—

14 (1) IN GENERAL.—Within 180 days after the  
15 date of enactment of this Act and biennially there-  
16 after, the Secretary shall prepare and submit to the  
17 appropriate Congressional committees a plan to  
18 carry out the program established under subsection  
19 (a) and the Center established under subsection (b).

20 (2) SPECIFIC REQUIREMENTS.—The plan shall  
21 include a description of—

22 (A) the research and development activities  
23 to be carried out by the program during the  
24 subsequent 2 years;

1 (B) the expected contributions of the pro-  
2 gram and the Center to the creation of innova-  
3 tive methods and technologies for the efficient  
4 and sustainable provision of energy critical ele-  
5 ments to the domestic economy;

6 (C) the technical criteria to be used to  
7 evaluate applications for loan guarantees under  
8 section 1706 of the Energy Policy Act of 2005;

9 (D) any projects receiving loan guarantee  
10 support under such section and the status of  
11 such projects;

12 (E) how the program is promoting the  
13 broadest possible participation by academic, in-  
14 dustrial, and other contributors; and

15 (F) actions taken or proposed that reflect  
16 recommendations from the assessment con-  
17 ducted under subsection (d) or the Secretary's  
18 rationale for not taking action pursuant to any  
19 recommendation from such assessment for  
20 plans submitted following the completion of the  
21 assessment under such subsection.

22 (3) CONSULTATION.—In preparing each plan  
23 under paragraph (1), the Secretary shall consult  
24 with appropriate representatives of industry, institu-  
25 tions of higher education, Department of Energy na-

1 tional laboratories, professional and technical soci-  
2 eties, and other entities, as determined by the Sec-  
3 retary.

4 (d) ASSESSMENT.—

5 (1) IN GENERAL.—After the program has been  
6 in operation for 4 years, the Secretary shall offer to  
7 enter into a contract with the National Academy of  
8 Sciences under which the National Academy shall  
9 conduct an assessment of the program under sub-  
10 section (a), including the operations and activities of  
11 the Center under subsection (b).

12 (2) INCLUSIONS.—The assessment shall include  
13 the recommendation of the National Academy of  
14 Sciences that the program should be—

15 (A) continued, accompanied by a descrip-  
16 tion of any improvements needed in the pro-  
17 gram; or

18 (B) terminated, accompanied by a descrip-  
19 tion of the lessons learned from the execution of  
20 the program.

21 (3) AVAILABILITY.—The assessment shall be  
22 made available to Congress and the public upon  
23 completion.

24 (e) AUTHORIZATION OF APPROPRIATIONS.—

1           (1) IN GENERAL.—There are authorized to be  
2 appropriated to the Secretary to carry out this sec-  
3 tion the following sums:

4                   (A) For fiscal year 2012, \$10,000,000.

5                   (B) For fiscal year 2013, \$15,000,000.

6                   (C) For fiscal year 2014, \$15,000,000.

7                   (D) For fiscal year 2015, \$15,000,000.

8                   (E) For fiscal year 2016, \$15,000,000.

9           (2) ASSESSMENT.—From the amounts author-  
10 ized under paragraph (1), there are authorized to be  
11 appropriated to the Secretary \$700,000 to enter into  
12 a contract under subsection (d)(1).

13           (3) AVAILABILITY.—Such sums shall remain  
14 available until expended.

15 **SEC. 102. SUPPLY OF ENERGY CRITICAL ELEMENTS.**

16           The President, acting through the Office of Science  
17 and Technology Policy, shall—

18                   (1) coordinate the actions of applicable Federal  
19 agencies to promote an adequate and stable supply  
20 of energy critical elements necessary to maintain na-  
21 tional security, economic well-being, and industrial  
22 production with appropriate attention to a long-term  
23 balance between resource production, energy use, a  
24 healthy environment, natural resources conservation,  
25 and social needs;

1           (2) identify energy critical elements and estab-  
2           lish early warning systems for supply problems of  
3           energy critical elements;

4           (3) establish a mechanism for the coordination  
5           and evaluation of Federal programs with energy crit-  
6           ical element needs, including programs involving re-  
7           search and development, in a manner that com-  
8           plements related efforts carried out by the private  
9           sector and other domestic and international agencies  
10          and organizations;

11          (4) promote and encourage private enterprise in  
12          the development of an economically sound and stable  
13          domestic energy critical elements supply chain;

14          (5) promote and encourage the recycling of en-  
15          ergy critical elements, taking into account the logis-  
16          tics, economic viability, environmental sustainability,  
17          and research and development needs for completing  
18          the recycling process;

19          (6) assess the need for and make recommenda-  
20          tions concerning the availability and adequacy of the  
21          supply of technically trained personnel necessary for  
22          energy critical elements research, development, ex-  
23          traction, and industrial production, with a particular  
24          focus on the problem of attracting and maintaining

1 high quality professionals for maintaining an ade-  
2 quate supply of energy critical elements; and

3 (7) report to Congress on activities and findings  
4 under this subsection.

5 **SEC. 103. RARE EARTH MATERIALS LOAN GUARANTEE PRO-**  
6 **GRAM.**

7 (a) AMENDMENT.—Title XVII of the Energy Policy  
8 Act of 2005 (42 U.S.C. 16511 et seq.) is amended by add-  
9 ing at the end the following new section:

10 **“SEC. 1706. TEMPORARY PROGRAM FOR RARE EARTH MA-**  
11 **TERIALS REVITALIZATION.**

12 “(a) IN GENERAL.—As part of the program estab-  
13 lished in section 101 of the Energy Critical Elements Re-  
14 newal Act of 2011, the Secretary is authorized to make  
15 guarantees under this title for the commercial application  
16 of new or significantly improved technologies (compared  
17 to technologies currently in use in the United States) for  
18 the following categories of projects:

19 “(1) The separation and recovery of rare earth  
20 materials from ores or other sources.

21 “(2) The preparation of rare earth materials in  
22 oxide, metal, alloy, or other forms needed for na-  
23 tional security, economic well-being, or industrial  
24 production purposes.

1           “(3) The application of rare earth materials in  
2           the production of improved—

3                   “(A) magnets;

4                   “(B) batteries;

5                   “(C) refrigeration systems;

6                   “(D) optical systems;

7                   “(E) electronics; and

8                   “(F) catalysis.

9           “(4) The application of rare earth materials in  
10          other uses, as determined by the Secretary.

11          “(b) TIMELINESS.—The Secretary shall seek to mini-  
12          mize delay in approving loan guarantee applications, con-  
13          sistent with appropriate protection of taxpayer interests.

14          “(c) COOPERATION.—To the maximum extent prac-  
15          ticable, the Secretary shall cooperate with appropriate pri-  
16          vate sector participants to achieve a complete rare earth  
17          materials production capability in the United States with-  
18          in 5 years after the date of enactment of the Energy Crit-  
19          ical Elements Renewal Act of 2011.

20          “(d) SUNSET.—The authority to enter into guaran-  
21          tees under this section shall expire on September 30,  
22          2019.”.

23          (b) TABLE OF CONTENTS AMENDMENT.—The table  
24          of contents for the Energy Policy Act of 2005 is amended

1 by inserting after the item relating to section 1705 the  
2 following new item:

“Sec. 1706. Temporary program for rare earth materials revitalization.”.

3 **TITLE II—NATIONAL MATERIALS**  
4 **AND MINERALS POLICY, RE-**  
5 **SEARCH, AND DEVELOPMENT**

6 **SEC. 201. AMENDMENTS TO NATIONAL MATERIALS AND**  
7 **MINERALS POLICY, RESEARCH AND DEVEL-**  
8 **OPMENT ACT OF 1980.**

9 (a) PROGRAM PLAN.—Section 5 of the National Ma-  
10 terials and Minerals Policy, Research and Development  
11 Act of 1980 (30 U.S.C. 1604) is amended—

12 (1) by striking “date of enactment of this Act”  
13 each place it appears and inserting “date of enact-  
14 ment of the Energy Critical Elements Renewal Act  
15 of 2011”;

16 (2) in subsection (b), by striking “Federal Co-  
17 ordinating Council for Science, Engineering, and  
18 Technology” and inserting “National Science and  
19 Technology Council,”;

20 (3) in subsection (c)—

21 (A) by striking “the Federal Emergency”  
22 and all that follows through “Agency, and”;

23 (B) by striking “appropriate shall” and in-  
24 serting “appropriate, shall”;

25 (C) by striking paragraph (1);

1 (D) in paragraph (2), by striking “in the  
2 case” and all that follows through “subsection,”

3 (E) by redesignating paragraph (2) as  
4 paragraph (1);

5 (F) by redesignating paragraph (3) as  
6 paragraph (2); and

7 (G) by amending paragraph (2), as reded-  
8 igned, to read as follows:

9 “(2) assess the adequacy and stability of the  
10 supply of materials necessary to maintain national  
11 security, economic well-being, and industrial produc-  
12 tion.”;

13 (4) by striking subsections (d) and (e); and

14 (5) by redesignating subsection (f) as sub-  
15 section (d).

16 (b) POLICY.—Section 3 of such Act (30 U.S.C. 1602)  
17 is amended—

18 (1) by striking “The Congress declares that it”  
19 and inserting “It”; and

20 (2) by striking “The Congress further declares  
21 that implementation” and inserting “Implementa-  
22 tion”.

23 (c) IMPLEMENTATION.—Section 4 of such Act (30  
24 U.S.C. 1603) is amended—

1           (1) by striking “For the purpose” and all that  
2 follows through “declares that the” and inserting  
3 “The”; and

4           (2) by striking “departments and agencies,”  
5 and inserting “departments and agencies to imple-  
6 ment the policies set forth in section 3”.

7 **SEC. 202. REPEAL.**

8           Title II of Public Law 98–373 (30 U.S.C. 1801; 98  
9 Stat. 1248), also known as the National Critical Materials  
10 Act of 1984, is repealed.

○