

Calendar No. 423115TH CONGRESS
2^D SESSION**S. 1563****[Report No. 115–255]**

To authorize the Office of Fossil Energy to develop advanced separation technologies for the extraction and recovery of rare earth elements and minerals from coal and coal byproducts, and for other purposes.

IN THE SENATE OF THE UNITED STATES

JULY 13, 2017

Mr. MANCHIN introduced the following bill; which was read twice and referred to the Committee on Energy and Natural Resources

MAY 22, 2018

Reported by Ms. MURKOWSKI, without amendment

A BILL

To authorize the Office of Fossil Energy to develop advanced separation technologies for the extraction and recovery of rare earth elements and minerals from coal and coal byproducts, 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 “Rare Earth Element
3 Advanced Coal Technologies Act”.

4 **SEC. 2. FINDINGS.**

5 Congress finds that—

6 (1) the United States is largely dependent on
7 foreign imports for the domestic supply of rare earth
8 elements and minerals in the United States;

9 (2) as of the date of enactment of this Act, the
10 United States does not have domestic production ca-
11 pability for, or a guaranteed supply chain of, rare
12 earth elements and minerals, particularly in times of
13 national crisis;

14 (3) access to certain rare earth elements and
15 minerals is critical for the national security of the
16 United States;

17 (4) China maintains a near monopoly of the
18 global supply chain of rare earth elements and min-
19 erals;

20 (5) the successful development of commercially
21 viable refining methods of rare earth elements and
22 minerals from coal byproducts could lead to new eco-
23 nomic development opportunities in parts of the
24 United States most affected by the downturn of the
25 coal industry;

26 (6) rare earth elements—

1 (A) comprise 17 elements on the periodic
2 table, including—

3 (i) the lanthanides, which are lan-
4 thanum (La), cerium (Ce), praseodymium
5 (Pr), neodymium (Nd), promethium (Pm),
6 samarium (Sm), europium (Eu), gado-
7 linium (Gd), terbium (Tb), dysprosium
8 (Dy), holmium (Ho), erbium (Er), thulium
9 (Tm), ytterbium (Yb), and lutetium (Lu);
10 and

11 (ii) transition elements, which are
12 scandium (Sc) and yttrium (Y); and

13 (B) can be divided into—

14 (i) light rare earth elements, which
15 are lanthanum (La), cerium (Ce), praseo-
16 dymium (Pr), neodymium (Nd), pro-
17 methium (Pm), and samarium (Sm); and

18 (ii) heavy rare earth elements, which
19 are scandium (Sc), yttrium (Y), europium
20 (Eu), gadolinium (Gd), terbium (Tb), dys-
21 prosium (Dy), holmium (Ho), erbium (Er),
22 thulium (Tm), ytterbium (Yb), and lute-
23 tium (Lu); and

24 (7) it is in the interest of the Federal Govern-
25 ment—

1 (A) to guide responsible domestic produc-
2 tion of rare earth elements and minerals to en-
3 sure industry and consumers in the United
4 States have access to a reliable domestic supply
5 of valuable rare earth elements and minerals;
6 and

7 (B)(i) to identify the areas of highest po-
8 tential interruption in the global supply chain of
9 rare earth elements and minerals; and

10 (ii) to strengthen the position of the
11 United States in that supply chain by miti-
12 gating potential interruptions through the de-
13 velopment of advanced coal technologies.

14 **SEC. 3. PROGRAM FOR EXTRACTION AND RECOVERY OF**
15 **RARE EARTH ELEMENTS AND MINERALS**
16 **FROM COAL AND COAL BYPRODUCTS.**

17 (a) IN GENERAL.—The Secretary of Energy, acting
18 through the Assistant Secretary for Fossil Energy (re-
19 ferred to in this section as the “Secretary”), shall carry
20 out a program under which the Secretary shall develop
21 advanced separation technologies for the extraction and
22 recovery of rare earth elements and minerals from coal
23 and coal byproducts.

24 (b) AUTHORIZATION OF APPROPRIATIONS.—There is
25 authorized to be appropriated to the Secretary to carry

1 out the program described in subsection (a) \$20,000,000
2 for each of fiscal years 2018 through 2025.

3 **SEC. 4. ASSESSMENT AND REPORT.**

4 (a) IN GENERAL.—Not later than 1 year after the
5 date of enactment of this Act, the Secretary of Energy,
6 in consultation with the Secretary of Defense (referred to
7 in this section as the “Secretary”), shall carry out, and
8 submit to the Committee on Energy and Natural Re-
9 sources of the Senate and the Committee on Energy and
10 Commerce of the House of Representatives—

11 (1) an assessment—

12 (A) identifying and ranking the rare earth
13 elements that—

14 (i) are most important to consumers
15 in the United States;

16 (ii) are most jeopardized in the global
17 supply chain; and

18 (iii) will have the greatest impact to
19 consumers in the United States in the
20 event of a disruption in the global supply
21 chain;

22 (B) evaluating the development of ad-
23 vanced separation technologies for the extrac-
24 tion and recovery of rare earth elements and
25 minerals from coal and coal byproducts (re-

1 ferred to in this subsection as the “tech-
2 nologies”);

3 (C) identifying and evaluating the results
4 of the development of the technologies, includ-
5 ing the results with respect to the extraction
6 and recovery of each rare earth element;

7 (D) determining what the technologies are
8 capable of producing;

9 (E) evaluating the performance of the
10 technologies, including what the technologies—

11 (i) succeed and fail at accomplishing;

12 and

13 (ii) can and cannot do cost-effectively;

14 and

15 (F)(i) evaluating the market impact on
16 each rare earth mineral of the penetration of
17 commercially viable technologies; and

18 (ii) how the penetration of commercially
19 viable coal-based technology will impact the
20 global supply chain; and

21 (2) a report analyzing—

22 (A) the additional resources required for
23 the development of commercial-ready deploy-
24 ment of technologies that are second generation
25 and transformational; and

1 (B) the market impact of processes to
2 treat and recover rare earth elements and min-
3 erals from sludge generated during treatment of
4 acid mine drainage from coal mines.

5 (b) REQUIREMENT.—In carrying out the assessment
6 and report under subsection (a), the Secretary shall focus
7 on the rare earth elements determined by the Secretary
8 to be most critical to the national security of the United
9 States.

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