

116TH CONGRESS  
1ST SESSION

# S. 1052

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.

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## IN THE SENATE OF THE UNITED STATES

APRIL 4, 2019

Mr. MANCHIN (for himself, Mrs. CAPITO, and Ms. MURKOWSKI) introduced the following bill; which was read twice and referred to the Committee on Energy and Natural Resources

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## 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,*

3       **SECTION 1. SHORT TITLE.**

4       This Act may be cited as the “Rare Earth Element  
5       Advanced Coal Technologies Act”.

6       **SEC. 2. FINDINGS.**

7       Congress finds that—

1           (1) the United States is largely dependent on  
2 foreign imports for the domestic supply of rare earth  
3 elements and critical minerals in the United States;

4           (2) as of the date of enactment of this Act, the  
5 United States does not have domestic production ca-  
6 pability for, or a guaranteed supply chain of, rare  
7 earth elements and critical minerals;

8           (3) access to certain rare earth elements and  
9 minerals is critical for the national security of the  
10 United States;

11           (4) China maintains a near monopoly of the  
12 global supply chain of rare earth elements and crit-  
13 ical minerals;

14           (5) the successful development of commercially  
15 viable refining methods of rare earth elements from  
16 coal byproducts could lead to new economic develop-  
17 ment opportunities in parts of the United States  
18 most affected by the downturn of the coal industry;

19           (6) rare earth elements—

20               (A) comprise elements on the periodic  
21 table, including—

22                   (i) the lanthanides, which are lan-  
23 thanum (La), cerium (Ce), praseodymium  
24 (Pr), neodymium (Nd), samarium (Sm),  
25 europium (Eu), gadolinium (Gd), terbium

1 (Tb), dysprosium (Dy), holmium (Ho), er-  
2 bium (Er), thulium (Tm), ytterbium (Yb),  
3 and lutetium (Lu); and

4 (ii) transition elements, which are  
5 scandium (Sc) and yttrium (Y); and

6 (B) can be divided into—

7 (i) light rare earth elements, which  
8 are lanthanum (La), cerium (Ce), praseo-  
9 dymium (Pr), neodymium (Nd), pro-  
10 methium (Pm), and samarium (Sm); and

11 (ii) heavy rare earth elements, which  
12 are scandium (Sc), yttrium (Y), gado-  
13 linium (Gd), terbium (Tb), dysprosium  
14 (Dy), holmium (Ho), erbium (Er), thulium  
15 (Tm), ytterbium (Yb), and lutetium (Lu);  
16 and

17 (7) it is in the interest of the Federal Govern-  
18 ment—

19 (A) to guide responsible domestic produc-  
20 tion methods of rare earth elements and min-  
21 erals to ensure industry and consumers in the  
22 United States have access to a reliable domestic  
23 supply of valuable rare earth elements and min-  
24 erals; and

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

4 (ii) to strengthen the position of the  
5 United States in that supply chain by miti-  
6 gating potential interruptions through the de-  
7 velopment of advanced separation technologies  
8 for coal and coal byproducts.

9 **SEC. 3. PROGRAM FOR EXTRACTION AND RECOVERY OF**  
10 **RARE EARTH ELEMENTS AND MINERALS**  
11 **FROM COAL AND COAL BYPRODUCTS.**

12 (a) IN GENERAL.—The Secretary of Energy, acting  
13 through the Assistant Secretary for Fossil Energy (re-  
14 ferred to in this Act as the “Secretary”), shall carry out  
15 a program under which the Secretary shall develop ad-  
16 vanced separation technologies for the extraction and re-  
17 covery of rare earth elements and minerals from coal and  
18 coal byproducts.

19 (b) AUTHORIZATION OF APPROPRIATIONS.—There is  
20 authorized to be appropriated to the Secretary to carry  
21 out the program described in subsection (a) \$23,000,000  
22 for each of fiscal years 2020 through 2027.

23 **SEC. 4. ASSESSMENT AND REPORT.**

24 (a) IN GENERAL.—Not later than 1 year after the  
25 date of enactment of this Act, the Secretary, in consulta-

1 tion with the Secretary of Defense and the Secretary of  
2 the Interior, shall carry out, and submit to the Committee  
3 on Energy and Natural Resources of the Senate and the  
4 Committee on Energy and Commerce of the House of  
5 Representatives—

6 (1) an assessment—

7 (A) identifying and ranking the rare earth  
8 elements that—

9 (i) are most important to consumers  
10 in the United States;

11 (ii) are most jeopardized in the global  
12 supply chain; and

13 (iii) will have the greatest impact to  
14 consumers in the United States in the  
15 event of a disruption in the global supply  
16 chain;

17 (B) evaluating the development of ad-  
18 vanced separation technologies for the extrac-  
19 tion and recovery of rare earth elements and  
20 minerals from coal and coal byproducts (re-  
21 ferred to in this subsection as the “tech-  
22 nologies”);

23 (C) identifying and evaluating the results  
24 of the development of the technologies, includ-

1 ing the results with respect to the extraction  
2 and recovery of each rare earth element;

3 (D) determining what the technologies are  
4 capable of producing;

5 (E) evaluating the performance of the  
6 technologies, including what the technologies—

7 (i) succeed and fail at accomplishing;

8 and

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

10 and

11 (F)(i) evaluating the market impact on  
12 each rare earth mineral of the penetration of  
13 commercially viable technologies; and

14 (ii) how the penetration of commercially  
15 viable coal-based technology will impact the  
16 global supply chain; and

17 (2) a report analyzing—

18 (A) the additional resources required for  
19 the development of commercial-ready deploy-  
20 ment of technologies that are second generation  
21 and transformational; and

22 (B) the market impact of processes to  
23 treat and recover rare earth elements and min-  
24 erals from acid mine drainage from coal mines.

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

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