

118TH CONGRESS  
2D SESSION

**S.** \_\_\_\_\_

To require the Secretary of Energy to remove carbon dioxide directly from  
ambient air or seawater, and for other purposes.

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IN THE SENATE OF THE UNITED STATES

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Mr. COONS (for himself and Mr. WHITEHOUSE) introduced the following bill;  
which was read twice and referred to the Committee on

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**A BILL**

To require the Secretary of Energy to remove carbon dioxide  
directly from ambient air or seawater, 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 “Federal Carbon Diox-  
5       ide Removal Leadership Act of 2024”.

6       **SEC. 2. FEDERAL REQUIREMENT TO REMOVE CARBON DI-**  
7       **OXIDE.**

8       (a) DEFINITIONS.—In this section:

9               (1) ELIGIBLE TECHNOLOGY.—

1 (A) IN GENERAL.—The term “eligible  
2 technology” means any equipment, technique,  
3 or technology, as determined by the Secretary,  
4 that—

5 (i) was placed into service after Janu-  
6 ary 1, 2022; and

7 (ii) removes carbon dioxide directly  
8 from ambient air or seawater.

9 (B) EXCLUSION.—The term “eligible tech-  
10 nology” does not include any equipment, tech-  
11 nique, or technology that—

12 (i) removes carbon dioxide that is de-  
13 liberately released from naturally occurring  
14 subsurface springs;

15 (ii) removes carbon dioxide using nat-  
16 ural photosynthesis, except as provided in  
17 subparagraph (C); or

18 (iii) uses captured carbon dioxide in  
19 enhanced oil recovery.

20 (C) EXPANSION OF ELIGIBLE TECH-  
21 NOLOGY.—Notwithstanding subparagraph  
22 (B)(ii), any equipment, technique, or technology  
23 that removes carbon dioxide using gasification,  
24 pyrolysis, or sequestration of solid, nonhaz-  
25 ardous, and cellulosic waste materials may be

1 included in the term “eligible technology” if the  
2 Secretary, by rule—

3 (i) determines that an entity that car-  
4 ries out a removal project under this sec-  
5 tion is able—

6 (I) to adequately monitor, report,  
7 and verify the quantity of greenhouse  
8 gas emissions (including direct emis-  
9 sions and significant indirect emis-  
10 sions), calculated on a lifecycle basis,  
11 removed using that equipment, tech-  
12 nique, or technology; and

13 (II) to adequately mitigate the  
14 environmental impacts (including im-  
15 pacts on biodiversity, land use, and  
16 air and water quality) associated with  
17 that equipment, technique, or tech-  
18 nology; and

19 (ii) requires that entity to carry out  
20 the activities described in clause (i).

21 (2) LIFECYCLE BASIS.—The term “lifecycle  
22 basis” means the net sum of all greenhouse gas  
23 emissions (using mass values for all greenhouse  
24 gases that are adjusted to account for their relative  
25 global warming potential, in consultation with the

1 Administrator of the Environmental Protection  
2 Agency) and removals associated with carbon dioxide  
3 removal activity from cradle to grave, including—

4 (A) embodied emissions of the applicable  
5 equipment; and

6 (B) any emissions associated with—

7 (i) energy and feedstock inputs;

8 (ii) the carbon dioxide removal proc-  
9 ess; and

10 (iii) carbon dioxide storage, including  
11 use and disposal of any materials or prod-  
12 ucts associated with carbon dioxide stor-  
13 age.

14 (3) REMOVE.—The term “remove”, with re-  
15 spect to carbon dioxide, means—

16 (A) to capture carbon dioxide using eligible  
17 technology; and

18 (B) to permanently store that captured  
19 carbon dioxide—

20 (i) in dedicated subsurface geologic  
21 storage reported under sections 98.440  
22 and 146.91(e) of title 40, Code of Federal  
23 Regulations (or successor regulations);

24 (ii) in building materials and mineral-  
25 ized carbon materials; or

1 (iii) using other permanent storage  
2 methods, as determined by the Secretary.

3 (4) SECRETARY.—The term “Secretary” means  
4 the Secretary of Energy.

5 (5) SMALL REMOVAL PROJECT.—The term  
6 “small removal project” means a project for the re-  
7 moval of carbon dioxide that removes not more than  
8 5 percent of the net metric tons of carbon dioxide  
9 required to be removed under subsection (b) for the  
10 applicable fiscal year.

11 (b) REQUIRED QUANTITIES.—The Secretary shall, to  
12 the extent economically feasible as determined under sub-  
13 section (c), remove—

14 (1) 50,000 net metric tons of carbon dioxide,  
15 calculated on a lifecycle basis, for each of fiscal  
16 years 2024 and 2025;

17 (2) 500,000 net metric tons of carbon dioxide,  
18 calculated on a lifecycle basis, for each of fiscal  
19 years 2026 through 2028;

20 (3) 5,000,000 net metric tons of carbon dioxide,  
21 calculated on a lifecycle basis, for each of fiscal  
22 years 2029 through 2034; and

23 (4) 10,000,000 net metric tons of carbon diox-  
24 ide, calculated on a lifecycle basis, for fiscal year  
25 2035 and each fiscal year thereafter.

1 (c) ECONOMIC FEASIBILITY.—

2 (1) IN GENERAL.—The removal of carbon diox-  
3 ide under subsection (b) shall be considered eco-  
4 nomically feasible if that removal can be accom-  
5 plished or, in the case of a contract under subsection  
6 (i), purchased—

7 (A) for each of fiscal years 2024 and 2025,  
8 at a price per metric ton of carbon dioxide of  
9 not more than \$750 (which the Secretary may  
10 adjust for inflation);

11 (B) for each of fiscal years 2026 through  
12 2028, at a price per metric ton of carbon diox-  
13 ide of not more than \$500 (which the Secretary  
14 may adjust for inflation);

15 (C) for each of fiscal years 2029 through  
16 2031, at a price per metric ton of carbon diox-  
17 ide of not more than \$300 (which the Secretary  
18 may adjust for inflation);

19 (D) for each of fiscal years 2032 through  
20 2034, at a price per metric ton of carbon diox-  
21 ide of not more than \$200 (which the Secretary  
22 may adjust for inflation); and

23 (E) for fiscal year 2035 and each fiscal  
24 year thereafter, at a price per metric ton of car-

1           bon dioxide of not more than \$150 (which the  
2           Secretary may adjust for inflation).

3           (2) INCLUSION OF MONITORING, REPORTING,  
4           AND VERIFICATION COSTS.—In determining whether  
5           the removal of carbon dioxide is considered economi-  
6           cally feasible under paragraph (1), the price for such  
7           removal shall include any costs associated with the  
8           monitoring, reporting, and verification required  
9           under subsection (g)(1).

10          (3) MULTIYEAR CONTRACTS.—The removal of  
11          carbon dioxide carried out pursuant to a contract  
12          entered into under subsection (i) that is a multiyear  
13          contract shall be considered economically feasible if  
14          such removal can be accomplished at the applicable  
15          dollar amount for the first fiscal year of the con-  
16          tract, as provided in paragraph (1), through the en-  
17          tire length of the contract.

18          (d) TIMING.—For each fiscal year, the Secretary  
19          shall remove the quantity of carbon dioxide required under  
20          subsection (b) for that fiscal year not later than 3 years  
21          after the beginning of that fiscal year.

22          (e) SMALL REMOVAL PROJECT SET-ASIDE.—To the  
23          extent practicable, at least 20 percent of the net metric  
24          tons of carbon dioxide required to be removed under sub-

1 section (b) for each of fiscal years 2024 through 2034  
2 shall be removed through small removal projects.

3 (f) FEDERAL ASSISTANCE.—Funds received pursu-  
4 ant to a contract entered into under subsection (i) shall  
5 not be considered Federal assistance or otherwise affect  
6 eligibility for any Federal assistance, including a tax in-  
7 centive.

8 (g) MONITORING, REPORTING, AND VERIFICATION.—

9 (1) IN GENERAL.—The Secretary, or an entity  
10 with which the Secretary enters into a contract  
11 under subsection (i), shall monitor, report, and  
12 verify the net metric tons of carbon dioxide that the  
13 Secretary or the entity, as applicable, removes for  
14 purposes of this section.

15 (2) STANDARDS.—Not later than 1 year after  
16 the date of enactment of this Act, the Secretary, in  
17 consultation with the Administrator of the National  
18 Oceanic and Atmospheric Administration, the Ad-  
19 ministrator of the Environmental Protection Agency,  
20 the Secretary of Agriculture, and other relevant  
21 Federal agencies, as determined by the Secretary,  
22 shall establish standards for the monitoring, report-  
23 ing, and verification of the net metric tons of carbon  
24 dioxide removed pursuant to this section, which  
25 shall—



1 (A) require the use of best available prac-  
2 tices used by similar carbon dioxide removal  
3 projects;

4 (B) ensure safe, effective, and efficient re-  
5 moval of carbon dioxide;

6 (C) require independent, third-party  
7 verification of carbon dioxide removal;

8 (D) ensure additionality, permanence, and  
9 net-negativity of carbon dioxide removal;

10 (E) include criteria to determine whether  
11 the storage of captured carbon dioxide is per-  
12 manent;

13 (F) ensure scientifically rigorous and  
14 transparent methods for monitoring, reporting,  
15 and verifying under paragraph (1); and

16 (G) be regularly reviewed and, as nec-  
17 essary, updated to account for scientific and  
18 technological advancements.

19 (3) PROHIBITION ON DOUBLE COUNTING.—Car-  
20 bon dioxide that is removed for the purpose of com-  
21 plying with any other greenhouse gas emissions  
22 management program, including any foreign, Fed-  
23 eral, State, local, or private greenhouse gas emis-  
24 sions management program, as determined by the  
25 Secretary, may not be considered removed under

1 subsection (b) for purposes of meeting the require-  
2 ments of that subsection.

3 (h) PRIORITIES.—In carrying out removal projects  
4 pursuant to subsection (b), the Secretary shall give pri-  
5 ority to projects based on the degree to which the  
6 project—

7 (1) minimizes the quantity of greenhouse gas  
8 emissions released by carrying out the project;

9 (2) supports the commercialization of innovative  
10 removal technologies;

11 (3) increases the diversity of commercially  
12 available eligible technologies;

13 (4) provides for domestic job creation, with a  
14 further preference for establishing partnerships with  
15 labor organizations, small businesses, minority-  
16 owned businesses, and women-owned businesses  
17 across value chains;

18 (5) results in economic development or eco-  
19 nomic diversification in regions or localities that  
20 have historically generated significant economic ac-  
21 tivity from the production, processing, transpor-  
22 tation, or combustion of fossil fuels, including  
23 through the use of coal mines, fossil fuel-fired elec-  
24 tricity generating units, and petroleum refining fa-  
25 cilities;

1           (6) quantifies and mitigates risks from carbon  
2       dioxide removal activities on, and provides measur-  
3       able cobenefits to, environmental justice commu-  
4       nities, the environment, agriculture, and public  
5       health, including by—

6                   (A) improving local air quality, water qual-  
7       ity, and soil quality;

8                   (B) minimizing land, water, and energy  
9       footprints; and

10                  (C) using zero-emission energy; and

11           (7) includes robust public engagement and com-  
12       munity benefits.

13       (i) CONTRACTS.—

14           (1) IN GENERAL.—The Secretary may, using a  
15       transparent and competitive process, enter into 1 or  
16       more contracts to meet the requirements of sub-  
17       section (b).

18           (2) DURATION.—The duration of a contract en-  
19       tered into under paragraph (1) shall not exceed 15  
20       years.

21           (3) MAINTENANCE OF REMOVAL COMMIT-  
22       MENTS.—A contract entered into under paragraph  
23       (1) shall require the entity that enters into the con-  
24       tract to permanently store an additional quantity of  
25       carbon dioxide that is equal to the quantity of car-

1       bon dioxide that is released after permanent storage  
2       by that entity.

3           (4) LIMITATION.—To the extent that there is a  
4       sufficient number of entities capable of removing  
5       carbon dioxide in accordance with this section under  
6       a contract entered into paragraph (1), the Secretary  
7       shall ensure that no singular entity is responsible for  
8       removing more than 25 percent of the net metric  
9       tons of carbon dioxide required to be removed under  
10      subsection (b) in any fiscal year.

11      (j) REPORT.—Not later than January 1, 2027, and  
12      every 2 years thereafter, the Secretary shall submit to  
13      Congress, and make publicly available, a report that de-  
14      scribes the progress made in carrying out the require-  
15      ments of this section, including, with respect to the period  
16      covered by the report—

17           (1) the quantities of removed carbon dioxide  
18       verified under subsection (g)(1) and the name of  
19       each entity that provided that verified quantity;

20           (2) the total price, and price per metric ton, of  
21       removing carbon dioxide for each applicable fiscal  
22       year as required under subsection (b);

23           (3) the methods used for the monitoring, re-  
24       porting, and verification required under subsection  
25       (g)(1);

1           (4) an assessment of how the quantities of car-  
2       bon dioxide removed under this section have affected  
3       environmental justice communities, the environment,  
4       agriculture, and public health;

5           (5) information on any labor impacts and job  
6       creation resulting from carrying out the require-  
7       ments of subsection (b); and

8           (6) an explanation of how the Secretary  
9       prioritized projects under subsection (h).

10       (k) AUTHORIZATION OF APPROPRIATIONS.—There  
11   are authorized to be appropriated such sums as are nec-  
12   essary to carry out this section.

13   **SEC. 3. STUDY ON THE LONG-TERM FUTURE OF FEDERAL**  
14                   **CARBON DIOXIDE REMOVAL MANAGEMENT.**

15       (a) IN GENERAL.—Not later than 1 year after the  
16   date of enactment of this Act, the Secretary of Energy,  
17   in consultation with the Administrator of the National  
18   Oceanic and Atmospheric Administration, the Adminis-  
19   trator of the Environmental Protection Agency, the Sec-  
20   retary of Agriculture, and other relevant Federal agencies,  
21   as determined by the Secretary of Energy, shall submit  
22   to the Committee on Energy and Natural Resources of  
23   the Senate and the Committee on Energy and Commerce  
24   of the House of Representatives a report that evaluates  
25   and makes recommendations for potential program design

1 elements and financing options for a Federal carbon diox-  
2 ide removal offtake program that can achieve carbon diox-  
3 ide removal from the atmosphere and the oceans at a  
4 gigaton scale annually by January 1, 2050.

5 (b) CONTENTS.—The report under subsection (a)  
6 shall include consideration of potential management and  
7 organizational structures for the program described in  
8 that subsection, including—

- 9 (1) a government-sponsored enterprise;  
10 (2) a government corporation;  
11 (3) a program office within the Department of  
12 Energy or another Federal agency; and  
13 (4) a contracted service provider.