SENATE THIRD READING
SB 643 (Caballero)
As Amended June 26, 2025
Majority vote

SUMMARY

Establishes the Carbon Dioxide Removal Purchase Program (CDRPP), which is intended to advance the development of carbon dioxide removal (CDR) technologies through a competitive grant program administered by the Air Resources Board (ARB), subject to future appropriation of funds for this purpose.

Major Provisions

1) Requires ARB to establish and administer the CDRPP, a competitive grant process for eligible CDR projects, to advance the development of CDR technologies in order to achieve the state's climate goals, while supporting the development of eligible CDR projects that provide economic, community, and environmental benefits within the state.

2) Requires ARB to do all of the following:

   a) Administer the competitive grant program, as specified.

   b) On or before January 1, 2028, and annually thereafter, conduct and publish on its internet website a survey of CDR projects existing or in development within the state, as specified.

   c) Conduct at least two public workshops to receive comments from the public.

   d) On or before December 31, 2027, and annually thereafter, publish on its internet website a report describing program activities completed CDR projects to date.

   e) On or after July 1, 2026, but on or before December 31, 2035, fund CDR projects in an amount totaling $50 million.

   f) Only fund eligible CDR projects that meet both of the following requirements:

      i) The eligible CDR project demonstrates the ability to secure carbon removal purchases from third parties in an amount at least equal to the amount of funds provided to that project by ARB.

      ii) The eligible CDR is additional, as defined.

   g) To the extent feasible, provide grants CDR projects operating in at least two of the following categories:

      i) Direct air capture.

      ii) Biomass carbon removal and storage.

      iii) Enhanced mineralization or enhanced weathering.

iv) Marine carbon dioxide removal.

h) Prioritize the following criteria in selecting eligible CDR projects through the program:

i) The potential of an eligible CDR project to accelerate development of CDR strategies to the scale needed to achieve the state target for total CDR by the year 2045.

ii) The potential of an eligible CDR project to be completed on or before December 31, 2035.

iii) The anticipated impacts of the community benefit mechanisms associated with an eligible CDR project.

iv) Distribution of program funds across multiple geographic areas and multiple eligible CDR project categories.

i) On or before January 1, 2028, adopt guidelines for the program that include all of the following:

i) The definition of an eligible CDR project.

ii) A requirement that an eligible CDR project be physically located within the state.

iii) A requirement that an eligible CDR project incorporate or fund community benefit mechanisms commensurate with the eligible CDR project.

iv) A requirement that an eligible CDR project results in carbon dioxide removals that are verified in the claimed quantity by an independent third-party verifier using appropriate, industry-standard protocols.

v) A minimum duration of sequestration, elimination, or other storage of removed gases without leakage to the atmosphere that is sufficiently long enough to ensure that the risk of leakage poses no material threat to public health, safety, the environment, or the achievement of net zero greenhouse gas emissions in California, and shall not be less than 100 years.

vi) A prohibition against the use of CDR processes for purposes of enhanced oil recovery.

vii) A prohibition against the use of a biomass feedstock for CDR, unless it is for biomass carbon removal and storage, as defined.

3) Provides that implementation is subject to an appropriation by the Legislature.

4) Makes related findings.

COMMENTS

CDR is an umbrella term used to describe a range of strategies used to remove carbon dioxide (CO2) from the atmosphere, without a relationship to where or when the CO2 was emitted. In contrast to carbon capture, CDR is a negative emissions strategy when it involves capturing

legacy CO2 directly from the atmosphere. To store the CO2 for long periods, it is generally injected underground into geological formations, such as former oil and gas reservoirs, deep saline formations, and coal beds.

Radical cuts in Greenhouse Gas (GHG) emissions are critical to climate change mitigation, but in parallel with emissions reductions, most experts agree that CDR is necessary to avert further climate disaster. The Intergovernmental Panel on Climate Change's (IPCC) Sixth Assessment asserts that global emissions will need to be cut by almost half by 2030 if warming is to be limited to 1.5°C, the global target in the Paris Agreement. It acknowledged that CDR will be necessary to meet the 1.5°C target, especially in hard-to-abate sectors.

California too has acknowledged the need for CDR. California has a statutory goal to achieve net zero GHG emissions by 2045, with a reduction in emissions of at least 85% from 1990 levels. This leaves 15% of emissions that need to be removed, estimated to be about 65 million metric tons (MMT). To balance out those remaining 15% of emissions, ARB's 2022 Scoping Plan projected that the state will need about 75 MMT of CDR by 2045 (65 MMT to balance out the 15% of remaining emissions in the state inventory plus 10 MMT to balance estimated net emissions from natural and working lands).

There are many biological and non-biological processes that remove CO2 from the air and turn it into a solid form, ranging from photosynthesis in plants to chemical capture with engineered membrane filters. Each process is unique and requires careful consideration to evaluate its usefulness. For example, Frontier (an advanced market commitment to procure and drive market development for CDR) evaluates projects on eight characteristics: durability, physical footprint, cost, capacity, net negativity, additionality, verifiability, and safety and legality.

In this bill, four specific types of CDR are called out: direct air capture, biomass carbon removal and storage, enhanced mineralization or weathering, and marine CDR.

According to the Author
CDR refers to removing carbon dioxide from the atmosphere and permanently storing it in places like cement, or deep underground in geologically secure locations or in the ocean. It does not refer to capturing CO2 from industrial smokestacks. ARB's 2022 Scoping Plan for Achieving Carbon Neutrality stated that "there is no path to carbon neutrality without carbon removal and sequestration" and established CDR targets of seven million metric tons (MMT) annually by 2030 and 75 MMT annually by 2045.

Over the last several years, a small number of companies have voluntarily purchased CDR removals as part of their own carbon neutrality goals, but none of the CDR removals have occurred in California. To meet the urgent need to reach carbon neutrality by 2045, this bill directs ARB to fund and track CDR projects. By accelerating CDR development and deployment, the bill is an integral step to remove carbon dioxide from the atmosphere and meet the state's climate goals.

Arguments in Support
According to bill sponsor Project 2030, California should be leading in the development of CDR projects. We have many of the pieces of a nascent CDR eco-system that could support California's CDR leadership: Several CDR companies have started here, and their headquarters and science teams are here. Additionally, California has CDR targets, a skilled labor force, abundant CO_2 storage capacity, and two of our California-based national labs (Lawrence

Livermore National Labs and Lawrence Berkeley National Labs) are leaders in CDR R&D. However, many California CDR companies are not developing projects in California but in other states, due to better incentives…SB 643 will ensure that CDR projects take place in California and will help the state meet its carbon neutrality goals in an equitable manner.

Arguments in Opposition
According to a coalition of environmental organizations including Center for Biological Diversity, the state has not researched or defined what legitimate, verified, effective forms of CDR are—yet this bill mandates spending $50 million for CDR. This is a terrible idea, especially during the state's budget crisis. The bill allows for Biomass Energy with Carbon Capture and Storage (BECCS) and marine CDR (essentially, geoengineering of oceans), both highly problematic technologies. BECCS because it adds climate and air pollution to the atmosphere and harms communities and forests. Marine geoengineering because of its significant probability of causing far-reaching ecological and social harms and its unproven effectiveness. The bill lacks guardrails to protect communities and the environment.

FISCAL COMMENTS

According to the Assembly Appropriations Committee:

1) One-time cost of $50 million (General Fund, Greenhouse Gas Reduction Fund (GGRF), or other fund source) for ARB to fund CDR projects. The fiscal year 2025-26 budget does not include funding for this purpose.
2) ARB will incur significant costs to implement the various requirements of this bill. ARB estimates ongoing costs of about $2.8 million annually (GGRF) to hire 13 staff. Examples of anticipated tasks include, among other things, establishing and updating program guidelines pursuant to the Administrative Procedure Act, including definitions, eligible project and feedstock types, selection criteria, community benefit requirements, and verification criteria; coordinating with various state entities and stakeholders; conducting public workshops; developing and executing contracts for the purchase of CDR credits; monitoring and auditing projects; and conducting annual reporting. The bill allows ARB to use up to 10% of the $50 million allocation to "supplement necessary administrative costs in establishing the program."

VOTES

SENATE FLOOR: 37-0-3
YES: Allen, Alvarado-Gil, Archuleta, Arreguín, Ashby, Becker, Blakespear, Cabaldon, Caballero, Cervantes, Cortese, Dahle, Durazo, Gonzalez, Grayson, Grove, Jones, Laird, Limón, McGuire, McNerney, Menjivar, Niello, Ochoa Bogh, Padilla, Pérez, Richardson, Rubio, Seyarto, Smallwood-Cuevas, Stern, Strickland, Umberg, Valladares, Wahab, Weber Pierson, Wiener
ABS, ABST OR NV: Choi, Hurtado, Reyes

ASM NATURAL RESOURCES: 12-0-2
YES: Bryan, Alanis, Connolly, Ellis, Flora, Haney, Hoover, Kalra, Muratsuchi, Pellerin, Schultz, Wicks
ABS, ABST OR NV: Garcia, Zbur

ASM UTILITIES AND ENERGY: 18-0-0
YES: Petrie-Norris, Patterson, Boerner, Calderon, Chen, Davies, Mark González, Harabedian, Hart, Irwin, Kalra, Papan, Rogers, Schiavo, Schultz, Ta, Wallis, Zbur

ASM APPROPRIATIONS: 15-0-0
YES: Wicks, Sanchez, Arambula, Calderon, Caloza, Dixon, Elhawary, Fong, Mark González, Ahrens, Pacheco, Pellerin, Solache, Ta, Tangipa

UPDATED

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CONSULTANT: Lawrence Lingbloom / NAT. RES. / (916) 319-2092 FN: 0001401