

CO2-Secure

A National Program to Deploy Carbon Removal at Gigaton Scale



ENERGY FUTURES
— INITIATIVE —

What is CO2-Secure?

CO2-Secure is the Energy Future Initiative's (EFI's) proposal for how the United States could achieve billions of tons of carbon dioxide removal (CDR) by midcentury through a federal purchasing program.

Why Carbon Dioxide Removal?

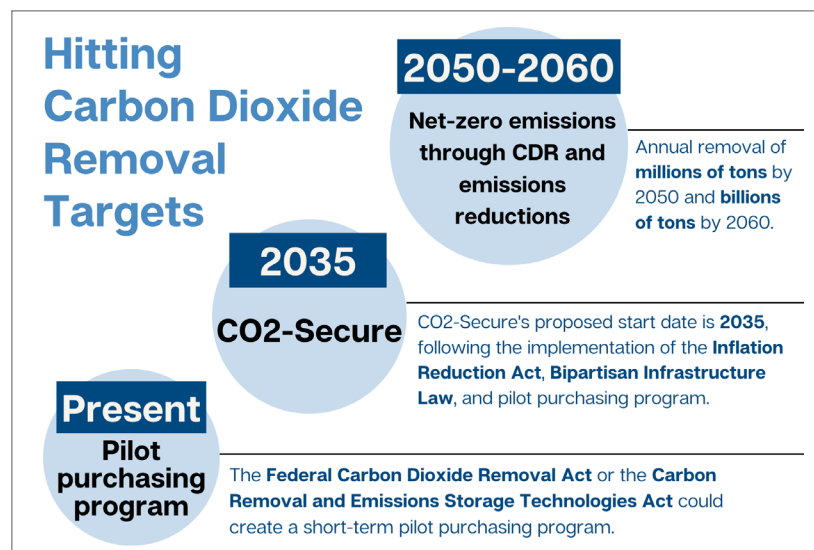
Recent international scientific assessments point to the need to limit global temperature increases to 1.5 degrees Celsius or lower to avoid the worst effects of climate change. According to the Intergovernmental Panel on Climate Change (IPCC), meeting this target requires an estimated seven billion tons per year of negative emissions, which is equivalent to 2021 carbon dioxide emissions from all of North and South America combined. The United States will need CDR to meet its target of net-zero emissions by midcentury.

What are the prerequisites for implementing CO2-Secure?

CO2-Secure would begin in 2035, following the short-term implementation of a proposed precursor U.S. Department of Energy (DOE) pilot purchasing program modeled after those proposed in the Federal Carbon Dioxide Removal Leadership Act (S. 4280), Carbon Removal and Emissions Storage Technologies (CREST) Act (S. 4420), or other similar legislation.

How is CO2-Secure different from previous proposals for large-scale CDR?

CO2-Secure outlines large-scale CDR with a level of specificity not seen before, and it provides flexibility for the program's timeline, implementation, and organizational structure. It also expands upon the idea of CDR as a public good meriting public investment to scale up CDR.



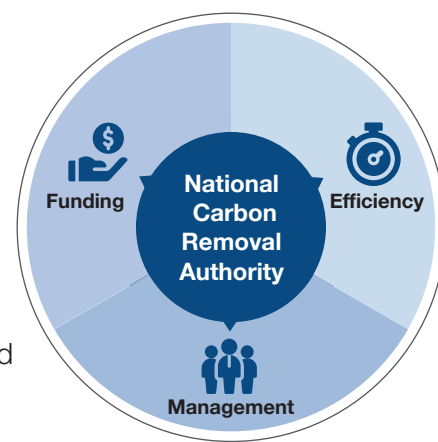
How to Implement CO2- Secure

The implementation of a large-scale CDR program will require deployment of individual projects of all sizes and technological approaches across the United States. Managing the carbon removed will require a monitoring program.

Public-private partnerships will be essential for successful implementation. There are multiple ways to do this, but a program design for CO2-Secure that focuses the government's role as a purchaser of CDR services may offer the most efficient and rapid mode of implementation. It could also lessen the likelihood that other policy and political factors would shape program implementation decisions.

How could CO2-Secure be organized?

The program will establish a federal CDR organization; EFI recommends creating a new government entity called the National Carbon Removal Authority (NCRA), rather than assigning the program to DOE. While there are multiple viable options for creating a new government entity, our report suggests that a government corporation is likely to be the most successful because of its funding plan, personnel management structure, and ability to operate efficiently and effectively. As a government corporation, the NCRA will have a CEO—appointed by the board—with full executive powers to hire personnel, develop management, and establish procurement authorities.



How will CO2-Secure be financed?

We estimate that the initial phase of the program will require funding of \$33.2 billion for a 10-year period. At the end of the period, Congress will reauthorize funding for subsequent years based on the initial experience and account for climate science assessments at that time.

How can the liability associated with long-term carbon storage be managed?

Long-term liability is a potential challenge for carbon dioxide sequestration. Although carbon dioxide has been successfully stored for decades, sequestration sites will require monitoring over very long periods of time. To manage this, NCRA could hold liability for leakage of carbon that is owned and stored in government-owned facilities. It would establish a dedicated fund to mitigate leakage in cases of government liability. Private entities could also hold liability for carbon stored in their own facilities for a period of 20-to-25 years after completion of injection with subsequent transfer of liability to NCRA. Leakage insurance could be offered to cover their liability.

Why discuss CO2-Secure now?

We need to start building towards large-scale CDR now to ensure our planet remains livable. CO2-Secure's goal is to offer specific ideas about such a program's organizational structure and implementation.