



December 31, 2024

RE: Public comment on the U.S. Department of Energy's (DOE's) Carbon Management Strategy

via carbonmanagementstrategy@hq.doe.gov

To whom it may concern:

The **Carbon to Sea Initiative** (CTS) is a nonprofit effort whose mission is to systematically assess whether and how ocean alkalinity enhancement (OAE) can deliver safe, cost-effective, and permanent CO₂ removal at scale. We are guided by a set of core principles that emphasize transparent outcomes, strong and clear governance standards, and sincere stakeholder engagement.

We are delivering on our mission by funding research to close knowledge gaps, advancing relevant technology and policy development, and engaging in community-building to support the emergence of a responsible and sustainable ocean-based CDR sector, should that be appropriate.

CTS applauds DOE's effort to produce a comprehensive strategy to guide its activities related to developing and deploying carbon management solutions, including carbon dioxide removal (CDR), through the end of the decade. To achieve the United States' international commitment to achieve net-zero emissions by 2050, we must simultaneously eliminate economy-wide reliance on fossil fuels and simultaneously develop technologies to remove legacy carbon pollution from the air.

It is also important for the DOE strategy to provide a comprehensive picture of its plans to develop a broad portfolio of safe and effective CDR technologies. However, the report acknowledges on page 6 that it does not provide such a strategy. It states that "[m]ore comprehensive strategies for biomass and carbon dioxide removal are available in other DOE documents." A footnote indicates that a carbon dioxide removal strategy is forthcoming in an unspecified interagency task force report to Congress. In November, a federal interagency committee released the National Marine Carbon Dioxide Removal Research Strategy. This is a vital contribution to a national CDR strategy, but does not by itself comprise a comprehensive strategy for development and deployment of safe and effective oCDR at scale. As soon as is practicable, DOE should utilize findings and recommendations from these reports to produce a robust strategy on CDR and incorporate it into the Carbon Management Strategy so that it truly provides a comprehensive playbook for achieving net-zero emissions.

CTS acknowledges and commends DOE's increased funding of CDR in recent years. That trend should continue to support the important, and growing, role of CDR in attaining net-zero emissions. While it is understandable that technologies that have received much greater attention and funding over a much longer period of time would be more advanced toward deployment, it does not follow that these technologies are necessarily the best solutions to the problem in the long run. Given the scale of the climate challenge, a truly comprehensive strategy should ensure that emerging technologies, such as ocean alkalinity enhancement and other forms of ocean-based CDR (oCDR), benefit from a level of investment comparable to other more mature technologies.

oCDR science and technologies are progressing rapidly and have considerable promise for cost, scale, and permanence. The readiness of these technologies for large-scale deployment remains an open question while the promise is quite great and would benefit from additional government investment to improve modeling, instrumentation, and development of methodologies for measuring/monitoring, reporting, and verification. Additional studies to assess the environmental effects and co-benefits of these technologies are also needed.

By DOE's estimate, the U.S. currently has only 1-5% of the CCUS and CDR capacity it will need to achieve net-zero emissions. Most scenarios (largely because of insufficient emission reductions) envision the need for CDR to offset 20% of U.S. emissions by 2050. As a result, DOE should accelerate development of promising but nascent CDR technologies, such as oCDR, because it will require an "all of the above" approach to achieve the level of carbon removal required to stay below 2°C of warming.

Building out this new industry will greatly assist the United States in meeting its climate goals while allowing the nation to maintain and enhance its competitiveness in participating in what McKinsey and Company have predicted to be a \$1.2 trillion CDR market by 2050.