

OCEAN STUDIES BOARD NATIONAL ACADEMY OF SCIENCES

Presentation on the White House Fast Track
Action Committee (FTAC) on Marine Carbon
Dioxide Removal (mCDR)

June 12, 2024

mCDR FTAC Co-Chairs:

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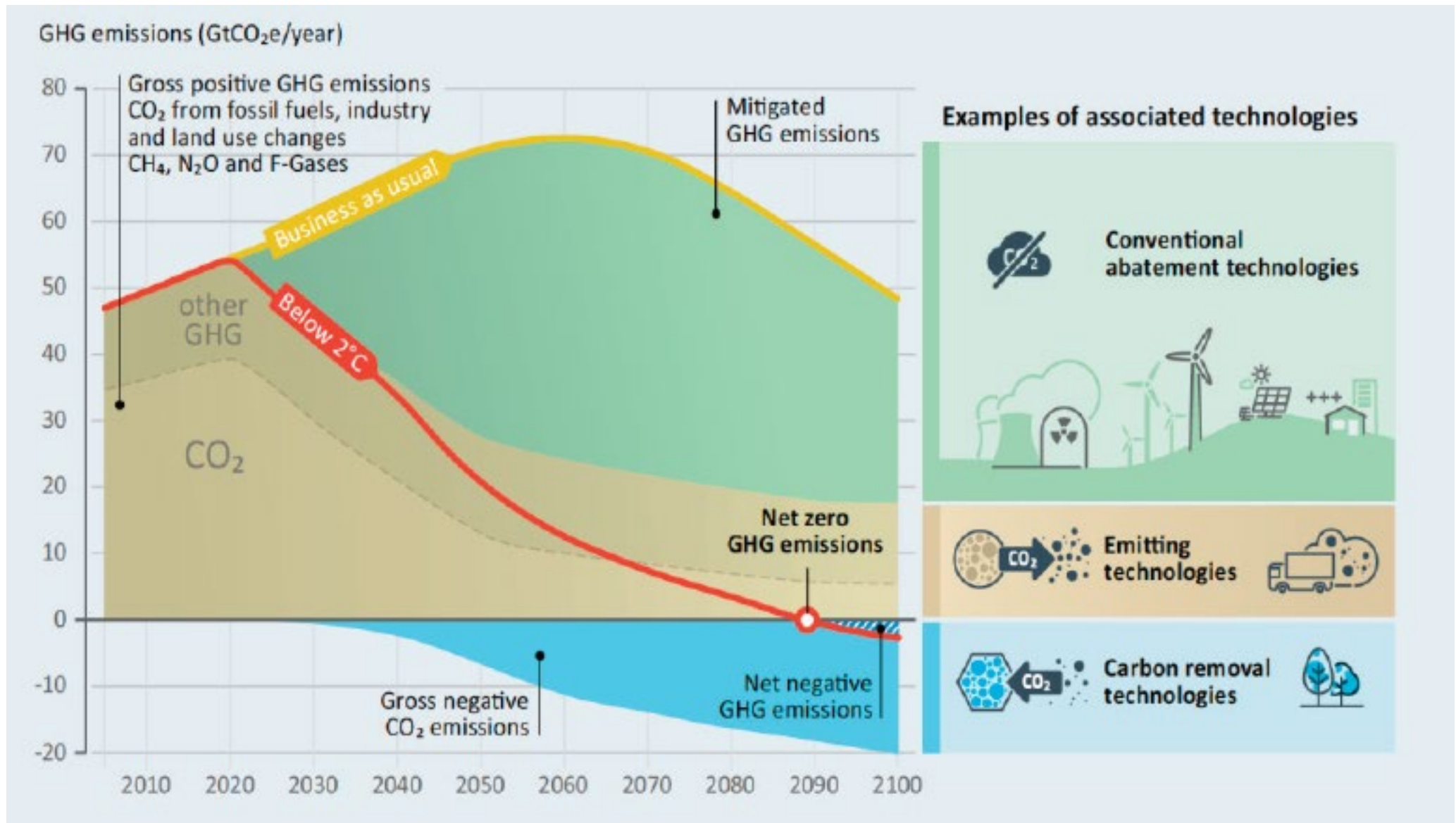
The Biden–Harris Administration is Tackling the Climate Crisis

- Cutting emissions in half by 2030; net-zero by 2050
- Promoting Resilience (e.g., National Resilience Framework)
- Advancing Carbon Dioxide Removal (CDR)
- Financing via Investing in America Agenda



The Need for CDR

NAS (2019) NETs and Reliable Sequestration



What is marine carbon dioxide removal (CDR)?

A variety of approaches to remove carbon dioxide from the atmosphere with the assistance of ocean processes.

Also referred to as mCDR, ocean-based CDR, or oCDR.

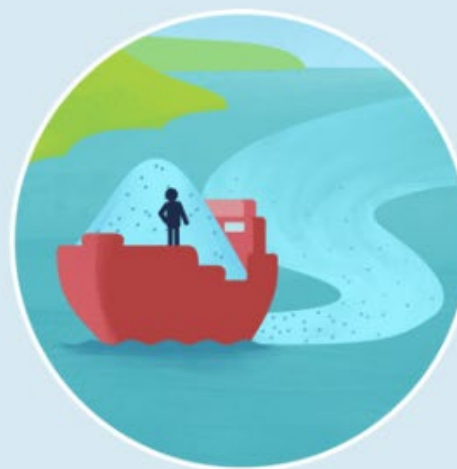


Marine CDR Examples

NASEM 2022: A Research Strategy
for Ocean Carbon Dioxide
Removal and Sequestration



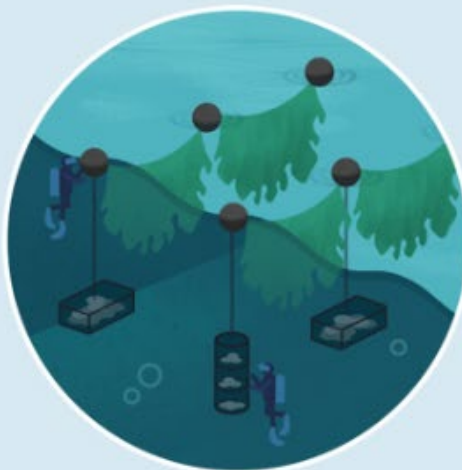
Electrochemical Processes



Ocean Alkalinity Enhancement



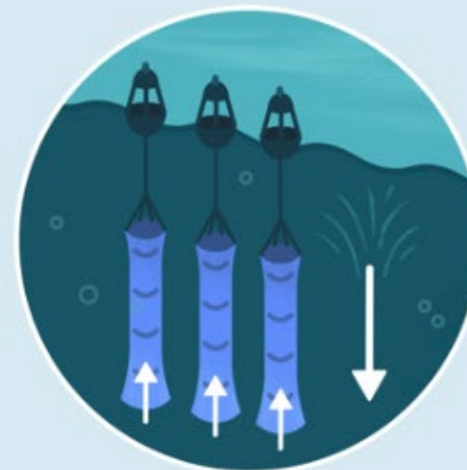
Ocean Nutrient
Fertilization



Seaweed Cultivation



Ecosystem Recovery



Artificial Upwelling /
Downwelling





Is Ocean-Based / Marine CDR a Potent Climate Solution?

- GESAMP: Review of Proposed Marine Geoengineering Techniques (2019)
- NAS: A Research Strategy for Ocean-based Carbon Dioxide Removal (2022)
- Research investments by NOAA, DOE, Carbon to Sea
- Investments in start ups by Frontier, Additional Ventures



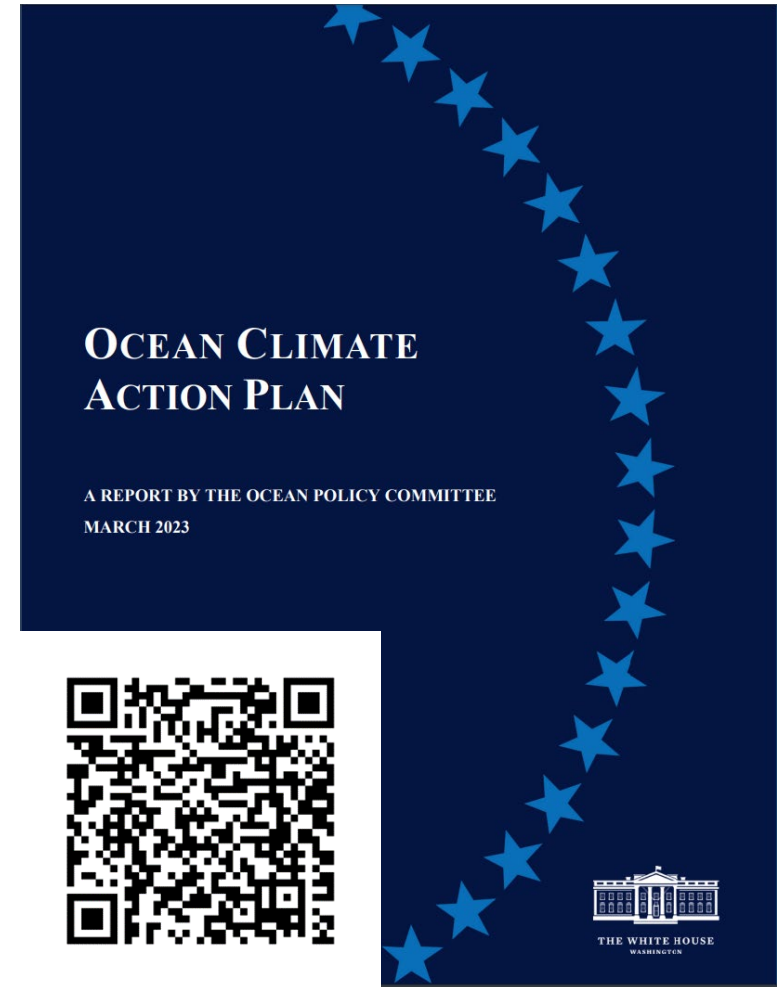
Significant Questions Remain about Marine CDR

- **Effectiveness** – how much carbon removed, for how long?
- **Safety** – what impacts on ecosystems, communities?
- **Benefits** – counteracts ocean acidification, other benefits?
- **Scalability** – costs, resource needs?



U.S. Objective for Marine CDR

“By 2030, build sufficient knowledge about the efficacy and tradeoffs of different methods of marine carbon dioxide removal (CDR) and use it to guide deployment decisions.”



Fast Track Action Committee (FTAC) for Marine CDR

OCTOBER 06, 2023

Marine Carbon Dioxide Removal:
Potential Ways to Harness the Ocean to
Mitigate Climate Change



Chartered by the White House
National Science and Technology Council



Marine CDR FTAC Membership

Co-chaired by OSTP and NOAA

14 departments and agencies

NOAA, DOE, NSF, NIST, NASA

EPA, Army Corps, USGS, BOEM, BSEE

Smithsonian, State, USAID, ONR



Objectives of Marine CDR FTAC

1. Develop a federal mCDR research program to identify benefits, risks, and challenges
2. Clarify permitting for mCDR research
3. Recommend ways to encourage public-private partnerships and promote collaboration



Objective 1: Research Program

May consider—

- Roles of lab, modeling, and field testing
- Physical science and social science research
- Science and monitoring needs for effective MMRV

Questions—

- How to prioritize most promising approaches?
- How to increase funding and leverage non-federal resources?



Objective 2: Permitting Clarity

May consider—

- International and national regulatory frameworks
- Example pathways for permitting different mCDR approaches

Questions—

- How to build state, territorial, and Tribal government capacity?
- What are the benefits/challenges of dedicated testing areas?



Objective 3: P'ship and Collaboration

May consider—

- Code of conduct for data sharing, community engagement, etc.
- Ways to enable joint funding of research

Questions—

- How to build trust with communities and across sectors, including academia, industry, philanthropy, government, and NGOs?
- How to enable long-term community involvement?
- Is there a role for mCDR hubs?



Timeline

- OCAP Published – March 2023
- FTAC Charter Signed – September 2023
- Federal Register Notice – February 2024
- Public Listening Sessions – March, April 2024
- Tribal Consultation – Targeting late Summer 2024
- Federal mCDR Research Plan – Targeting Early Fall 2024



For more information

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mCDR FTAC Charter



Ocean Climate Action Plan

