United States Senate
WASHINGTON, DC 20510

August 7, 2017

Dr. Marcia K. McNutt
President
National Academy of Sciences
500 Fifth Street NW
Washington, D.C. 20001

Dear Dr. McNutt:

As the committee on Developing a Research Agenda for Carbon Dioxide Removal and Reliable Sequestration continues to develop your Carbon Dioxide Removal (CDR) report, we request that you consider expanding your focus to include ocean carbon capture technologies and processes. In particular, in your "blue carbon" area of study, we urge you to expand your research and analysis beyond wetlands and marshes to focus on opportunities for direct removal of CO_2 from our oceans. Although this is a nascent area of research, the combined threat of ocean acidification and recognition of commercial opportunities has given our national labs and universities the necessary impetus to begin research and early stage testing on various processes.

The Department of Energy (DOE) in its assessment of the Secretary of Energy Advisory Board (SEAB) CO_2 Utilization Report supported additional focus on carbon capture for oceans and on ocean mineralization. DOE noted that this research "has significant potential benefits for areas with much greater, and more immediate, economic impact than DAC, including waste water treatment, sea water desalination, and mineral extractions, among others." Research in this area could help drive down the overall costs of direct air capture – and lead to new and innovative technologies and methods of carbon utilization that could benefit carbon capture projects across the board.

We have both been briefed on related research that is already underway at Lawrence Livermore National Laboratory – and find the work being done potentially transformative in both the capture and utilization spaces. Its "SeaSand" project is exploring how to pull CO_2 from the ocean to precipitate carbonate building materials like limestone bricks and sand. The act of pulling CO_2 from seawater could aid in combatting ocean acidification, reduce the amount of carbon in our oceans, and potentially create new commercial opportunities in our coastal communities – all while advancing carbon capture and utilization technologies for use and export on a global scale.

While one of us represents a Coastal state and the other a lignite coal producing Plains state, we both understand the need to advance carbon capture and utilizations technologies – regardless of the carbon source. We also agree that in a global landscape that is moving towards a carbon constrained future, we must continue to support research and innovation that can be both

environmentally and commercially beneficial. We applaud your research in this area and share your belief that the U.S. should continue to lead on energy innovation. Thank you for your consideration of this request.

Sincerely,

Sheldon Whitehouse
United States Senator

Heidi Heitkamp
United States Senator

Cc:
Ms. Katie Thomas, Board on Atmospheric Sciences and Climate, NAS
Dr. K. John Holmes, Board on Energy and Environmental Systems, NAS