

February 28, 2023

Mr. Keith Boyea
Director, Contracts & Awards
Office of Clean Energy Demonstrations
U.S. Department of Energy
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Re: Response to Request for Information (RFI) OCED-RFI-23-1
Department of Energy's Use of Demand-side Support for Clean Energy Technologies

Dear Mr. Boyea:

Thank you for the opportunity to submit information to the U.S. Department of Energy's (DOE) Office of Clean Energy Demonstrations (OCED) in response to OCED-RFI-23-1 seeking public input to help inform DOE's development of demand-side support measures for clean energy technologies.

This letter is submitted jointly by the [Direct Air Capture Coalition](#) (DAC Coalition), [Carbon Business Council](#) (CO2BC), [UCLA Institute for Carbon Management](#) (ICM) and Equatic. The DAC Coalition is a global non-profit organization consisting of over seventy-five companies, NGOs and academic institutions in the DAC ecosystem, CO2BC is a member-driven nonprofit and technology-neutral coalition of more than eighty carbon management companies unified to restore the climate, ICM is a carbon removal research and technology innovator and Equatic is a seawater-based carbon removal company.

Overall, we are strongly in favor of DOE engaging in demand-side support measures to scale up clean energy technologies, particularly those focused on carbon removal. As documented in the UN International Panel on Climate Change 6th Assessment Report, in addition to decarbonization of the energy economy, removal of greenhouse gasses such as CO₂ currently in the atmosphere (carbon removal) at a gigatonne-scale is necessary to limit warming by 2050 to 1.5°C above pre-industrial levels.

However, the current and planned carbon removal capacity, and the rate of capacity increase, is inadequate compared to the impacts of climate change. Private sector innovation and business development must be further stimulated by government support, including from DOE, and this support must be proactive, including commitment for public procurement of carbon removal.

DOE implementation of demand-side support can provide confidence and assurance for the private sector to continue following suit. Continued and sustained government support that evolves over time will ensure that the carbon removal industry continues to scale up, even in the event of an economic downturn where private markets could be affected.

Question 1 - What are the potential benefits and drawbacks of DOE implementing demand-side support measures in a given industry (e.g., carbon dioxide removal, hydrogen, low-carbon cement and concrete, low-carbon steel, sustainable aviation fuels)?

We believe the key benefit to DOE implementing demand-side support measures for carbon removal is augmenting the pace of innovation, business development and execution of carbon removal within the United States, allowing the industry to scale while the regulatory landscape for carbon accounting matures. While we highly value the domestic scaling of the carbon removal industry, we also appreciate that DOE can help drive the development of standards and consistent approaches for the measurement, reporting and verification (MRV) and overall accounting of carbon removal globally thereby reducing market friction. Creating a level playing field for carbon removal approaches ensures that all forms of carbon removal can scale. One risk is picking winners and losers too early in demand-side support programs, which threatens stunting innovation and cooling private sector investment.

Question 2 - What would be the most effective demand-side support measure DOE could use to support commercial scale-up of a given technology (e.g., reverse auctions, advanced market commitments, contracts-for-difference, direct procurement, pooled offtake vehicles)?

Support measures would create a critical backstop for the private carbon removal market, providing market stability and signaling the long-term nature of demand. We believe different support measures are best utilized at different stages of the maturity of the carbon removal market. Initially, advanced market commitments (AMCs) are the best support measure DOE can provide to help establish and grow the carbon removal market. AMCs will help provide carbon removal companies with cash flow necessary to invest in research and business development to drive down the cost per ton of carbon removal to \$100 or less. To foster holistic growth of the market, DOE should support AMCs which commit to companies across the carbon removal ecosystem, including both sequestration and utilization, taking into account government incentives structures for different segments of the supply chain such as 45Q tax credits.

Further, we strongly believe that DOE should support procurement of carbon removal in the medium to long term as carbon removal technology and projects mature. We believe public sector actors such as DOE must be active buyers of carbon removal to advance net zero goals across society and drive clarity in measuring durability of carbon removal across different

technologies and processes, which is necessary for the market to price in the relative value of different types of removal. Public procurement serves as a necessary path toward a long-term sustainable regulatory regime for allocating responsibility for carbon removal across sectors.

We encourage DOE to further investigate contracts for difference as a measure for incentivizing development of innovative technologies and processes which are not currently cost competitive or are eligible for 45Q tax credits. We recognize that contracts for difference will only be useful when there is well understood reference pricing for types of carbon removal.

We caution against DOE supporting a reverse auction measure at this time as carbon removal technology and processes, including DAC, are scaling. Reverse auctions are designed to allow market forces to identify suppliers who can provide goods or services at the most competitive cost. However, as carbon removal technology evolves, the outcomes across different forms of removal may vary widely, making some higher-quality types of durable removal less competitive. And, in addition, the current ability to remove carbon dioxide may not correlate to the removal potential of a given technology or process at scale. Finally, methods for MRV of carbon removed and durably stored, and the relative values of removal to buyers, are still not uniformly priced into markets, making it difficult to build a reverse auction pricing removal.

Across all measures DOE supports, we encourage DOE to develop, at this stage, non-price considerations it can assess as part of its participation in the demand-side market. This includes considerations directly related to carbon removal, such as durability, additionality, and scalability, as well as co-benefits such as environmental stewardship, equity for marginalized communities and other societal benefits. These non-price considerations will help create the basis for evaluating relative quality of promised carbon removal outcomes holistically. With some carbon removal approaches costing more than others to reflect the length of time that carbon remains stored, we encourage price differentiation rather than a set price that risks creating a race to the bottom on costs.

Also, as a research agency that funds the National Labs and other entities, DOE could support a significant research and development program to develop end uses, products, and materials that would turn captured carbon dioxide from a “waste product” into a saleable commodity that could be monetized for profit. The creation of a circular energy economy and products such as durable materials that can be sold at profit will go a long way toward driving demand for captured carbon dioxide.

Question 3 - What are the benefits and drawbacks of DOE partnering with an independent entity to implement demand-side support measures?

While we are supportive of the DOE partnering with an independent entity to implement demand-side support measures for carbon removal, we are conscious of the potential pitfalls or drawbacks that result from committed partnerships with single entities. In other words, DOE may be perceived as “picking winners” to the exclusion of other entities engaged in viable measures for either priming demand-side carbon removal, or carbon removal itself. DOE should be open to leveraging the full suite of carbon removal solutions to drive speed and scale.

We also emphasize that to play an effective role in guiding the evolution of the carbon removal industry, DOE must build its internal capacity and competency through direct support across a broad spectrum of partnership.

We caution that the DOE must strike a thoughtful balance between making meaningful investments and creating substantive partnerships on one hand, while allowing for the proliferation of a diversity of projects and technologies to best foster the growth of the industry necessary to attain gigatonne-scale carbon removal.

Question 4a - What might a partnership arrangement look like between DOE and an independent entity responsible for facilitating purchasing of clean energy technologies and services?

In addition to creating partnerships with private-sector stakeholders, we also encourage DOE to consider a mechanism to partner with state and local governments to support local incubation of carbon removal, including developing local procurement strategies.

Question 4d - What organizational structure would be best for the entity in question?

While we believe DOE as a federal agency is the appropriate type of entity to support initial measures such as AMCs while the carbon removal market is maturing, a government-sponsored enterprise (GSE) dedicated to carbon removal is the optimal organizational structure for operating in a more mature carbon removal market ecosystem and being responsible for procurement. Similar to the Federal National Mortgage Association, a carbon removal GSE would have the ability to raise private capital, could develop partnerships with private sector market leaders and would have sufficient independence from federal bureaucracy to quickly and efficiently deploy its resources to keep up with the rapidly evolving carbon removal industry. In the absence of a GSE, we are also generally supportive of a government corporation model (e.g., Amtrak), similar to the proposal by the Energy Futures Initiative to create a [National Carbon Removal Authority](#).

7. What qualifications does your organization have to implement demand-side support

Measures?

As ecosystem partners, the DAC Coalition and CO2BC can serve as conduits between policymakers and the carbon removal community to reach key audiences to explore partnerships and promote support measures. This can include hosting education sessions, identifying subject matter experts for evaluating the merits of different support measures and organizing channels for stakeholder feedback on implementation, including hosting periodic check-ins with DOE.

Thank you for your consideration of this information. Please do not hesitate to contact us if you have any questions or need additional information.



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