6450-01-P

DEPARTMENT OF ENERGY

Notice of Intent Regarding Launching a Voluntary Carbon Dioxide Removal Purchasing Challenge; DOE Carbon Dioxide Removal Purchasing (CO_2RP) Challenge

AGENCY: Office of Fossil Energy and Carbon Management, Department of Energy.

ACTION: Notice of intent.

SUMMARY: The Department of Energy (DOE or the Department), Office of Fossil Energy and Carbon Management (FECM) is issuing this Notice of Intent (NOI) to notify interested parties of its intent to launch a Voluntary Carbon Dioxide (CO_2) Removal Purchasing (CO_2RP) Challenge. The CO_2RP Challenge will call on other organizations to purchase small and growing quantities of high-quality, permanent CO_2 Removal (CDR) credits. The CO_2RP Challenge will operate in coordination with DOE's Carbon Dioxide Removal Purchase Pilot Prize (CDR Purchase Prize), through which the Department will award up to $30,000,000 across ten prize winners that successfully deliver their committed CDR credits. In addition, the Challenge will invite CDR suppliers that were *not* selected for or did not apply to the DOE CDR Purchase Prize to seek designation as a "next wave" supplier that demonstrates promise for other future DOE or private sector CDR credit purchasing efforts. CDR credit suppliers participating in the CO_2RP Challenge through pursuit of designation within DOE's list of "next wave" CDR credit providers will submit CDR credit proposals to DOE for review.

DATES: Written comments are requested by May 15, 2024.

ADDRESSES: Interested parties may submit comments electronically to *VoluntaryCDRchallenge@hq.doe.gov* and include "Voluntary CDR Purchasing Challenge" in the subject line. Responses must be provided as attachments to an email. Only electronic responses will be accepted.

FOR FURTHER INFORMATION CONTACT: Questions may be directed to Rory Jacobson, Acting Division Director for Carbon Dioxide Removal, *rory.jacobson@hq.doe.gov* or (202)-586-1650.

SUPPLEMENTARY INFORMATION:

I. BACKGROUND

Large-scale carbon dioxide removal ("CDR") is critical to reach net-zero targets by 2050 and is anticipated to serve an important role as a counterbalance for hard to abate sectors and a mechanism to reduce atmospheric carbon dioxide. The US Long Term Strategy[1] expects that at least 100 million tonnes of technological CDR (in addition to land use, land use change, and forestry (LULUCF) approaches) will be required for the US to achieve net-zero by 2050. Leading analyses by scientific bodies like the Intergovernmental Panel on Climate Change (IPCC) and the National Academies of Sciences (NAS) anticipate that CDR will be needed at least at the gigatonne scale by mid-century to deliver on the Paris Agreement goals.[2] While these analyses collectively make clear that reducing emissions directly (*i.e*. without carbon credit purchases) is the primary long-term strategy for climate mitigation, in the vast majority of cases, CDR is essential as a complement to these efforts to avoid exceeding committed emissions targets and accelerate the pace of mitigation.

Currently, CDR pathways across the DOE portfolio are at varying levels of technical maturity and few pathways have been commercially demonstrated. Further, while a diverse portfolio of CDR approaches holds significant promise towards delivering on the United States' Long-Term Strategy, these pathways face common challenges to achieve scale, including factors like (1) cost, (2) measurement, reporting, and verification ("MRV"), and (3) resource constraints. For this reason, DOE announced a "Carbon Negative Shot" initiative at the 2021 United Nations

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[1] *The Long-Term Strategy of the United States: Pathways to Net-Zero Greenhouse Gas Emissions by 2050,* US Department of State and Executive Office of the President, (November 2021), *https://www.whitehouse.gov/wp-content/uploads/2021/10/US-Long-Term-Strategy.pdf*.

[2] *Negative Emissions Technologies and Reliable Sequestration: A Research Agenda (2019)*, National Academies of Sciences, Engineering, and Medicine, *https://doi.org/10.17226/25259*.

Climate Change Conference (commonly referred to as COP26), aimed at catalyzing innovation across a portfolio of approaches to enable gigatonne-scale CDR at less than $100 per tonne CO_2e net removed for at minimum 100 years, inclusive of MRV, within a decade.[3] In addition to piloting an extensive portfolio of CDR pathways, advancing and establishing MRV best practices and guidance, and investing in research and development to support supply ("push"), DOE is exploring opportunities to establish workable demand ("pull") incentive mechanisms.

On August 10, 2023, the DOE and the National Energy Technology Laboratory (NETL) published a Notice of Intent (DE-FOA-0003081) to issue Funding Opportunity Announcement No. DE-FOA-0003082, titled Carbon Negative Shot Pilots, and Other Funding Opportunities.[4] These intended funding opportunities included a Carbon Negative Shot Pilots FOA (DE-FOA-0003082), a Direct Air Capture (DAC) Commercial Pilot Prize, and a CDR Purchase Prize.

Launched on September 29, 2023, the CDR Purchase Prize is a historic, first-of-a-kind government purchasing program for permanent CDR credit purchasing.[5] The CDR Purchase Prize follows in the footsteps of private businesses and coalitions that have shown how relatively small-scale purchases of CDR credits can have an outsized impact on catalyzing technology innovation and the advancement of standards for robust MRV and carbon accounting.

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[3] On September 29, 2023, the U.S. Department of Energy's (DOE) Office of Fossil energy and Carbon Management (FECM) announced up to $35 million to advance technologies that permanently remove carbon dioxide from the atmosphere. *See*, Carbon Dioxide Removal Purchase Pilot Prize, Office of Fossil Energy and Carbon Management, (September 29, 2023), *https://www.energy.gov/fecm/carbon-dioxide-removal-purchase-pilot-prize*.

[4] Notice of Intent to Issue Funding Opportunity: Carbon Negative Shot Pilots, Office of Fossil Energy and Carbon Management, (August 11, 2023), *https://www.energy.gov/fecm/notice-intent-issue-funding-opportunity-carbon-negative-shot-pilots*.

[5] *DOE Announces $35 Million to Accelerate Carbon Dioxide Removal*, Office of Fossil Energy and Carbon Management, (September 29, 2023). *https://www.energy.gov/fecm/articles/doe-announces-35-million-accelerate-carbon-dioxide-removal*.

The CDR Purchase Prize will award up to $35M of CDR credit purchases, across four CDR areas of interest: (1) direct air capture (DAC), (2) enhanced CO_2 mineralization, (3) biomass carbon removal with storage (BiCRS), and 4) other planned and managed carbon sinks with secure geological storage or equivalent. The first-round application for the program closed on December 14, 2023. In spring 2024, DOE will announce up to 25 semifinalists that have submitted the highest quality CDR Credit Concept Proposals for how they plan to deliver independently verified, high-quality CDR credits to the US government with secure geological or equivalent storage. DOE will then release the final rules for how semifinalists will be evaluated and selected to secure one of the 10 finalists awards, which will provide finalists up to $3M upon delivery of their verified CDR credits. DOE's CDR Purchase Prize is designed to catalyze further voluntary CDR credit purchases in several ways, including:

- ***Supplier transparency for prospective CDR credit purchasers***: DOE and the National Labs will conduct rigorous technical diligence on all applicants, and our pool of semi-finalists will offer a portfolio of CDR project developers with a high chance of delivering robust CDR credits in the near future.
- ***Purchase contract norms***: DOE will set norms for what qualifies as high-quality CDR credits, and what MRV methods and broader delivery terms are appropriate for CDR credit purchasing, including efforts such as publishing model CDR credit purchasing templates and term sheets for private buyers to use as a starting point for their own purchases.
- ***Motivation for further action***: DOE's initiative is designed to show the importance and urgency of purchasing CDR credits today, so that governments and businesses alike invest more resources in CDR now. In addition, the CDR Purchase Prize is designed to challenge CDR suppliers to sign up as many new private purchasers as they can by including the

number of external purchase commitments as part of the selection criteria for from the semifinals to the finals. This will simultaneously enable DOE to amplify the demand for high-quality CDR credits with the greatest scalability and demand, while also providing potential CDR credit purchasers in the private sector with a short list of projects that have successfully undergone initial DOE assessment.

- ***Enhancing CDR credit demand integrity:*** DOE will model how CDR credit purchasing organizations can account for credit purchases and retirements transparently and with the care needed to ensure that credits do not substitute for emissions reductions.[6]

DOE recognizes that the CDR Purchase Prize alone is insufficient to catalyze the marketplace for CDR credits. Even with the selection criteria encouraging semifinalists to secure as many purchases as possible, DOE recognizes that the pool of CDR credit purchasers must be significantly larger than at present for the industry to scale successfully. CDR is likely to be essential for many organizations to meet net-zero goals, yet only a few dozen organizations have purchased permanent CDR credits to date. This means that potentially thousands of additional organizations that have committed to net-zero climate targets will need to start buying permanent CDR credits at small and growing scales today. If organizations fail to begin purchasing CDR today, the field will fail to scale CDR supply as quickly as needed, and CDR solutions will not be available at the cost, scale, or with the necessary MRV standards and community safeguards needed to achieve net zero targets. Furthermore, regulators and civil society groups have indicated that permanent CDR can represent an especially high integrity approach for carbon credits to meet disclosures or other regulations around carbon credit and net-zero claims.

[6] All CO_2RP Challenge participants will be encouraged to adopt the position—consistent with DOE's position— that CDR is best viewed as part of a decarbonization portfolio that first achieves maximum emissions reductions from existing sources.

Organizations that build out permanent CDR portfolios today may attain advantages in the context of any future carbon-related regulatory compliance regimes.

Yet despite the imperative for voluntary CDR credit purchases today, several factors are inhibiting the growth of voluntary CDR credit markets, including:

1. *Insufficient incentives:* Companies have no requirement to purchase CDR credits as part of their climate plans, which is compounded by a lack of clear and consistent direction by civil society groups working on corporate climate disclosure and action on the appropriate role for these credits in near-term decarbonization activities. Government subsidies for CDR projects have grown in recent years but remain far below levels needed to catalyze widespread adoption.
2. *High prices:* CDR credits are more expensive than emission reduction credits, with engineered CDR credits selling for between $200-1000 per tonne CO_2e net removed. These prices can represent an approximately 50-250x premium of average emissions reductions credits. Existing subsidies are insufficient to close the gap between the prices buyers are willing to pay, and the funding needed to scale CDR technologies.
3. *Complicated procurement:* There is currently limited expertise among most corporate carbon credit purchasers on how to evaluate carbon removal companies and MRV protocols, and to design procurement agreements that are fair for all parties and bankable for suppliers.
4. *Voluntary carbon markets (VCMs) challenges*: VCMs remain relatively small and face challenges related to market transparency and credit integrity. However, high-integrity VCMs represent potentially important channels for unlocking significant capital for climate-impactful investments that can help limit the increase in the global average temperature to 1.5°C. Additional action is needed by civil society, the private sector, and

governments to address relevant challenges and enable conditions for high-integrity VCMs to grow.

II. Voluntary Carbon Dioxide Removal Purchasing Challenge

To further support the CDR credit purchasing market, DOE intends to launch a two-pronged CO_2 Removal Purchasers Challenge ("CO_2RP Challenge"). By engaging with both CDR credit buyers and suppliers, the DOE CO_2RP Challenge will enhance market transparency and bolster the quality and integrity of CDR credit supply, to accelerate, improve, and scale the CDR credit market.

a. Credit Buyers

DOE will ask for any organization or government that discloses its GHG inventory to join the "CO_2RP Challenge" by purchasing a small and growing volume of permanent CDR. To join the Challenge, an organization will be required to:

- Purchase and retire permanent CDR annually, aligned with the requirements and assessment criteria of DOE's purchases, starting no later than 2025.
- Disclose to DOE every associated CDR purchase, which will maintain a public inventory of:
    - CDR credit purchasing entity;
    - CDR credit supplier entity;
    - CDR project delivering credits;
    - CDR crediting methodology, protocol, or standard (inclusive of MRV); and
    - Date verified of CDR credit volume delivered and retired.
- Require but kept private:
    - price paid per tonne of CDR.
- Disclose to the public:

- Transparent accounting of CDR and any other forms of carbon credits separately from activities that directly reduce emissions in their supply chains in any annual climate related disclosures.

Participation in the CO_2RP Challenge will not preclude CDR buyers from participating in other buyer coalitions or coordinated funding initiatives. The Challenge is intended to consolidate CDR credit purchasing efforts across private organizations that align with DOE's Carbon Negative Shot implementation strategy. The Challenge will not require CDR credit buyers to purchase a minimum volume; however, it is anticipated DOE may issue guidance or resources to help organizations incorporate CDR appropriately into their greenhouse gas inventories and net-zero strategies.[7]

b. **CDR Credit Suppliers:**

DOE will encourage additional CDR credit suppliers to join the CO_2RP Challenge by offering to evaluate a new round of credits using the process implemented in Phase 1 of the CDR Purchase Prize. This component of the CO_2RP Challenge is intended to identify CDR credit suppliers that may have been too early to apply to the CDR Purchase Prize but are likely to have strong technical and commercial viability. While no new funding will be available for this effort to suppliers, DOE will and publish a list of "next wave" applications across the four area[8] of interest categories outlined in the CDR Purchase Prize from:

[7] DOE anticipates issuing more detailed guidance regarding eligible and appropriate Scope 1-3 greenhouse gas accounting and attribution of CDR credit purchases, as well as clear guidelines prioritizing direct emissions reductions at the greatest pace and scale feasible. For more information on Scope 1-3 greenhouse gas accounting, please see EPA Greenhouse Gas Inventory Guidance for Scope 1 and 2, and (*https://www.epa.gov/climateleadership/scope-1-and-scope-2-inventory-guidance*) Scope 3 (*https://www.epa.gov/climateleadership/scope-3-inventory-guidance*).

[8] Please consult the Official Rules document for the CDR Purchase Pilot prize for detailed descriptions of eligible CDR pathways. See: *https://www.herox.com/DAC-commercia*l

- Organizations that were not selected to participate in the semifinalist pool for the CDR Purchase Prize but have significantly updated and advanced their credit offering with new project design, MRV, or project offerings.
- Organizations offering credits from projects that did not apply or were not eligible for the CDR Purchase Prize but anticipate selling voluntary credits within the next calendar year.

RESPONSE GUIDELINES

NOI responses shall include:

1. NOI/RFI title and reference number;
2. Name(s), phone number(s), and email address(es) for the principal point(s) of contact;
3. Institution or organization affiliation and postal address; and
4. Comments and recommendations regarding the intended structure, objectives, and implementation of the DOE Carbon Dioxide Removal Purchasing (CO_2RP) Challenge as proposed within this NOI.

CONFIDENTIAL BUSINESS INFORMATION

Pursuant to 10 CFR 1004.11, any person submitting information that he or she believes to be confidential and exempt by law from public disclosure should submit via email two well-marked copies: One copy of the document marked “confidential” including all the information believed to be confidential, and one copy of the document marked “non-confidential” with the information believed to be confidential deleted. Submit these documents via email. DOE will make its own determination about the confidential status of the information and treat it according to its determination.

Signing Authority

This document of the Department of Energy was signed on March 7, 2024, by Dr.

Jennifer Wilcox, Acting Assistant Secretary, Office of Fossil Energy and Carbon Management, pursuant to delegated authority from the Secretary of Energy. That document with the original signature and date is maintained by DOE. For administrative purposes only, and in compliance with requirements of the Office of the Federal Register, the undersigned DOE Federal Register Liaison Officer has been authorized to sign and submit the document in electronic format for publication, as an official document of the Department of Energy. This administrative process in no way alters the legal effect of this document upon publication in the *Federal Register*.

Signed in Washington, DC, on March 7, 2024.

Treena V. Garrett,
Federal Register Liaison Officer,
U.S. Department of Energy.

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