



Bipartisan Policy Center

# A Federal Policy Agenda to Support DAC Scale-up This Decade

**Federal Policy Recommendations from the Bipartisan Policy Center's DAC Advisory Council**

In the years since the Bipartisan Policy Center's Direct Air Capture Advisory Council published their [Federal Policy Recommendations](#)<sup>1</sup> in June 2021, Congress has acted in major bipartisan ways—through the Energy Act of 2020, the Bipartisan Infrastructure Law (BIL), and sections of the Inflation Reduction Act (IRA) that had prior bipartisan support—to support DAC and enabling [carbon management](#)<sup>2</sup> infrastructure. While the council is tremendously excited about the opportunities that DAC technologies present toward achieving our shared economic and environmental goals, the DAC industry is still nascent and faces unique challenges that need to be addressed with additional targeted policies.

The DAC Advisory Council has identified the following federal policy recommendations for policymakers in the 118<sup>th</sup> Congress. These recommendations are framed around three focus areas and serve as key components for driving successful deployment of DAC in the coming decades:

**Focus Area #1: Supporting the full Research, Development, Demonstration, and Deployment (RDD&D) lifecycle of DAC**

**Focus Area #2: Focusing on long-term revenue certainty**

**Focus Area #3: Enabling carbon management infrastructure**

**ENERGY**

August 2023

1 Mackler, S. (2023). [The Case for Federal Support to Advance Direct Air Capture](#). Bipartisan Policy Center.

2 Broberg, D. (2021). [The IIJA is a Big Deal for Carbon Management](#). Bipartisan Policy Center.

## FOCUS AREA #1: SUPPORTING THE FULL RDD&D LIFECYCLE OF DAC

---

### 1) Position DAC Hubs for growth

Achieving our climate goals requires scaling DAC and carbon dioxide removal (CDR) to the gigaton level, yet less than 10,000 tons of global DAC capacity is currently operational. Although the primary focus of climate policy and investment must continue to be on emissions reductions, a massive scale-up in capacity is necessary *this decade* to enable the supply chains and cost declines for gigaton-scale carbon removal with DAC in later decades. The BIL's \$3.5 billion for four regional DAC Hubs offers an exciting opportunity for scaling DAC domestically, but achieving scale-up at the hubs requires a sustained prioritization on enabling high volumes of CO<sub>2</sub> removal.

This summer, the Department of Energy is evaluating the first round of DAC Hub applications submitted under the first funding opportunity announcement (FOA), with awards notifications slated for the second half of 2023. The notice of intent (NOI) from mid-2022 signaled that a second round of funding will be solicited in 2024 or later. In the interim period between first project selection and the second FOA, DOE should seek feedback from applicants on how to improve their FOA process for the second round of submissions, with a clear goal of setting up the hubs for long-term success and scale-up.

### 2) Fast-track funding for DAC pilots

DOE made clear in their 2022 DAC Hubs NOI that the hubs funding is not intended for technological development of DAC pilots, and is instead reserved for the task of convening, planning, and deploying DAC technologies at scale. While this is a wise strategic use of the hubs funding, a majority of DAC companies today still need to deploy pilot-scale facilities to achieve scale at the hubs in the future. It is critical that DOE and Congress prioritize alternate funding streams for supporting DAC pilots in the coming years.

Several existing DOE programs are already set up to support DAC pilots—including the CDR RD&D program and the American-Made [DAC Prizes competitions](#).<sup>3</sup> DOE's Small Business Innovation Research (SBIR) program provides another potential funding stream for facilitating grants toward DAC technological development. To ensure that the SBIR award process is more accessible and optimally designed for start-ups and small businesses, DOE should continue to solicit input from businesses on how to improve their funding process for DAC pilots. Congress should also aim to ensure adequate funding for these early facilities as more companies look to reduce engineering risk.

---

3 American-Made Challenges. [American-Made Direct Air Capture \(DAC\) Prizes](#). U.S. Department of Energy.

### 3) Continue to increase funding for basic, applied, and operational R&D

Even with the progress over the past decade, many foundational carbon management technologies remain in the early stages of innovation. Companies that have demonstrated success at the pilot and demonstration stages still require applied and operational research trials to fine tune their industrial processes necessary for commercial success.

While authorizations from the 117<sup>th</sup> Congress increased funding for DOE's CDR RD&D program from approximately \$70 million to \$320 million in fiscal year 2024, the United States must maintain the positive trend toward increased funding for DAC RD&D to improve the technology and reduce costs. These increased authorizations are a signal of bipartisan support for DAC RD&D funding, but they need to be fully appropriated each year during the congressional appropriations process.

### 4) Encourage coordination across federal government

With the passage of the BIL, the Energy Act of 2020, and the IRA, there is an opportunity for DOE and the Biden administration to meet the scale of ambition that DAC presents through strategic implementation and synergies across similar government programs. To this end, leaders from DOE and the White House should look to maximize coordination between the myriad subgroups tasked with formulating a federal response on CDR and DAC deployment including: the DOE-led CDR task force (authorized by the Energy Act of 2020), the CEQ-led task forces for permitting reform with regard to carbon capture utilization and storage (CCUS) (authorized by the USE IT Act), and the Interagency Carbon Dioxide Removal Research Coordination effort led by the U.S. Carbon Cycle Science Program.

Reporting requirements and strategic planning should be consistent across every group that is focused on deploying CDR as a climate solution. Over time, an effort should be made to consolidate leadership into a single, interagency CDR task force with multiple subgroups that focus on different pathways for deploying CDR (e.g., technological, oceans, geological, terrestrial, and data aggregation). This vision for an interagency task force is articulated by the bipartisan REMOVE Act (previously called the CREATE Act), championed by Sens. Kyrsten Sinema (I-AZ) and Lisa Murkowski (R-AK) and Reps. Annie Kuster (D-NH) and Anthony Gonzalez (R-OH).

## FOCUS AREA #2: FOCUSING ON LONG TERM REVENUE CERTAINTY

---

### 5) Support bipartisan CDR procurement

While federal investments for planning and building at-scale DAC facilities are essential, it is also important to ensure sufficient revenue streams are available to cover operational expenses for DAC facilities. Amendments to the 45Q tax credit under the IRA allow for DAC-to-saline storage to claim \$180/ton—an improvement over previous credit levels, but still below today’s operational costs for DAC. As the world’s largest purchaser of goods and services, the federal government is positioned to help stimulate early markets for DAC operation and provide demand pull for DAC and carbon removal services.

This issue has drawn [bipartisan attention](#),<sup>4</sup> and Congress recently tasked DOE with establishing a competitive purchasing pilot program for CDR as part of the FY2023 appropriations omnibus. Policymakers should coordinate with DOE on standing up the pilot procurement program and should pass authorizing legislation such as the CREST Act, led by Sens. Susan Collins (R-ME) and Maria Cantwell (D-WA), to provide DOE with guidance and clarity on how to prioritize project selection and carrying out due diligence. Furthermore, Congress should pass appropriation funding to support this effort.

### 6) Extend the 45Q tax credit and ensure robust implementation

The IRA made essential enhancements to the 45Q tax credit, including:

- Increasing the value of the credit from \$50 to \$180 per ton captured by DAC and geologically stored.
- Decreasing the eligibility threshold for DAC facilities from 100,000 to 1,000 tons per year (the world’s largest DAC facility is currently 4,000 tons/year).
- Enabling [direct payments](#)<sup>5</sup> to be made to project developers in the first five years of the credit.

Increased revenue streams for operating DAC and other carbon management infrastructure have already spurred significant investments that are helping to lower risk and drive down the long-term costs for DAC. Maintaining all of the IRA improvements to 45Q is a baseline requirement for the long-term success of DAC deployment, and the Department of the Treasury and IRS should ensure swift and effective implementation of the recent credit changes.

---

4 Tham, N. (2022). [Promoting Early Markets for Carbon Dioxide Removal Through Federal Procurement](#). Bipartisan Policy Center.

5 Bipartisan Policy Center. (2022). [Three Reasons Why “Direct Pay” is Crucial for Clean Energy Tax Policy](#).

Policymakers should also consider further improvements to the tax credit that can support DAC deployment, including: extending the window of direct pay beyond five years, indexing the credit value to inflation, and extending the credit past 12 years to cover long-term operational expenses.

### **FOCUS AREA #3: ENABLING CARBON MANAGEMENT INFRASTRUCTURE**

---

#### **7) Enable meaningful community engagement around DAC Hubs and projects**

Environmental justice and addressing concerns of communities that have been disproportionately impacted by legacy pollution is an important step toward enabling durable climate solutions. Successfully deploying DAC requires strategic engagement with communities, including increased access to educational opportunities and raising awareness of CDR solutions in locations where DAC Hubs will be developed.

DOE's BIL funding opportunities have all required the creation of community engagement plans that are tailored to specific regional and community needs. Project developers will need to integrate meaningful two-way engagement into project deployment, and policymakers should ensure that sufficient resources are available to both the developer and community organizers in facilitating this engagement. Trusted third party actors may also play a useful role in community engagement around technology types, outside the context of specific projects. Policies to support community engagement and ensure trust within a community could also benefit from leveraging private sector or philanthropic funding.

#### **8) Catalyze domestic workforce development and job creation**

Thousands of new jobs will be created in pursuit of decarbonization, including through the deployment of DAC technologies. Realizing this opportunity requires a sustained commitment from private and public actors in establishing these new jobs, investing in workforce training, and readying workers for careers in DAC deployment. Federal assistance for re-skilling and up-skilling of certain worker trades can also help ensure many people are not left behind.

Federal dollars for DAC can create strong partnerships between project developers and the labor community, such as through DOE's suggested use of labor-management partnerships at the DAC Hubs. Multilateral engagement between companies, NGOs, and federal or local governments can also help assess workforce availability and demand for certain skill sets. A clear process for identifying the types of jobs DAC companies currently need or anticipate needing in the future will help communities plan and build out training opportunities

and curriculum to prepare the workforce. DOE's Office of Fossil Energy and Carbon Management, with support from other relevant offices within DOE and in other federal agencies, should initiate a task force to evaluate existing resources from the federal government to support the upskilling and training of a workforce that can enable the DAC industry.

### 9) Ensure transparent MRV and carbon credits with high quality

Life cycle analyses should be completed in a consistent and transparent manner to build community trust and ensure climate benefits. As new reporting requirements for DAC infrastructure are being drafted, it is important to keep in mind existing best practices and federal monitoring programs, such as the Environmental Protection Agency's [Subpart RR](#)<sup>6</sup> for the greenhouse gas reporting program and guidance surrounding Class VI permits for geologic storage. These existing models provide a high degree of transparency and environmental stewardship that should be maintained to ensure consistent signals to the private sector.

In the broader context of carbon credits for emissions reductions and carbon removal, there have been clear challenges regarding market integrity and transparency. Despite these challenges, improving the public acceptance and quality of carbon credits is worth the effort since these credits can provide significant revenues toward DAC and other climate beneficial projects. Policymakers should consider the role of the federal government in facilitating quality carbon credits and how best to leverage existing efforts to improve credit quality. The durable and clear accounting of DAC-to-geologic-storage should serve as a gold standard for transparent CO<sub>2</sub> removal in future crediting systems.

### 10) Address permitting bottlenecks to facilitate infrastructure and CO<sub>2</sub> storage pathways

DAC deployment will face the same challenges that other clean energy infrastructure has faced in previous decades, including significant delays for permit application and review. The two operational Class VI permits for injecting CO<sub>2</sub> into geologic formations took three-to-six years to permit and dozens of applications currently remain under administrative review at EPA. To prevent future bottlenecks for carbon removal and permanent sequestration, permitting and regulatory processes should be improved to increase efficiency while maintaining robust environmental standards and advancing environmental justice.

Policymakers should ensure that EPA's underground injection control program has sufficient resources to process Class VI permits and applications for state-

---

6 U.S. Environmental Protection Agency. Subpart RR – [Geologic Sequestration of Carbon Dioxide](#). Greenhouse Gas Reporting Program.

level authority (“primacy”) over Class VI permits. This includes congressional support for state-level regulator training, when capacity for evaluating Class VI permits needs to be scaled up. The DAC Council is reassured by the recently released notice for public comment on [Louisiana’s Class VI primacy authority](#)<sup>7</sup> and is hopeful for swift approval of their ability to approve permits with demonstrated environmental integrity and necessary site characterization.

Other pathways for facilitating geologic storage permits should also continue to be explored by policymakers, such as the potential to leverage Class II permits as a first step towards a Class VI well, or through improved ease of DAC toward other CO<sub>2</sub> storage or use pathways with real climate benefits. There is also a clear need to identify bipartisan solutions for long-term liability and ownership of stored CO<sub>2</sub>.

Regulatory clarity surrounding CO<sub>2</sub> transport is also worth addressing, as there is currently no federal actor in charge of interstate siting and construction authorities for CO<sub>2</sub> pipelines. Policies that ensure a “do no harm” approach to providing regulatory clarity of CO<sub>2</sub> transport infrastructure should be considered within any permitting reform effort.

---

7 U.S. Environmental Protection Agency. (2023). [EPA Opens Public Comment on Proposal Granting Louisiana Primacy for Carbon Sequestration and Protection of Drinking Water Sources](#).