

CFTI CCUS Workgroup Recommendation Compilation

Proposed 118th Congress Priorities

High Priority

1. Recommendations to Modify the 45Q Tax Incentive

a. **Extend Direct Pay for the full 12 years, presently Direct Pay is eligible for only the first 5 years.**

The IRA provided a 5-year direct payment for the 45Q Tax credits, the last 7 years are in the form of credit against taxes owed.

- **Authorization:** N/A
- **Appropriations:** N/A/
- **Rational:** Some organizations developing relatively new technologies do not have a revenue stream to owe taxes. The last 7 years of the tax incentive is not anticipated to benefit a CCUS facility.
- **Specific Recommendations:** Request that the Section 45Q tax credit be modified such that the direct payment is extended for the full eligibility period of the tax credit.

b. **Modify inflation indexing for the 45Q tax credit to begin in 2021 to be in line with other technologies in lieu of the present 2025 base year.**

- **Authorization:** N/A
- **Appropriations:** N/A/
- **Rational:** Inflation has caused all materials and the cost of capital to increase dramatically. The 45Q tax credit does not start to adjust for inflation until 2027 with a base year of 2025. Inflation has already eroded the value of the tax credit significantly since the \$85/ton tax credit was proposed. The 45Q tax credit should be indexed in line with other GHG reducing technologies. A level tax playing field is needed to support CCUS development.
- **Specific Recommendations:** Modify the inflation base year for indexing of the 45Q Tax credit to 2021.

c. **Extend the 45Q Tax Credit beyond 12 years.**

As companies advance in their process to make CCUS projects a reality, the operation and maintenance costs after the expiration of the 12-year credit pose a challenge to the long-term prospects and are inhibiting project development. The tax credit needs to be extended beyond 12 years, at a stepped down rate to support on-going operations and maintenance costs for the life of the facility. CCUS modeling shows a CCUS project cannot be sustainable at the expiration of the tax credit. The technology is still in the

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development stage, economies of scale have not been achieved. [The committee recognizes the political challenges with this recommendation]

- **Authorization:** N/A
- **Appropriations:** N/A/
- **Rationale:** Uncertainty regarding the fate of projects after year twelve is inhibiting adoption of CCUS. In addition, an extended credit would help ensure CCUS projects are cost effective.
 - i. CCUS Technology is still in the development stage, economies of scale have not been achieved and the “nth” plant has not been installed. Risk factors are still high with developing a CCUS facility and incentives are critical.
 - ii. The infrastructure requirements for transporting and storing CO₂ are not well developed. For every CCUS plant, CO₂ pipelines and storage need to be permitted and installed. Similar to CCUS facilities, the permitting and financing barriers to permit a Class VI or Class II storage facility and install the CO₂ pipelines call for a longer-term incentive.

2. Direct the IRS to properly implement the Inflation Reduction Act tax credits to support CCUS projects.

The U.S. Treasury provided initial guidance on the 45Q tax incentive.

- **Authorization:** N/A
- **Appropriations:** N/A/
- **Rational:** Carbon Capture Use/Storage projects need certainty. Clear guidance in a timely manner from the U.S. Treasury would allow projects to better plan financial benefits and impacts of the incentives.
- **Specific Recommendations:** Timely guidance and clarification on the design capacity of a carbon capture system for electric generation facilities. We recommend that the per unit design capacity for capturing the carbon be set at 75%.

3. Permitting Reform

As CCUS projects selected and funded by the Department of Energy move forward, permitting requirements to site the projects, transport and store the carbon will determine development of CCUS technology and the industry.

a. Require Federal Agencies to implement FAST 41.

- **Authorization:** N/A
- **Appropriations:** N/A/
- **Rational:** Congress and the Biden-Harris Administration supported the development of CCUS projects and development of the technology. To further encourage the technology to come to fruition and fully benefit from the funding and support, permitting approvals will be key, especially for storage and interstate transportation. Efficient and effective permitting timelines along with transparency of the federal environmental review process will be critical in scaling the carbon management industry at the pace necessary to meet the need of anticipated project

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deployment incentivized by recent policy successes. As part of the bipartisan Utilizing Significant Emissions with Innovative Technologies (USE IT) Act, carbon transport and storage infrastructure are eligible for the permitting review process created under Title 41 of the Fixing America's Surface Transportation Act, also referred to as FAST-41. This program is designed to improve the timelines, predictability and transparency of the federal environmental review and authorization process for significant infrastructure projects, including construction of any facility, technology, or system that captures, reuses, or stores carbon emissions, including those capturing legacy emissions from the ambient air.

- **Specific Recommendations:** The Administration should require federal agencies to implement the authority established under FAST-41 to ensure that project development can move forward within time frames that ensure successful deployment. Congress should include CCUS technologies in permitting reform.

b. NEPA: Provide clearer timelines on the NEPA process

The National Environmental Policy Act requires government agencies that have oversight on a project to conduct a NEPA review. Each agency with jurisdiction over the project will conduct its own review. For projects that require permits or that are overseen by more than one government agency (such as EPA, DOE, FERC, etc.) the project may undergo multiple NEPA reviews without a clear timeline on the process end date.

- **Authorization:** N/A
- **Appropriations:** N/A/
- **Rational:** Delays and uncertainty with the NEPA review discourages development of CCUS projects. Given that a CCUS project has three distinct elements (the carbon capture system, the CO₂ pipelines and the storage facility), each element of the project could require additional NEPA review. CCUS projects need more regulatory certainty and clearer timelines for the process would help.
- **Specific Recommendations:** The below recommendations draw upon the tenants found in Aspen's Build, Cleaner Faster Report.
 - Streamline approvals for projects where there is limited environmental impact. For projects that may cause unique environmental impacts, the review process should focus specifically on those factors while permitting the project on an accelerated timeline in compliance with existing environmental laws.
 - Adopt judicial review provisions designed to accelerate resolution of litigation, ideally to less than one year. This could include provisions to require that cases be brought to court more quickly, direct review by a Court of Appeals, and request that cases be expedited and resolved within a year.

c. Permitting reform on CO₂ transport network: seek clarity for CO₂ Interstate siting and construction authority (unknown whether authority would go to FERC or rest with PHMSA). To meet climate goals, a significant scale up is needed of an interstate network for transporting CO₂ captured from multiple industrial facilities, power plants and direct air capture plants to locations where it can be put to beneficial use or safely and permanently stored in appropriate geologic formations.

- **Authorization:** N/A

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- **Appropriations:** N/A/
- **Rational:** Permitting any type of interstate pipelines creates challenges because multiple jurisdictions require permits and approval for construction. The timeline for obtaining the permits, not including the potential litigation, requires several years if not more than a decade. To meet carbon dioxide reduction requirements to meet climate goals, transporting the CO₂ for use or storage needs to be expedited: one tool would entail Federal backstop siting authority.
- **Specific Recommendations:** Provide regulatory clarity for interstate construction of CO₂ transport projects. There is clear regulatory authority given to the Pipeline and Hazardous Materials Safety Administration (PHMSA) over the safety of CO₂ pipelines. However, the authority to regulate siting, construction and operation activities is currently handled on a state-by-state basis. Clarity surrounding the interstate construction process for CO₂ pipelines could provide critical certainty for project developers and aid in the near-term goal of building carbon transport and storage infrastructure needed to meet the anticipated demand provided by recent enhancements to the 45Q tax credit. Importantly, any clarifications should “do no harm” and not hinder existing processes and timelines. What remains clear, additional policy development and engagement with developers and communities will be needed to identify any potential long-term solutions for regulatory authority over CO₂ transport as the industry continues to scale.

4. Expedite State Primacy Approval

Work with state regulators to advance the permitting process for Class VI Permitting: Encourage state regulators and state policy makers to adopt laws and regulations at least as stringent as EPA’s and apply for “primacy” from EPA to obtain the primary responsibility for permitting Class VI wells. States that are granted primacy early will have better opportunities to encourage CCUS projects in their locals.

- **Authorization:** N/A
- **Appropriations:** N/A/
- **Rational:** Issuing underground injection control permits at the state level has typically been a faster process than at the federal level.
- **Specific Recommendations:** In line with the provisions in H.R. 1, encourage legislation that directs EPA to provide expeditious updates regarding the status of a Primacy applicant, further encourage and allow state level EPA staff to lead on State Primacy and Class VI well permits.

5. Congress to authorize and appropriate funding for Early-Stage R&D funding.

CFTI CCUS Workgroup recommends fully funding DOE’s requested budget for Fossil Energy and Carbon Management (FECM), \$906 million for early-stage R&D on CCUS. There are a number of technologies being developed for CCS and CCU. More fundamental R&D will help discover disruptive technologies to help reduce the cost of capturing, transporting, and injecting the CO₂. Currently, post-combustion amine solvent systems are the most advanced option. The availability of additional R&D funding will ensure that other promising options such as non-aqueous solvents, solid sorbents,

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membrane systems, and cryogenic systems are able to advance even after the current front-runner technology becomes more mature. Additionally, funding is critical to perform testing that can close knowledge gaps about carbon capture co-benefits and air quality impacts to inform the permitting process going forward.

- **Authorization:** Include funding for early-stage R&D on CCUS.
- **Appropriations:** \$904,475,000
- **Rational:** Several carbon capture technologies remain in the early R&D phase. There is a risk that the current front-runner, post-combustion amine sorbent technologies, will mature enough to lock-out other options. For this reason, it is important to continue to provide research, development and deployment support to other potentially transformative technologies. Other funding to support the CCUS technologies include emissions monitoring technology, methods to prevent pollutants from exiting the amine systems and atmospheric modeling to confirm the benefits of the CCUS efforts.
- **Specific Recommendations:** Appropriate funds for early stage, transformative R&D and emissions monitoring and atmospheric modeling.

Medium Priority

1. Federal Backstop Authority for CO₂ Storage Stewardship

Seek federal backstop authority for CO₂ storage stewardship post-closure at the discretion of the state.

- **Authorization:** N/A
- **Appropriations:** N/A/
- **Rational:** The long-term risk of leakage from CO₂ storage is expected to be low following closure of geologic storage wells because any issues should be identified during the injection process itself. Nonetheless, companies considering carbon capture are concerned about long-term post-closure stewardship. Many groups would only accept such backstop authority if long-term storage fees were paid into an escrow account and transferred to the federal government.
- **Specific Recommendations:** A federal long-term stewardship transfer could be offered in exchange for payment into a long-term stewardship fund that would transfer to the Federal Government following successful closure of a storage site.

2. Provide Clarity for CO₂ Storage Projects on Federal Lands.

- **Authorization:** N/A
- **Appropriations:** N/A/
- **Rational:** The geologic storage of carbon dioxide (CO₂) beneath federal lands offers a significant opportunity to catalyze a domestic carbon capture industry that will reduce greenhouse gas emissions and create and maintain high-paying jobs. The United States Geologic Survey estimates that roughly 130 million acres of technically suitable storage capacity are overlaid by federal lands. With historic levels of funding provided for carbon capture, removal, and storage projects in the 117th

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Congress, there is increasing interest in the development of CO₂ storage projects on federal lands.

- **Specific Recommendations:** In June 2022, the Bureau of Land Management (BLM) issued a new policy authorizing the use of federal lands for the geologic storage of CO₂, and subsequently approved the first application for such activity. However, uncertainty remains for CO₂ storage developers, including questions surrounding pore space ownership, land use plans, and interaction with other regulations and laws governing CO₂ storage. Congress should work with the BLM, and other relevant agencies, including the U.S. Forest Service, to provide further clarity for CO₂ storage activities on federal lands.

3. Congress to authorize and appropriate funds for Work Force Development in the CCUS sector.

The carbon capture industry is nascent compared to other technologies required for the clean energy economy. Further workforce development will help ensure CCUS success.

- **Authorization:** Work force development is needed to further implement and allow the CCUS technologies and industry to be successful.
- **Appropriations:** \$10,00,000
- **Rational:** Given that the CCUS industry is new, there is not a large enough trained workforce to address the challenges of capturing and condensing carbon, building CO₂ pipelines, and using or storing the CO₂. The oil and gas industry has used CO₂ for enhanced oil recovery but in order to significantly increase development of CCUS, a larger and more trained workforce will be needed. DOE-funded projects require that grantees offer internships, but this is not sufficient to allow for the necessary growth of the CCUS industry. The American Recovery Act of 2009 supported Regional Technology Training Centers that can be drawn on to create a trained workforce.
- **Specific Recommendations:** Support and continue funding to the Regional Technology Training Centers that focus on promoting CCUS knowledge and training opportunities. Establish grants for retraining employees from retired coal fired power facilities, mines, and other displaced workers as well as veterans to encourage the development of the CCUS workforce.

4. Regional Geologic Storage Corporations: Support the creation of regional geologic storage corporations responsible for developing CO₂ transportation and storage projects and for managing long-term carbon storage.

- **Authorization:** Congress to authorize up to 10-20 Regional Geologic Storage Corporations or Hubs, similar to Hydrogen Hubs, to encourage the systematic development of CO₂ pipelines and geologic storage.
- **Appropriations:** \$2 billion
- **Rational:** Citing and permitting interstate CO₂ pipelines as well as storage facilities are two highly challenging aspects of CCUS. Creating storage and collection hubs will facilitate carbon capture efforts at regional electric utility and industrial locations

by encouraging centralized permitting and citing activities. A geologic storage corporation could create efficiencies with the infrastructure to maximize carbon capture.

- **Specific Recommendations: (Drawing on the hydrogen hub language)**
 - In addition to grant funding, hub awardees should be able to share tax incentives with entities capturing and condensing CO₂.
 - DOE should consider growth potential of the hub when choosing a location.
 - DOE should have transparency practices regarding project data and information that could provide important information for subsequent hubs and that also conform with data sharing practices that include information security and confidentiality protections.

5. Establish parity between 45Q carbon capture tax credits for utilization and sequestration.

- **Authorization:** N/A
- **Appropriations:** N/A/
- **Rational:** To further encourage the reduction of carbon in the economy and promote a circular economy, increasing the tax credit for carbon capture and utilization to match the incentives for carbon capture and sequestration for both direct air capture and power and industrial sectors will help encourage innovation. Such an incentive will support utilizing capture carbon in the manufacturing of products to lower the emission intensity of production. The tax parity will further incentivize the deployment and innovation of carbon capture technology and low/zero carbon products in the circular economy.
- **Specific Recommendations:** Support the Captured Carbon Utilization Parity Act introduced in the Senate by Senators Sheldon Whitehouse (D-RI) and Bill Cassidy (R-LA) and in the House of Representatives introduced by Representatives David Schweikert (R-AZ) and Terri Sewell (D-AL). The legislation increases the value for direct air capture utilization to \$180/metric ton and increases the value for power and industrial sector utilization to \$85/metric ton.

6. Encourage EPA to provide guidance on how a Class II permit may transition to a Class VI permit.

- **Authorization:** N/A
- **Appropriations:** N/A
- **Rational:** Energy operators looking to transition Class II wells for oil and gas operations to wells that inject CO₂ for long-term storage currently have two options, prove that there is no increased risk to underground sources of drinking water (USDW) or apply for a Class VI permit. To date, EPA has avoided developing comprehensive guidance regarding a streamlined federal regulatory framework for Class II wells to be converted to a Class VI well or explicitly defining how a Class II well can demonstrate a lack of risk to USDW and be used for geologic sequestration. Instead, EPA has prioritized States with both Class II and Class VI Primacy to create State-level transition frameworks.¹¹ Given that some States will ultimately not receive Primacy, EPA should create a regulatory

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pathway for Class II wells to be converted into geologic storage wells for the permanent sequestration of CO₂ in geologic formations and provide comprehensive guidance on how and when a Class II well is required to be permitted as a Class VI well.

- https://www.epa.gov/sites/default/files/2020-08/documents/class2eorclass6memo_0.pdf
- **Specific Recommendations:** Encourage EPA to develop a regulatory framework to convert Underground Injection Control (UIC) Class II wells to be used for long-term geologic storage of carbon dioxide. Within one year, direct the Agency to provide a report to the Congress detailing when a UIC Class II well would pose an increased risk to underground sources of drinking water if utilized for only geologic sequestration and a comprehensive regulatory framework to convert UIC Class II wells to UIC Class VI wells.

Low Priority

The committee chose to delete all the Low Priority items.