Carbon Capture and Storage in the United States: An Integrated Analysis of Policy, Permitting, and Market Viability

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Executive Summary

Carbon capture and storage (CCS) is a critical technology for significantly reducing greenhouse gas emissions, particularly in hard-to-abate industrial sectors. Despite successful international projects, CCS adoption in the U.S. has been limited by nascent federal and state policies, infrastructure gaps, high costs, and uncertain incentives.

This project highlights go-to-market considerations for CCS developments in the U.S. To do so, this study developed three primary workstreams: U.S. policy research, EPA Underground Injection Control (UIC) program and Class VI Well permitting research, and emitter data collection, scoring, and ranking.

The scope of U.S. policy research for this project focused on expert interviews with members of the CCS industry, community representatives, legal scholars, and state CCS agency personnel. Additionally, the work included research into publicly available resources outlining federal and state legislation. The study outlines CCS policies and incentives that are critical for a successful market entry. In the U.S., CCS policy is mainly driven by the Inflation Reduction Act (IRA), with state policies in the early stages of development and lacking immediate, direct incentives for CCS implementation. This is a potentially prohibitive barrier for future CCS developments.

To contextualize and provide strategic recommendations related to Class VI Well permitting, our work involved conducting industry interviews, analyzing public database materials, and developing community engagement guidelines. The primary interviews included a carbon removal startup accelerator and an employee of the United States Geologic Survey (USGS), which gave U.S. specific insights into industry challenges, key players, data sources, and the status of commercial incentives for carbon sequestration. The team analyzed EPA Class VI Well applications to identify common causes of delays, specifically focusing on Requests for Additional Information (RAIs) from the EPA, to inform future submissions and expedite permitting. Lastly, the team developed community engagement guidelines based on EPA best practices, recommending proactive and inclusive public involvement strategies for CCS projects.

A framework was developed to assess and prioritize emitters as potential customers for future CCS projects. This framework incorporated direct engagement to collect emissions data and understand emitter perspectives on CCS adoption. Key activities included identifying primary Points of Contact (POCs), estimating CO2 emissions based on available data and typical industry flue gas concentrations, mapping distances between emitters and potential storage sites, and creating a weighted scoring rubric to rank emitters across different industries. The core criteria for evaluating an emitter's attractiveness were their emissions volumes, proximity to geologic sequestration sites, the presence of nearby pipeline infrastructure, and supportive state-level CCS

policies. The findings indicate a growing interest among industrial emitters in target industries to pursue CCS development. However, developing clear and consistent commercial incentives is imperative.

Several key risks could impede the successful deployment of CCS in the U.S. These include a current lack of sufficiently clear and long-term financial incentives for CCS projects, limited awareness and understanding among emitters regarding the benefits and implementation of CCS technologies, a nascent and potentially overburdened Class VI Well permitting process, including concerns about the EPA's capacity to efficiently handle a surge in application reviews, and the potential for localized opposition to CCS projects and associated infrastructure.

Successful CCS solutions in the U.S. will require clear and compelling commercial incentives to drive emitter adoption. Furthermore, strategic partnerships between reliable and experienced stakeholders, encompassing technology providers, project developers, and industrial emitters. Future CCS projects should prioritize comprehensive technical and logistical modeling to ensure project feasibility and address potential operational challenges. Early and transparent engagement with regulatory agencies and local communities is recommended to navigate the permitting process effectively and mitigate delays and potential opposition.

This study outlines critical considerations for CCS developments in the U.S. While federal policies, like the Inflation Reduction Act (IRA) offer significant incentive, the nascent state of state-level support and uncertainties in the Class VI Well permitting process, coupled with risks related to incentives, emitter knowledge, and local opposition, require careful consideration. The primary recommendations emphasize the need for clear commercial drivers, strong partnerships, thorough technical planning, and proactive stakeholder engagement to ensure the successful and widespread deployment of CCS as a vital tool for industrial decarbonization and the achievement of national climate goals.

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1. Introduction

Carbon capture and storage (CCS) is a critical technology for significantly reducing greenhouse gas emissions, especially for hard-to-abate sectors like heavy industry. It involves capturing carbon dioxide (CO_2) from the air through Direct Air Capture (DAC), or from a single point source emitter (e.g., steel, aluminum, power generation, pulp & paper), and securely storing the captured emissions underground. The process of storing the captured CO_2 can be done using both short-term and long-term approaches. Long-term storage strategies, through things like geologic storage, require significant capital expenditures, multilateral coalitions, and innovative technology. However, permanent CCS solutions are recognized as essential for achieving global climate targets.

If the United States is to reach net-zero emissions by 2050, it must reduce greenhouse gas emissions by 50–52% below 2005 levels by 2030. Industrial processes, which account for 23% of the nation's total direct greenhouse gas emissions (U.S. Environmental Protection Agency, 2022), therefore require particular attention. However, many of these industries remain difficult to decarbonize with existing technologies due to their heavy reliance on fossil fuels and the technical constraints inherent in their operations, emphasizing the critical need for effective CCS solutions.

CCS enables significant emissions reduction potential in hard-to-abate sectors that would otherwise struggle to decarbonize. Internationally, several CCS projects have already demonstrated commercial viability. As of last year, 50 CCS projects were operational, another 44 under construction, and another 534 planned (Global CCS Institute, 2024). Notable examples include Canada's Quest CCS Project, active since 2015, which captures and stores approximately one million tons annually from industrial hydrogen production (Shell Canada, n.d.).

Despite successful international examples, CCS adoption in the United States has been limited by several factors, including complex policy landscapes, inadequate infrastructure, significant capital costs, and uncertain financial incentives.

To address these challenges, this study conducted a comprehensive review of state and federal CCS policies, evaluated the permitting process requirements applicable to CCS projects, and aggregated emissions data for industrial facilities (e.g., iron, steel, pulp and paper, etc.) in targeted U.S. states. A framework was developed to evaluate and prioritize potential CCS adopters based on key criteria such as emissions volume, infrastructure readiness, and regulatory environment. In addition to generating a ranked list of high-priority emitters, the project also produced detailed guidance for engaging with key stakeholders, including federal agencies and local communities. This work aims to support the broader deployment of CCS and contribute to the acceleration of industrial decarbonization in the United States.

2. Methodology

The project had three primary workstreams: U.S. policy research, EPA Underground Injection Control (UIC) program and Class VI Well permitting research, and emitter data collection, scoring, and ranking. These workstreams were designed to provide a comprehensive foundation for evaluating the feasibility and prioritization of CCS deployment across the U.S.

The first workstream focused on understanding the federal and state policy landscape relevant to CCS. This began with secondary research using publicly available databases, legislative documentation, and institutional reports to identify and analyze existing and proposed policies impacting the CCS industry. To further deepen the understanding of evolving state-level CCS frameworks, the research team conducted primary interviews with a legal scholar, industry community representative, and officials from relevant local government departments and agencies. These engagements provided first-hand insights into ongoing policy developments, regulatory interpretations, and anticipated legislative trends that may not yet be publicly documented.

The second workstream focused on the Class VI Well permitting process, which is critical for geologic CO_2 sequestration projects. In 1974, Congress passed the Safe Drinking Water Act. This authorized EPA to set regulations and standards for sources of drinking water, including critical protections for Underground Sources of Drinking Water (USDWs), which hold 38% of the drinking water in the U.S. (U.S. Environmental Protection Agency, n.d.). Under the EPA's Underground Injection Control (UIC) Program, Class VI Well regulations establish rigorous standards for safely injecting and permanently storing carbon dioxide in deep underground rock formations, aiming to prevent CO_2 leaks that could harm underground sources of drinking water or escape back into the atmosphere (U.S. Environmental Protection Agency, n.d.). Following an initial review of EPA documentation and scholarly literature, the team conducted targeted outreach to technical experts, including academics, nonprofits, and public sector representatives, who are directly involved in Class VI Well permitting. These interviews offered valuable insights into procedural nuances, technical requirements, and common permitting challenges, which are often underrepresented in formal documentation. Furthermore, the team reviewed existing Class VI Well applications materials, published on the EPA's website, to identify primary reasons for delays which would extend permitting process timelines. The team also developed a community engagement protocol based on best practices published by the EPA.

The third workstream involved identifying and assessing industrial emitters that are viable candidates for CCS implementation. Emissions data were collected from publicly available sources, including EPA databases and state environmental agency reports. To address data gaps at the facility level, the research team contacted companies directly to gather detailed emissions profiles and assess organizational interest in CCS adoption. This outreach was essential in acquiring non-public information and in understanding the industry's readiness and openness to engage in CCS initiatives.

Together, these three workstreams supported a robust and multi-dimensional analysis. By combining secondary data review with and primary stakeholder and expert outreach, this methodology enabled a nuanced understanding of the regulatory, technical, and market dynamics shaping CCS deployment in the United States.

3. Policy Landscape for CCS in the U.S.

3.1 Federal Policies

The United States federal government has increasingly prioritized CCS technologies as essential tools for achieving greenhouse gas emission reduction targets. Several legislative developments, particularly recent policies, have significantly improved the conditions for broader CCS adoption.

Among these, the Inflation Reduction Act (IRA) of 2022 notably enhanced the existing Section 45Q tax credit for carbon capture projects (Global CCS Institute, 2023). Specifically, the IRA increased the tax credit value to $85 per metric ton of CO_2 for industrial point-source projects, up from the previous rate of $50 per metric ton. For Direct Air Capture (DAC) facilities, the act substantially increased the credit to $180 per metric ton of captured CO_2 from the prior rate of $50 per metric ton (U.S. Congress, 2022). These increased tax incentives significantly offset initial capital and operational costs associated with CCS projects, markedly improving the economic feasibility of adopting CCS technologies across various industries.

Furthermore, the IRA relaxed the minimum annual capture thresholds for eligibility. Previously set at 100,000 metric tons of CO_2 annually, the thresholds were reduced to 12,500 metric tons annually for industrial emitters and 1,000 metric tons annually for DAC facilities (U.S. Congress, 2022). This reduction broadens the scope of qualifying facilities, enabling smaller-scale and more innovative CCS projects to access these crucial incentives, thereby stimulating broader industry participation.

Additionally, the IRA introduced direct payment and transferability options, providing substantial financial flexibility (U.S. Congress, 2022). This innovation allows tax-exempt entities, such as local governments, to directly claim tax credits, which was previously challenging due to their tax-exempt status. Moreover, these provisions offer more avenues for project developers and investors to monetize tax credits, facilitating greater investment and partnership opportunities in CCS initiatives.

The act also extended the construction commencement deadline for eligible projects from 2026 to 2033 (U.S. Congress, 2022), providing project developers with additional planning and implementation timeframes to meet qualifying requirements. This extension ensures that a greater number of projects, including complex and large-scale initiatives, can take advantage of the tax incentives offered, supporting sustained growth in the CCS industry.

Additionally, the passage of the bipartisan Infrastructure Investment and Jobs Act (IIJA) infused nearly $12 billion into carbon reduction and removal programs, $2.1 billion of which is authorized for the build-out of pipelines to move the CO2 from where it's captured to where it's stored (Cummings, 2022).

Recent EPA regulations have further supported CCS deployment. In April 2024, the EPA finalized the Carbon Pollution Standards for fossil fuel-fired power plants, mandating significant reductions in carbon emissions and explicitly identifying CCS as a viable compliance method (U.S. Environmental Protection Agency, 2024). These regulations drive power sector decarbonization by integrating CCS technology into existing and future power generation facilities.

Collectively, these federal policies create a robust framework that addresses previous economic and technical challenges, setting a favorable stage for enhanced industrial participation and the widespread adoption of CCS technologies.

3.2 State-Level Policies

In addition to federal incentives, state-level policies play a significant role in promoting and shaping the deployment of CCS technologies within the United States. States have developed diverse approaches to support CCS implementation, including regulatory frameworks, financial incentives, mandates, and supportive infrastructure developments. These measures are critical in addressing unique regional considerations and driving localized adoption of CCS.

State-level CCS policies typically fall into several categories, such as tax incentives, grant programs, regulatory clarity for pore space ownership, pipeline infrastructure support, and carbon emissions trading schemes (IEA, n.d.). These policies aim to reduce barriers and risks associated with CCS projects, enabling broader industrial and economic participation at the state level.

To evaluate the impact of state-level policies on the CCS industry, each policy was categorized as positive, neutral, or negative. This assessment was based on four key criteria: financial incentives, regulatory clarity, infrastructure support, and policy maturity.

More specifically, policies were considered positive if they offered direct incentives such as tax credits or grants, provided clear permitting pathways, and supported infrastructure development.

Neutral policies generally expressed support for CCS but lacked specific, actionable measures or were still in development. Negative classifications were reserved for policies that presented regulatory uncertainty, lacked financial support, or created barriers to CCS deployment.

California serves as a notable example of progressive and comprehensive state-level CCS policies. The state has implemented a regulatory framework through its Low Carbon Fuel Standard (LCFS) program, which provides substantial financial incentives for capturing and sequestering carbon dioxide. Under the LCFS, CCS projects earn tradable credits that can be sold to industries seeking to meet mandated carbon intensity reduction targets (California Air Resources Board, n.d.).

Additionally, California's Cap-and-Trade Program, administered by the California Air Resources Board (CARB), sets a statewide limit on carbon emissions (California Air Resources Board, n.d.), driving industrial emitters to invest in emission reduction technologies like CCS to comply with stringent emissions caps.

State	Policy / Law	Description and Implications	Impact
California (CA)	Low Carbon Fuel Standard (LCFS)	Aims to reduce GHG emissions from transportation fuels. CCS projects can generate revenue by selling credits under the LCFS.	Strong
Louisiana (LA)	Geologic Sequestration of Carbon Dioxide Act	Grants eminent domain for CO_2 storage projects, assigns long-term site liability to the state, and establishes a CO_2 storage fund for post-closure costs.	Weak
Washington (WA)	Greenhouse Gas Emissions—Cap-and-Invest Program (RCW 70A.65.110)	Promotes offset project development via aggregation and cost-reducing mechanisms; supports CO_2 removal projects.	Moderate
Texas (TX)	Texas Administrative Code, Title 16, Chapter 5	Directs the Railroad Commission to regulate CO_2 geologic storage, clarifies ownership rights, and creates a trust fund for long-term monitoring.	Moderate
North Dakota (ND)	CO_2 Storage Statute	Ensures stored CO_2 under a valid permit is not classified as pollution or nuisance; protects operators from legal risk.	Weak
Nebraska (NE)	Geologic Storage of Carbon Dioxide Act	Establishes a legal framework for CO_2 storage, clarifies pore space ownership, aligns with federal permitting, and creates a storage fund with state liability options.	Moderate
Montana (MT)	An Act Regulating Carbon Sequestration (SB 498)	Authorizes CCUS regulation, confirms surface owner pore space rights, allows state liability transfer, and sets up a storage fund.	Moderate

Table 1. State-level CCS policies in the United States (not an exhaustive list). Source: IEA, CCUS Legal and Regulatory Database (n.d.).

3.3 Pore Space Ownership

Pore space refers to the voids or gaps located between soil, rock, and sediment particles beneath the ground surface of a land area. When these voids are sufficiently large, they can serve as storage for materials such as gases or liquids (Hall, 2024). For CCS developers, securing legal access and rights to this pore space is a prerequisite for CO_2 injection.

Unlike several other countries where subsurface rights are exclusively managed by the national government, ownership of pore space in the U.S. is more fragmented. Depending on the state, it may be held by private landowners, the state government, or federal authorities (Chevron). Most states adhere to one of two prevailing legal doctrines. The more commonly adopted framework, known as the "American Rule," asserts that surface landowners, not mineral rights holders, retain ownership of the pore space beneath their land (Ellis v. Ark. La. Gas Co., 1979).

However, in many U.S. states, ownership of pore space remains legally unresolved (Cummings, 2022). Furthermore, ownership can become more complex as states vary in whether and how pore space interests can be severed and conveyed, and clarification on the relationship between a severed pore space interest and surface and mineral interests (Hall, 2024).

Future CCS developments will need to consider differences in pore space ownership when engaging with federal and local permitting processes.

3.3 Federal Policy Reversals and Their Implications for CCS

In September 2024, then-presidential candidate Donald Trump pledged to rescind all unspent funds under the IRA upon taking office, characterizing the act as part of the “Green New Scam” and asserting that it contributes to inflation without delivering commensurate benefits (Politico, 2024). This commitment has materialized through executive actions aimed at freezing and redirecting funds allocated for climate-related initiatives.

The Trump administration’s intent to rescind unspent funds under the IRA and roll back climate-related initiatives poses substantial challenges to the continuation and expansion of CCS projects. The proposed repeal of these provisions threatens to undermine the financial viability of both existing and planned CCS initiatives.

Following the administration’s directives, federal agencies have initiated a suspension of climate-related grants and funding programs established under the IRA. In February 2025, the EPA continued to withhold funds despite court orders mandating their release, leading to significant delays and uncertainty for projects reliant on federal support (Politico, 2025).

The CCS industry faces considerable uncertainty because of these policy reversals. Projects that were financially structured around the incentives provided by the IRA are now at risk. For instance, Summit Carbon Solutions, which aims to develop a large-scale CO_2 pipeline network in the Midwest, has indicated that the potential repeal of the 45Q tax credit would necessitate a comprehensive reassessment of the project’s economic feasibility (Reuters, 2024).

Moreover, the broader energy sector is experiencing shifts in investment patterns. While some companies remain committed to emission reduction strategies to meet international market demands and corporate sustainability goals, the lack of federal support may deter new entrants and slow the pace of CCS deployment (IEA, 2021).

It is important to note that the majority of the research and analysis for this project is based on rules, regulations, and legislative frameworks in effect up to the year 2024. Consequently, recent policy changes beyond this timeframe under the Trump administration may not be fully reflected in this analysis. Stakeholders and project developers should therefore remain responsive to ongoing policy developments to ensure accurate risk assessment and strategic planning.

4. Class VI Well Application Process

The study focused on three areas of work surrounding the Class VI Well permit application process. These workstreams ultimately highlighted the importance of prioritizing early engagement with the EPA before submitting well applications. Furthermore, quantitative categorization of existing well applications shed light on which issues within application materials most frequently led to approval delays.

The first workstream was focused on expert interviews, including a discussion with a major startup accelerator focused on the carbon removal industry provided valuable insights into current industry challenges, the landscape of major players, available public data sources, and existing commercial incentives for emitters to utilize carbon sequestration technologies. These interviews helped to contextualize the practical and economic factors influencing the deployment of Class VI Wells.

The second workstream involved analyzing publicly available Class VI Well application materials from the EPA database were undertaken. This review aimed to categorize the leading causes for delays in the application review process, specifically focusing on the frequency and nature of Requests for Additional Information (RAIs) issued by the EPA. The insights gained from this analysis will help identify critical areas of focus for future application submissions to potentially expedite the permitting timeline.

Finally, the team developed community engagement guidelines for CCS projects based on based on the EPA’s Public Participation Guide. We recommend that developers plan and budget for public involvement, including thorough identification of communities that will be impacted by the CCS projects. Additionally, developers should engage in public outreach, provide opportunities for feedback, respond timely to inquiries, and offer technical and financial assistance to facilitate public participation.

Detailed Class VI Well information, application guidelines, and technical tools can be found on the EPA's website.

5. Emitter Identification and Analysis

5.1 Key Criteria for Identifying Viable Emitters

Identifying suitable emitters for CCS requires an in-depth assessment of multiple technical, economic, environmental, regulatory, and infrastructural factors (IEA, 2020; Global CCS Institute, 2021). Effective emitter identification ensures CCS project viability for both CCS operators and industrial customers assessing the critical factors, including following.

CO_2 emission levels

A primary factor for emitter prioritization is the volume of CO_2 emissions produced by their facilities. Industries with substantial emission outputs, such as power generation, cement manufacturing, steel production, and chemical processing, typically represent the most viable candidates for CCS due to their significant potential for emissions reductions (IEA, 2020). Sites with lower emissions volumes may not represent economically viable opportunities.

Proximity to storage sites

Another essential factor is the geographical proximity of emitters to suitable geological formations capable of securely storing CO_2 through geologic storage (GS). Facilities close to these storage locations typically encounter fewer logistical and technical challenges and require less capital investment. Shorter transportation distances reduce the costs and complexity associated with CO_2 transport and storage, thereby enhancing project feasibility (Global CCS Institute, 2021).

Pipeline infrastructure

Preexisting pipeline infrastructure, either for CO_2 or for natural gas, also significantly impacts CCS project viability. Emitters located near established or planned pipeline networks can considerably reduce capital investments and operational complexity (U.S. Department of Energy, 2019). Existing pipelines also serve as an indication of state and local attitudes toward future infrastructure permitting development.

Corporate willingness

Assessing the financial and corporate willingness of emitters to adopt CCS is equally critical. Companies with stable financial positions, defined corporate sustainability goals, a history of participation in environmental initiatives, and eligibility for economic incentives such as the Section 45Q tax credit are likely to be more receptive and proactive toward adopting CCS technology (U.S. Environmental Protection Agency, 2022). Understanding a company's incentives and willingness allows CCS operators to prioritize partnerships with committed and financially capable industry players.

Policies and incentives

State-level CCS policies and incentives are also pivotal in determining emitter viability. States offering robust financial incentives, clear regulatory guidance, and comprehensive CCS-supportive legislation provide a more favorable environment for CCS investments. Such states are likely to host more viable CCS opportunities, as supportive legislative frameworks significantly decrease regulatory uncertainties and improve economic feasibility (Interstate Oil and Gas Compact Commission, 2017).

5.2 Weighted Scoring System

To systematically prioritize potential emitters, a weighted scoring method is recommended (International Energy Agency, 2020; Global CCS Institute, 2021). This approach involves assigning weights to each criterion based on their relative significance, reflecting specific project or regional considerations.

However, due to the limited availability of data for certain criteria, this analysis focuses primarily on four key factors: emission levels, proximity to suitable geological storage sites, presence of nearby pipeline infrastructure, and state-level CCS policies and incentives.

Each criterion was assessed using a scoring rubric that assigns values on a 0 to 10 scale. Rather than using a continuous proportional scale, the rubric employs clearly defined brackets for each criterion. This bracketed approach ensures clarity and consistency, enabling evaluators to categorize emitters in a standardized way that aligns with industry thresholds. It also simplifies the scoring process, especially when analyzing a large dataset of potential emitters, and enhances comparability across facilities.

For example, the emissions criterion, which is the most heavily weighted at 40%, scores facilities based on annual CO_2 output: 0 points for less than 50,000 tons, 3 points for 50,000 to 100,000 tons, 6 points for 100,000 to 500,000 tons, and 10 points for more than 500,000 tons. These thresholds reflect operational realities in emissions-intensive sectors such as cement, steel, and chemical manufacturing.

Proximity to geological storage sites, weighted at 25%, is scored from 0 to 10 based on the distance between the facility and a viable storage location. Facilities within 5 kilometers of a storage site receive the highest score of 10, as proximity minimizes transportation costs and logistical hurdles. Conversely, those farther than 20 kilometers score lowest due to higher infrastructure demands. Close alignment of emitter facilities with storage sites is critical for project viability, as it directly enhances economic efficiency and reduces operational complexities.

The third criterion, pipeline infrastructure, is weighted at 20%. Facilities located within 5 kilometers of existing or planned CO_2 pipelines receive 10 points, while those more than 20 kilometers away score a 0. This reflects the significant cost and complexity associated with pipeline construction and integration.

The final criterion, state-level CCS policy and incentive environment, is assigned a 15% weight. States offering robust and clearly articulated incentives and regulatory frameworks score higher, as these environments reduce uncertainty and encourage investment. Facilities in states with minimal or unclear support for CCS receive lower scores.

Criteria	Measurement Method	Scoring Rubric (0-10)	Weight (%)
Emission Levels	Annual CO_2 emissions (metric tons)	0: <50,000 tons; 3: 50,000-100,000 tons; 6: 100,000-500,000 tons; 10: >500,000 tons	40
Proximity to Geological Storage Sites	Distance to suitable geological storage sites (km)	0: >20 km; 4: 10-20 km; 7: 5-10 km; 10: <5 km	25
Nearby Pipeline Infrastructure	Distance to existing or planned pipeline networks (km)	0: >100 km; 5: 50-100 km; 8: 20-50 km; 10: <20 km	20
State-level CCS Policies and Incentives	Availability and clarity of state CCS incentives and regulations	0: No support or unclear policies; 5: Moderate support and clarity; 10: Strong incentives and clear regulations	15

Table 2. Emitter scoring matrix. Values are illustrative.

By applying this weighted, bracketed scoring methodology, the evaluation framework facilitates the creation of a prioritized list of emitters that are best positioned for CCS adoption. The design ensures objectivity and scalability while also capturing critical factors that drive the practical deployment of CCS technologies.

Emitter	State	Emissions volume	…	Sector	Score
Company 1	XXX	XXX	…	P&P	8.7
Company 2	XXX	XXX	…	Aluminum	8.2
…	…	…	…	…	…
Company n	XXX	XXX	…	Steel	5.5

Table 3. Sample view of the final scoring table. Values are illustrative.

6. Conclusion

While international projects have demonstrated the technical and commercial viability of CCS, adoption in the United States remains constrained by policy fragmentation, permitting inefficiencies, infrastructure limitations, and uncertain commercial incentives. Although recent federal initiatives, such as the IRA and the Bipartisan Infrastructure Act, have significantly strengthened the financial landscape for CCS, their long-term impact remains uncertain due to evolving political dynamics.

To assess the readiness of the U.S. for widespread CCS deployment, this project employed a three-part analytical framework: a comprehensive review of the federal and state policy environment, an in-depth analysis of the EPA Class VI Well permitting process, and the development of an emitter identification and scoring model. Findings indicate that federal incentives provide a foundational market signal, but significant gaps remain in the consistency and maturity of state-level policy frameworks. The Class VI Well permitting pathway, while designed to uphold environmental integrity, often contributes to project delays as a result of frequent RAIs and limited agency capacity. Public acceptance also emerges as a critical factor in project viability, underscoring the need for early, transparent, and inclusive community engagement.

The emitter prioritization framework developed in this study offers a replicable tool to identify and rank high-potential CCS customers. By evaluating emissions volumes, proximity to geological storage, pipeline infrastructure, and the strength of state-level CCS policies, the framework enables more efficient allocation of resources and facilitates strategic partnerships. Preliminary results suggest increasing interest among industrial emitters, though sustained engagement and more consistent incentive structures are needed to convert this interest into investment.

To accelerate CCS deployment in the United States, several next steps are recommended. States should be encouraged to enact clear pore space legislation, align permitting procedures with federal guidelines, and establish targeted incentives to promote CCS adoption. The Class VI Well application process would benefit from standardized templates, improved transparency, and expanded agency capacity to reduce permitting timelines. The emitter framework could be refined to incorporate financial indicators, operational readiness, and emissions intensity. In parallel, stakeholders should remain responsive to federal policy changes, diversify financing strategies, and cultivate multi-stakeholder coalitions that can mitigate project risks and foster cross-sector collaboration.

Ultimately, CCS can only scale effectively if the broader enabling environment spanning policy, regulation, infrastructure, and market demand, is coherent, predictable, and robust. Strong collaboration between public and private sectors, reinforced by transparent governance and early community engagement, will be essential to advancing CCS from a promising innovation to a central component of the U.S. decarbonization strategy. This project contributes to that goal by providing actionable insights and strategic frameworks to inform the next wave of CCS development.

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