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Taxpayer Liabilities from Carbon Sequestration: Archer Daniels Midland (ADM) Case Study

Introduction

Carbon capture and storage (CCS) projects can pose great financial risks for taxpayers, as well as health and safety risks for nearby communities. Leaks at Archer Daniels Midland's (ADM) sequestration facility—the first commercial sequestration site in the country and a recipient of significant federal subsidies—highlight the potential long-term liabilities and fiscal pitfalls of CCS for taxpayers.

ADM's facility captures CO₂ from its Decatur Corn Processing Plant, an ethanol production facility in Illinois, and injects it underground into the Mount Simon Sandstone Formation.¹ Since CO₂ injections began more than seven years ago, ADM has sequestered more than 4.5 million metric tons.² But on September 13, 2024, news broke that the site leaked 8,000 metric tons of liquid CO₂ into the underground rock formation just 5 to 6 miles from the boundary of the Mahomet Aquifer³⁴—raising serious concerns for the nearly one million Illinois residents who rely on the aquifer as their sole source of drinking water.⁵

ADM's project has received substantial federal support. The Department of Energy (DOE) awarded ADM \$141.4 million in grants for the project's development.⁶ ADM's commercial operations also build on the Illinois Basin-Decatur Project (IBDP), a DOE-funded initiative led by the University of Illinois that received \$66.7 million in taxpayer subsidies to test commercial-scale deployment of carbon sequestration.⁷ Like the current project, the IBDP used CO₂ from ADM's ethanol production facility and injected it at the same site. That pilot project concluded in 2014 after injecting one million metric tons of CO₂.⁸ ADM now uses the IBDP's injection and verification wells to monitor its commercial operations.

ADM also likely benefited from the lucrative 45Q tax credit, which offered \$20 for every ton of CO₂ sequestered.⁹ According to data reported by ADM to the Environmental Protection Agency (EPA), the facility sequestered nearly 3 million metric tons between 2017 and 2022—likely generating around \$70 million in 45Q payouts.¹⁰ However, because the sequestration operation sources CO₂ from ADM's ethanol plant, whose CCS equipment was installed before 2018, ADM may no longer be eligible for 45Q unless the ethanol plant installs additional CCS equipment or the sequestration facility begins receiving CO₂ from other qualifying capture facilities.¹¹

The Illinois Basin-Decatur Project

In 2003, the DOE launched the Regional Carbon Sequestration Partnership Program to advance CO₂ storage technologies, identify potential storage locations, and set the stage for commercial-scale deployment.¹² The program was organized around seven partnerships covering different regions of the country. In December 2007, as part of the Development Phase designed to demonstrate large-scale carbon sequestration projects, DOE awarded \$66.7 million to the Midwest Geological Sequestration Consortium (MGSC) for the IBDP.¹³ The project conducted large-volume CO₂ storage tests in the Mount Simon Sandstone Formation within the Illinois Basin. ADM supplied the CO₂ from its ethanol plant in Decatur, Illinois, and hosted the project at its facility.

The injection well (CCS#1) was drilled in 2009, followed by the verification well (VW#1) the following year. In March 2011, MGSC received a Class I Underground Injection Control (UIC) permit from the Illinois Environmental Protection Agency. This permit was later reclassified as a Class VI permit when the EPA finalized the Class VI regulatory program. The EPA completed its review of the injection facility's specifications and approved operations in October 2011, with injection beginning the following month.¹⁴

The IBDP injected CO₂ over a three-year period, from November 17, 2011 to November 26, 2014. During that time, a total of one million metric tons of CO₂ was injected into the sandstone formation at depths between 5,545 and 7,051 feet.¹⁵ The IBDP laid the groundwork for ADM's commercial project.

ADM Commercial Project

In October 2009—nearly two years after the MGSC received funding for the IBDP—ADM was selected to participate in DOE's Illinois Industrial Carbon Capture and Storage (ICCS) program, funded through the American Recovery and Reinvestment Act of 2009.¹⁶

ADM Sequestration Timeline

Dec. 2007	Illinois Basin-Decatur Project (IBDP) awarded \$66.7 million through DOE's Regional Carbon Sequestration Partnership Program
Oct. 2009	ADM's commercial project selected for Phase 1 of DOE's Illinois Industrial Carbon Capture and Storage (ICCS) program - \$141.4 million awarded in total
Nov. 2011	Illinois Basin-Decatur Project begins injections
Nov. 2014	Illinois Basin-Decatur Project ends injection
April 2017	ADM's commercial project begins injections
Sept. 2020	Verification well begins having intermittent malfunctions
Jan. 2022	All verification well gauges begin malfunctioning
Oct. 2023	ADM finds corrosion on its verification well at 5,000 feet and stops its use
Mar. 2024	ADM discovers 8,000 metric tons leaked at 5,000 feet
June 2024	EPA conducts onsite inspection and becomes aware of the leak
Sept. 2024	Public find out about the leak from a news story on September 13 th . On September 24 th , ADM detects a potential leak in its other verification well and stops injections

ADM was one of 12 projects selected for Phase 1 funding and one of only three to advance to Phase 2. In total, ADM received approximately \$141.4 million in DOE grants to support its commercial-scale CCS project.

The commercial project is designed to capture CO₂ from ADM's Decatur Corn Processing Plant and transport it 1.2 miles to a dedicated injection well. The commercial injection well (CCS#2) is located less than one mile from the IBDP's injection well (CCS#1). This project is authorized to inject CO₂ into the Mount Simon Sandstone Formation at depths between 5,553 feet to 7,043 feet.¹⁷ ADM continues to use the IBDP's original injection and verification wells to monitor its commercial project.

ADM submitted its application for a Class VI UIC permit in mid-2011, and the permit was approved in September 2014.¹⁸ This marked only the second-ever Class VI permit issued by the EPA, following the FutureGen 2.0 project. Commercial injection operations at the ADM site started on April 7, 2017.¹⁹

CO₂ Leaks Discovered

On September 13, 2024, news outlets first reported that the ADM sequestration site had leaked 8,000 metric tons of liquid carbon dioxide into the underground rock formation²⁰—an incident that occurred in March of that year. The leak raised fears about possible contamination of the Mahomet Aquifer, the only drinking water source for nearly one million residents in Central Illinois.

As later revealed in a public letter to the EPA, ADM first became aware of a potential issue four years earlier but failed to alert the public or surrounding community of this risk.²¹ In 2020, a gauge in the commercial project's verification well (VW#2) began experiencing intermittent electrical malfunctions.²² By January 2022, all of the gauges in VW#2 had failed. In October 2023, while attempting to repair the equipment, ADM discovered corrosion on tubing roughly 5,000 feet underground. The company subsequently took VW#2 out of service and began relying on its remaining monitoring network: CCS Well #1, CCS Well #2, and VW#1.

Limited Oversight of Sequestration Wells

- **Underground Injection Control (UIC) Program:** This program oversees fluids injected underground, including CO₂, to ensure they do not contaminate underground sources of drinking water (USDWs). The Class VI injection well program regulates the injection of CO₂ for long-term storage through geological sequestration. The EPA directly administers the Class VI program in all states except North Dakota, Wyoming, Louisiana, and West Virginia, which have "primacy" and administer the program in lieu of the EPA.
- **Greenhouse Gas Reporting Program:** Certain sources of greenhouse gases are required to report emissions data, including wells injecting CO₂ underground for geologic sequestration.

In March 2024, ADM discovered a pool of fluid near VW#2 at a depth of 5,000 feet. ADM later confirmed that “the unexpected fluid we discovered related to historical impacts from the previously identified VW#2 corrosion condition.” The company also stated that it had “confirmed that the unique fluid conditions that caused corrosion at VW#2 do not exist at any of the other wells.” EPA likely became aware of the leak three months later during their onsite inspection in June.

On September 19, less than a week after news of the first leak broke, the EPA announced a proposed order requiring ADM to “take compliance measures at its wells.”²³ The agency alleged that ADM violated its permit by allowing injected fluid to migrate into an unauthorized zone and by failing to monitor the injection well in accordance with its permit. Then, on September 27, ADM notified the EPA that it had discovered a second suspected leak—this time in the IBDP verification well (VW#1) at a depth of 5,000 feet. ADM temporarily paused all CO₂ injections on September 24.²⁴

ADM Silent on CO₂ Leaks During Land Easement Negotiations

In 2023, after VW#2’s gauges began malfunctioning but before the public was notified, ADM sought an easement to sequester captured carbon 1.25 miles underneath land owned by the City of Decatur. As part of the negotiation process, ADM agreed to pay \$450 per acre for subsurface storage rights, totaling \$1.2 million.²⁵ Negotiations continued for nearly a year, during which time ADM discovered the leak. However, neither the Decatur community nor the broader public was informed. On May 3, 2024—two months after the leak was detected and four months before the news would be made public—the City of Decatur finalized an agreement allowing ADM to sequester CO₂ beneath Lake Decatur, at a depth of 4,500 feet.²⁶

Recent Actions

On July 18, 2024 the Governor of Illinois signed into law the *Safety and Aid for the Environment in Carbon Capture and Sequestration Act (SAFE CCS Act)*.²⁷ The law—supported by ADM²⁸—sets regulations around CCS, including new requirements for monitoring sequestration, a two-year moratorium on new pipelines, and establishment of a Carbon Dioxide Sequestration Fund. Notably, the SAFE CCS Act permits the use of eminent domain once 75% of surface area rights above a prospective sequestration site have been secured—a provision opposed by groups such as the Illinois Farm Bureau, which believes the “just compensation” for landowners required under the law is insufficient.²⁹

In the event of contamination, current legislation requires CCS operators to provide an alternate source of drinking water within 24 hours and a supply of water for other uses within 30 days.³⁰ However, groups have raised concerns about operators' ability to meet this requirement—particularly in cases like the Mahomet Aquifer, where providing drinking water to nearly one million Illinois residents within 24 hours would be financially and logistically unviable. In 2015, a coalition of Illinois communities and the University of Illinois at Urbana Champaign petitioned the EPA to designate the Mahomet Aquifer as a sole source aquifer. In their petition, they estimated that relying on alternative surface water and groundwater sources would be “economically infeasible” for the vast majority of community water suppliers.³¹ These concerns have intensified following the announcement of ADM’s leak.³²

In January 2025, the Champaign County Board enacted a 12-month moratorium on carbon sequestration activities near the Mahomet Aquifer.³³ Board members stated the moratorium would give them time to consider additional regulations and restrictions on carbon sequestration, particularly around the Mahomet Aquifer.³⁴

A month later, in February 2025, the Illinois state legislature introduced legislation prohibiting future sequestration projects over sole source aquifers, such as the Mahomet, and over their recharge areas, which help replenish groundwater supplies.³⁵ CO₂ contamination in recharge areas can spread to aquifers because the two are hydrologically connected. Amendments have since been made to exclude recharge areas from the bill, allowing a proposed sequestration project by One Earth Sequestration LLC to proceed.³⁶ The bill would also not affect existing Class VI wells approved before 2023, such as ADM’s.

Conclusion

The ADM carbon sequestration project underscores the risks of moving forward with commercial-scale carbon capture. From delayed leak disclosures and regulatory violations to unanswered questions about the risks of long-term storage, the project reveals how quickly public trust—and taxpayer dollars—can be put in jeopardy. Tax dollars should not fund private gains at the expense of local communities. And in the case of critical health and safety emergencies stemming from sequestration projects, such as groundwater contamination, federal taxpayers could bear some of the costs of both immediate and long-term recovery, especially in states that have not adopted legislation or regulations on sequestration liability.

As carbon capture initiatives expand nationwide, policymakers must ensure that communities aren’t kept in the dark and that taxpayers aren’t left footing the bill for projects that fail to deliver on safety and accountability.

¹ Archer Daniel Midlands (ADM), “ADM and Carbon Capture and Storage,” accessed March 20, 2025. <https://www.adm.com/en-us/standalone-pages/adm-and-carbon-capture-and-storage/>

² *ibid.*

³ Carlos Anchondo, “First US CO₂ injection well violates permit — EPA,” E&E News, September 13, 2024. <https://www.eenews.net/articles/first-us-co2-injection-well-violates-permit-epa/>

⁴ Environmental Protection Agency (EPA), “Mahomet Sole Source Aquifer Project Review Area,” Feb. 10, 2015. <https://www.epa.gov/sites/default/files/2016-02/documents/mahomet-ssa-project-review-area-map-20150210.pdf>

⁵ Illinois State Water Survey Prairie Research Institute, “East Central Illinois,” accessed April 2, 2025. <https://www.isws.illinois.edu/illinois-water-supply-planning/east-central-illinois-basin>

⁶ Peter Folger, “Carbon Capture and Sequestration: Research, Development, and Demonstration at the U.S. Department of Energy,” Congressional Research Service, February 10, 2014. <https://www.congress.gov/crs-product/R42496>

⁷ Green Car Congress, “DOE Awards \$66.7 Million for Large-Scale Carbon Sequestration Project; Ethanol Plant the CO₂ Source,” December 19, 2007. <https://www.greencarcongress.com/2007/12/doe-awards-667.html>

⁸ National Energy Technology Laboratory (NETL), “Carbon Storage Atlas: Midwest Geological Sequestration Consortium,” accessed March 20, 2025. <https://netl.doe.gov/coal/carbon-storage/atlas/mgsc/phase-III/ibdp>

⁹ \$20 per ton is the applicable amount for facilities placed in service before Feb 9, 2018, and ensure that the captured carbon is geologically sequestered. Source: 26 U.S. Code § 45Q.

¹⁰ Calculation conducted by TCS using EPA FLIGHT data, assuming ADM claimed and received the 45Q credit for every reported sequestered metric ton of CO₂ from 2017-2022. Annual credit amounts are pulled from IRS Form 8933 and Instructions for Form 8933 for years over the covered period. Source: EPA, “Illinois – Direct GHG Emissions of Selected Gases Reported by Sector in Metric Tons of CO_{2e} (2017-2023),” accessed April 25, 2025.

<https://ghgdata.epa.gov/ghgp/main.do#/trend/?q=&st=IL&bs=&fid=&sf=11001100&ds=A&yr=2023&tr=current&cyr=2023&ol=0&sl=0&rs=ALL>

¹¹ Facilities placed in service before Feb 9, 2018, will no longer be eligible for 45Q starting the earlier of January 1, 2023 or the end of the calendar year the IRS and EPA certified that during the period beginning after October 3, 2008, facilities have claimed a total of 75 million tons of carbon. The IRS certified that the cap was reached in 2022. Source: 26 U.S. Code § 45Q(g).

¹² NETL, “Regional Carbon Sequestration Partnership (RCSP),” accessed April 25, 2025.

<https://www.netl.doe.gov/carbon-management/carbon-storage/RCSP>

¹³ Green Car Congress, “DOE Awards \$66.7 Million for Large-Scale Carbon Sequestration Project; Ethanol Plant the CO₂ Source,” December 19, 2007. <https://www.greencarcongress.com/2007/12/doe-awards-667.html>

¹⁴ Green Car Congress, “Large-scale CO₂ injection test begins in Illinois,” November 21, 2011.

<https://www.greencarcongress.com/2011/11/large-scale-co2-injection-test-begins-in-illinois-.html>

¹⁵ Depths at which ADM is authorized to inject under its permit. Source: EPA, “United States Environmental Protection Agency Underground Injection Control Permit: Class VI,” IL-115-6A-0002, December 2014.

https://udr.epa.gov/ords/uicdr/r/uicdr_ext/uicdr-pub/repository-1-details?p15_project_id=130&clear=15

¹⁶ Department of Energy, “Archer Daniels Midland Illinois ICCS Project,” accessed March 20, 2025.

<https://www.energy.gov/fecm/archer-daniels-midland-company>

¹⁷ Depths at which ADM is authorized to inject under its permit. Source: EPA, “United States Environmental Protection Agency Underground Injection Control Permit: Class VI,” IL-115-6A-0001, November 2021.

https://udr.epa.gov/ords/uicdr/r/uicdr_ext/uicdr-pub/repository-1-details?p15_project_id=130&clear=15

¹⁸ Erin Voegelé, “EPA approves permit for ADM’s second CCS well,” Ethanol Producer Magazine, September 29, 2014. <https://ethanolproducer.com/articles/epa-approves-permit-for-adms-second-ccs-well-11495>

¹⁹ ADM, “Part 98 Mandatory Greenhouse Gas Reporting Subpart RR – Geologic Sequestration of Carbon Dioxide: Annual Monitoring Report,” March 25, 2022. https://www.epa.gov/system/files/documents/2022-09/2021_archer_daniels_midland_decaturn_mrv_report.pdf

²⁰ Carlos Anchondo, “First US CO₂ injection well violates permit — EPA,” E&E News, September 13, 2024. <https://www.eenews.net/articles/first-us-co2-injection-well-violates-permit-epa/>

²¹ ADM, “RE: Response to August 14, 2024 Notice,” August 22, 2024. <https://www.adm.com/globalassets/standalone-pages/carbon-capture-and-storage/letter--adm-letter-to-u.s.-epa--8.22.2024.pdf>

²² Michael D. Harris to Mr. Harris, “Response to August 14, 2024 Notice,” August 22, 2024. <https://www.adm.com/globalassets/standalone-pages/carbon-capture-and-storage/adm-letter-to-u.s.-epa-responding-to-nov-082224.pdf>

²³ EPA, “EPA Announces Proposed Order Requiring Archer Daniels Midland Co. to Take Actions to Ensure Safe Operation of its Carbon Sequestration Well in Decatur, Illinois,” September 19, 2024. <https://www.epa.gov/newsreleases/epa-announces-proposed-order-requiring-archer-daniels-midland-co-take-actions-ensure>

²⁴ Todd Davis to Stephen M. Jann, “USEPA Permit Number IL-115-6A-0001 Follow-up Report regarding Preliminary Data,” September 27, 2024. <https://bloximages.chicago2.vip.townnews.com/herald-review.com/content/tncms/assets/v3/editorial/1/96/1964fb1a-803c-11ef-924d-bfecf67f567a/66fc697c6782c.pdf.pdf>

²⁵ Noah Nelson, “Decatur City Council approves ADM carbon capture sequestration, Tillamook plant redevelopment plan,” WCIA Central Illinois News & Weather, March 21, 2023. <https://www.wcia.com/news/decaturn-city-council-approves-adm-carbon-capture-sequestration-tillamook-plant-redevelopment/>

²⁶ David Horn for Decatur City Council, “Why Decatur's carbon sequestration agreement is a disservice to Decatur residents,” accessed March 20, 2025. <https://www.hornfordecatur.org/news/why-decaturns-carbon-sequestration-agreement-is-a-disservice-to-decaturn-residents>

²⁷ “Illinois Senate Bill 1289,” LegiScan, accessed March 20, 2025. <https://legiscan.com/IL/bill/SB1289/2023>

²⁸ Tim Alexander, “Illinois has passed standards for carbon capture storage,” Farm World Online, June 11, 2024. <https://www.farmworldonline.com/News/NewsArticle.asp?newsid=34820>

²⁹ Timothy Eggert, “IFB: Protections fall short in carbon capture, pipeline bill,” Farm Week Now, June 3, 2024. https://www.farmweeknow.com/policy/state/ifb-protections-fall-short-in-carbon-capture-pipeline-bill/article_8025cccc-1ec5-11ef-960a-ef11af47a8d7.html

³⁰ Prairie Rivers Network, “Central Illinois legislators announce intent to file legislation to protect Mahomet Aquifer,” September 10, 2024. <https://prairierivers.org/front-page/2024/09/central-illinois-legislators-announce-intent-to-file-legislation-to-protect-mahomet-aquifer/>

³¹ Petitioners included the Cities of Champaign, Urbana, Delavan, and Gilman; the Town of Normal; the Villages of Savoy, Mansfield, and Mahomet; and the University of Illinois at Urbana Champaign. “The petition concluded that out of 111 community water suppliers that had an available alternative source of surface water, 102 were classified as economically infeasible, 7 were economically possible, and 2 were economically feasible. For the 120 community water suppliers that had an available alternative source of ground water, 92 were classified as economically infeasible, 14 were economically possible, and 14 were economically feasible.” Source: EPA, “Support Document for the Proposed Designation of the Mahomet Aquifer System as a Sole Source Aquifer,” March 2014. <https://www.epa.gov/sites/default/files/2016-02/documents/mahomet-supportdoc-201503.pdf>

³² Protect the Mahomet Aquifer, “Leak at ADM's carbon capture facility underscores need to ban sequestration under Mahomet Aquifer,” September 13, 2024. <https://www.protectthemahomet.com/press-release-adm-leak>

³³ Champaign County Zoning Ordinance No. 2025-1, January 23, 2025. https://www.co.champaign.il.us/planningandzoning/PDF/forms/Ordinance_Zoning_Amendment.pdf

³⁴ Hannah Flayhan, “Champaign County Board votes to temporarily hold off carbon sequestration,” WAND News, updated October 11, 2024. https://www.wandtv.com/news/champaign-county-board-votes-to-temporarily-hold-off-carbon-sequestration/article_1611b66c-877e-11ef-ad4c-df65e70ffcb0.html

³⁵ Illinois General Assembly, Bill Status of SB 1723. Accessed April 17, 2025.

<https://www.ilga.gov/legislation/BillStatus.asp?DocNum=1723&GAID=18&DocTypeID=SB&LegId=160743&SessionID=114&GA=104>

³⁶ One Earth Sequestration, LLC, “Class Vi Permit Application Narrative,” March 2024.

https://udr.epa.gov/ords/uicdr/r/uicdr_ext/uicdr-pub/repository-1-details?p15_project_id=143&clear=15