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ABSTRACT

Carbon capture and storage is being used in an increasing number of locations in the United States as a tool to address climate change, and many more projects are in the planning stages. Although government, industry, and some prominent environmental organizations support the use of CCS, some environmental organizations and many citizens who live in the vicinity of proposed CCS projects oppose CCS. This has prompted several local governments to enact ordinances that attempt to prohibit or regulate CCS. These ordinances take many forms—moratoria, zoning restrictions and setbacks, effective bans, outright bans, construction and operational restrictions, and various other types of regulation. However, these local government ordinances may be vulnerable to attack on grounds that the ordinances are invalid. One potential line of attack is that the local regulations are *ultra vires*, but preemption typically will be a stronger basis for challenging the ordinances. Preemption is a legal doctrine that laws from one level of government *preempt* and thereby render unenforceable certain laws from another level of government. For example, federal law might preempt state and local laws. Further, state law may preempt local law. In both cases, courts and commentators often refer to three types of preemption—express, implied, and field. This Article explores the motivations for opposition to CCS, the types of local regulations that may be used in an attempt to regulate CCS at the local level, and the potential legal challenges to such local regulation.

I. INTRODUCTION

Carbon capture and storage (CCS)[1] is the *capture*[2] of CO_2—either directly from the atmosphere or from industrial emissions—followed by the injection of the CO_2 deep into the subsurface of the earth for permanent *storage*.[3] This process is sometimes called "carbon capture and

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[1] The "carbon" of the phrase "carbon capture and storage" refers to carbon dioxide. *See, e.g.*, Keith B. Hall, *Drafting and Negotiating Instruments to Acquire Pore Space Rights for CCS*, 69 NAT. RES. & ENERGY L. INST. 5-1, 4 (2023); Owen L. Anderson, *Geologic CO_2 Sequestration: Who Owns the Pore Space?*, 9 WYO. L. REV. 97, 97 (2009).

[2] In the context of CCS, to "capture carbon" is to separate CO_2 molecules from other types of molecules in a gaseous mixture. For a discussion of the methods used to separate CO_2 from the other components in a gaseous mixture, see Keith B. Hall, *Carbon Capture and Storage: Models for Compensating Non-consenting Landowners*, 14 SAN DIEGO J. CLIMATE & ENERGY L. 39 (2023).

[3] *Background Information About Geologic Sequestration*, U.S. ENV'T PROTECTION AGENCY (Jan. 19, 2021), https://19january2021snapshot.epa.gov/uic/background-information-about-geologic-sequestration_.html (noting that "the process of injecting carbon dioxide" that has been "captured . . . into deep subsurface rock formations for long-term storage" is a step in "a process frequently referred to as 'carbon capture and storage' or CCS."); *About CCUS*, INT'L ENERGY AGENCY,

sequestration," particularly in older discussions of CCS.[4] CCS is a subset of a broader concept called "carbon capture utilization and storage" or "CCUS."[5]

Various international authorities, such as the United Nation's Intergovernmental Panel on Climate Change and the International Energy Agency advocate the use of CCS as a tool to fight climate change.[6] In the United States, the federal government has promoted CCS under both Democrat and Republican administrations, and the 45Q tax credit included in the Internal Revenue Code provides a financial incentive to engage in CCS.[7] Several states also are encouraging CCS.[8]

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https://www.iea.org/reports/about-ccus [https://perma.cc/6Z9G-ECS3] (referring to "the capture of CO2 from large point sources" or "directly from the atmosphere," and injection of the carbon dioxide "for permanent storage.") (last visited Aug. 7, 2024).

[4] As recently as several years ago, the process was typically called "CO_2 sequestration," "carbon sequestration" or "carbon capture and sequestration." *See, e.g.*, Christopher J. Miller, *Carbon Capture and Sequestration in Texas: Navigating the Legal Challenges Related to Pore Space Ownership*, 6 TEX. J. OIL GAS & ENERGY L. 399, 400–01 (2011). Some sources referred to "CO_2 Sequestration" or "Sequestration of CO_2." *See, e.g.*, Anderson, *supra* note 1, at 101; *cf.* LA. STAT. ANN. § 30:1101 (2009) (statutory scheme enacted in 2009 that is referred to as the "Louisiana Geological Sequestration of Carbon Dioxide Act"). Now, however, it is more common to refer to it as "carbon capture and storage." *See, e.g.*, KY. REV. STAT. ANN. § 353.804(2) (West 2024) (statute enacted in 2021 referring to "carbon capture and storage technology" and "a carbon capture and storage project").

[5] *Carbon Capture, Utilization & Storage*, U.S. DEP'T OF ENERGY, https://www.energy.gov/carbon-capture-utilization-storage [https://perma.cc/QAK4-QPG4] (last visited Aug. 7, 2024) ("Carbon capture, utilization and storage (CCUS), also referred to as carbon capture, utilization and sequestration, is a process that captures carbon dioxide emissions from sources like coal-fired power plants and either reuses or stores it so it will not enter the atmosphere.").

[6] JIM SKEA ET AL., 2022: CLIMATE CHANGE 2022: MITIGATION OF CLIMATE CHANGE, SUMMARY FOR POLICYMAKERS 28–29 (2022) https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC_AR6_WGIII_SummaryForPolicymakers.pdf [https://perma.cc/4S79-D786]; *Cement*, INT'L ENERGY AGENCY, https://www.iea.org/reports/cement [https://perma.cc/QJF6-26AN] (last visited Aug. 7, 2024) ("CCS is also likely to play a critical role in decarbonising cement").

[7] 26 U.S.C. § 45Q(f)(4); 26 C.F.R. § 1.45Q-5. The dollar value of the tax credit was recently increased by the Inflation Reduction Act of 2022, Pub. L. No. 117-169, 136 Stat. 1818.

[8] For example, two states authorize a prospective CCS operator that has obtained certain permits to use eminent domain to acquire subsurface pore space rights. *See* ALA. CODE § 9-17-154 (2024); LA. STAT. ANN. § 30:1108. Statutes in about ten states authorize the use of a process similar to oil and gas field unitization for a CCS operator to acquire authority to use subsurface pore spaces from holdout landowners if the CCS operator already has obtained consent from a majority or, in most of these states, a supermajority, of the landowners. *See* CAL. PUB. RES. CODE § 71461 (2024); IND. CODE § 14-39-2-4 (2024); KY. REV. STAT. ANN. §§ 353.806, .808; MISS. CODE ANN. § 53-11-9 (2024); MONT. CODE ANN. § 82-11-204 (2024); NEB. REV. STAT. §§ 57-1610(13), -1612 (2024); N.D. CENT. CODE § 38-22-10 (2024); UTAH CODE ANN. §§ 40-11-10, -11(h) (West 2024); W. VA. CODE § 22-11B-19 (2024); WYO. STAT. ANN. §§ 35-11-315, -316(c).

However, many individuals oppose CCS projects or CO_2 pipelines being located near them.[9] Reflecting this opposition, some local governments are taking steps to prohibit or restrict CCS projects or CO_2 pipelines within their jurisdictions.[10] This Article discusses local regulation of CCS, addressing such topics as: the motivations for local regulation (Part II of this Article);[11] the types of regulations that have been enacted or which may be enacted (Part III);[12] potential bases for challenging local regulations, including preemption (Part IV);[13] examples of local regulations and statutes or litigation regarding potential preemption of local regulations (Part V);[14] and potential local benefits of CCS that supporters could promote in opposing local restrictions on CCS (Part VI).[15]

II. MOTIVATIONS FOR LOCAL REGULATION

There are various reasons why people might oppose CCS. Several of these are discussed below.

A. Visual Impacts

Some people regard industrial facilities as unsightly. In recent years, some people have opposed rooftop solar, large commercial scale photovoltaic solar, and offshore wind turbines for this reason.[16] Similar opposition can arise to injection disposal facilities. The risk for this sort of opposition is heightened if a proposed facility is planned for areas near neighborhoods or areas that potential opponents regard as scenic.

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9 Indeed, at multiple meetings of a Task Force on Local Impacts of Carbon Capture and Sequestration chaired by the author of this Article, a witness stated that he and his neighbors did not oppose carbon capture and storage, but that they opposed a CCS project being located near them. Video recordings of the meetings are available on the Louisiana State Senate's website. For example, a video recording of the November 6, 2023 meeting is available at *Carbon Capture Sequestration T.F.*, LA. STATE SENATE (Nov. 6, 2023) [hereinafter Nov. 6 Carbon Capture Sequestration T.F.], https://www.senate.la.gov/s_video/VideoArchivePlayer?v=senate/2023/11/110623LICCS.

10 For several examples, see *infra* Part VI.

11 *See infra* Part II.

12 *See infra* Part III.

13 *See infra* Part IV.

14 *See infra* Part V.

15 *See infra* Part VI.

16 *See, e.g.*, Sammy Roth, *Newsletter: Are Solar and Wind Farms Ugly or Beautiful? There's A Lot Riding on the Answer*, L.A. TIMES (May 27, 2021), https://www.latimes.com/environment/newsletter/2021-05-27/are-solar-and-wind-farms-ugly-or-beautiful-boiling-point [https://perma.cc/LR66-QJHJ].

For example, the State of Louisiana has granted a pore space lease to Air Products Blue Energy LLC for use in CCS.[17] The leased area consists of state-owned water bottoms beneath Lake Maurepas, a large lake in Louisiana.[18] Years ago, Lake Maurepas had some oil and gas activity, but in recent years Lake Maurepas has mainly been used for recreation and commercial fishing. Many local residents vehemently oppose the CCS project. They seem to be more worried about feared impacts other than potential effects on their view of the Lake, but the opponents have complained that visible platforms will be constructed on the Lake for the injection wells and monitoring wells.[19]

Concerns about visual impacts could prompt outright opposition or support for requirements that the CCS operator mitigate visual impacts with setbacks (requirements that facilities be at least a specified minimum distance from property lines or some other reference point), fencing, or other screening (such as shrubbery).[20]

B. Fear of Carbon Dioxide Leaks

Some opponents of CCS projects worry about the possibility of CO_2 leaks. Their principal fear is not about small leaks that might lessen the climate benefit of a CCS project. Rather, they are worried about leaks that are large enough to be dangerous. Potential leakage pathways include subsurface seeps, a failure of containment at the injection well, a failure of containment at some other well, or a pipeline leak.

A small leak would not be dangerous to public health. People encounter carbon dioxide in small concentrations at all times. Carbon

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17 A copy of the agreement is available on the website of the Louisiana Department of Energy and Natural Resources at LA. STATE MINERAL & ENERGY BD., RESOLUTION #21-10-051 (2021) [hereinafter RESOLUTION #21-10-051], https://www.dnr.louisiana.gov/assets/OMR/media/forms_pubs/CS01A.pdf [https://perma.cc/HT2H-N47L]. Copies of other pore space agreements entered by the State are available at *Special Notices and Announcements*, STATE OF LA., DEP'T OF ENERGY & NAT. RES., https://www.dnr.louisiana.gov/index.cfm/page/168 [https://perma.cc/FDU6-SUH2] (last visited Aug. 7, 2024).

18 *See* "Carbon Dioxide Storage Agreement," entered between the State of Louisiana and Air Products Blue Energy LLC on October 1, 2021, available at RESOLUTION #21-10-051, *supra* note 17, at 3, exhibit C, https://www.dnr.louisiana.gov/assets/OMR/media/forms_pubs/CS01A.pdf.

19 This concern was expressed at meetings of the Task Force on Local Impacts of CCS, which is discussed elsewhere in this Article. *See infra* Part II.I.

20 In other contexts, local residents have complained about proposed projects that would harm their "viewshed." For example, some people have complained that solar farms are ugly. Others have made the same complaint about wind turbines.

dioxide is naturally present in the atmosphere at low concentrations,[21] as well as in carbonated beverages,[22] and it is discharged by humans and other animals when they breathe out.[23] Further, people sometimes use dry ice, which is solid carbon dioxide, to provide a "smoke" or "fog" as part of Halloween decorations or on other occasions, and the vapors emitted from the dry ice are gaseous carbon dioxide.[24] These encounters pose little risk because carbon dioxide does not exhibit toxic effects at low concentrations.[25] Further, carbon dioxide is not considered a carcinogen.[26]

The main risk associated with carbon dioxide would be a leak so massive that it displaced atmospheric oxygen, so that the carbon dioxide (or any gas other than oxygen) could be an asphyxiant.[27] At the concentrations of carbon dioxide that would exist in such circumstances, CO_2 can have toxic effects, but in those circumstances the greater risk

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21 Robert Monroe, *Broken Record: Atmospheric Carbon Dioxide Levels Jump Again*, SCRIPPS INST. OF OCEANOGRAPHY (June 5, 2023), https://scripps.ucsd.edu/news/broken-record-atmospheric-carbon-dioxide-levels-jump-again.

22 *Carbonation*, BRITANNICA, https://www.britannica.com/science/carbonation [https://perma.cc/JXE5-J946].

23 Adeline Guais et al., *Toxicity of Carbon Dioxide: A Review*, 24 CHEM. RSCH. IN TOXICOLOGY 2061, 2062 (2011) ("Carbon dioxide is a normal constituent of the human body arising from cellular respiration" and is "released from the lungs").

24 Pinchas Halpern et al., *Exposure to Extremely High Concentrations of Carbon Dioxide: A Clinical Description of a Mass Casualty Event*, 43 ANNALS EMERGENCY MED. 198, 198 (2004).

25 Carbon dioxide is naturally present in the atmosphere at about 400 parts per million (ppm). The Occupational Safety and Health Administration puts the 8-hour time-weighted average exposure limit at 5,000 ppm. 29 C.F.R. § 1910.1000, tbl. Z-1. Carbon dioxide can have toxic effects at high concentrations. *See* Halpern et al., *supra* note 24, at 198 (noting that generally carbon dioxide's main risk is as an asphyxiant, rather than a toxin, but that even at normal concentrations of oxygen, high concentrations of carbon dioxide can have toxic effects).

This does not mean that members of the public uniformly understand this or care about the distinction between a toxicity or poisoning effect on the one hand, versus some other risk, such as the risk that a substance could be an asphyxiant if it is present in a sufficient amount to displace oxygen. The Author of this Article is Chair of a "Task Force on Local Impacts of Carbon Sequestration," which was established by Senate Resolution No. 179 during the 2023 Regular Session of the Louisiana Legislature. During public meetings held by the Task Force to collect public comments, opponents of a particular CCS project proposed for the Lake Maurepas area in Louisiana repeatedly claimed that carbon dioxide is toxic, despite assurance from technical witnesses that carbon dioxide leaks would not pose a toxicity risk.

26 *Chemical Profiles: Carbon Dioxide*, CANADIAN CTR. FOR OCCUPATIONAL HEALTH & SAFETY, https://www.ccohs.ca/oshanswers/chemicals/chem_profiles/carbon_dioxide.html [https://perma.cc/L2PF-6HH4] (last visited Aug. 7, 2024).

27 *See, e.g.*, *id.* (noting dangers as an asphyxiant, rather than as a toxic substance); Halpern et al., *supra* note 24, at 198 (noting danger as an asphyxiant and as a toxic substance, but only at high concentration).

would be asphyxiation.[28] Thus, a very large leak of carbon dioxide would be required to create a health risk.

It is difficult to imagine that the sort of subsurface features that can lead to a natural seep of oil or gas would be sufficient to facilitate a dangerous leakage of carbon dioxide.[29] Further, Safe Drinking Water Act (SDWA) regulations that apply to CCS require analyses of potential pathways for escape of carbon dioxide,[30] and a SDWA permit would not be granted if any such pathway was apparent.[31] The United States Congress enacted the SDWA in 1974[32] "to assure that water supply systems serving the public meet minimum national standards for protection of public health."[33]

Part C of the SDWA addresses the protection of underground sources of drinking water (USDW).[34] Part C requires the United States Environmental Protection Agency (EPA) to develop regulations for state underground injection control (UIC) programs, including "minimum requirements for effective programs to prevent underground injection which endangers drinking water sources."[35] The SDWA directs that the minimum requirements developed by the EPA must include the mandate that an effective State UIC program shall "prohibit . . . any underground injection in such State which is not authorized by a permit . . . [or] rule,"[36] and that the state shall not authorize by permit or rule "any underground

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28 *See* Halpern et al., *supra* note 24, at 196–99.

29 A "seep" is "[a] natural occurrence of oil and/or gas that has leaked onto the surface." NORMAN J. HYNE, NONTECHNICAL GUIDE TO PETROLEUM GEOLOGY, EXPLORATION, DRILLING & PRODUCTION 611 (3d ed. 2012). One risk assessment put the annual probability of a rapid lead through caprock at 0.00000002% per year. *See* PRAIRIE RSCH. INST., CARBON CAPTURE, UTILIZATION, AND STORAGE IN ILLINOIS 32 (2022) (available at https://www.ideals.illinois.edu/items/125493).

30 *See, e.g.*, 40 C.F.R. § 146.82.

31 *Class VI – Wells Used for Geologic Sequestration of Carbon Dioxide*, U.S. ENV'T PROT. AGENCY, https://www.epa.gov/uic/class-vi-wells-used-geologic-sequestration-carbon-dioxide [https://perma.cc/UU9A-YD4P] (last visited Aug. 7, 2024) [hereinafter *Class VI Wells*] ("Site characterization requirements to ensure the geology in the project area can receive and contain the CO_2 within the zone where it will be injected, including that the area is free of faults and fractures"); *accord* LA. ADMIN. CODE tit. 43, pt. XVII, § 3607(C)(1)(b)(iii) (2024) (requiring that any applicant for a Class VI permit identify "the location, orientation, and properties of known or suspected faults and fractures that may transect the confining zone(s) in the area of review and *a determination that they would not interfere with containment*" (emphasis added)).

32 Safe Water Drinking Act, Pub. L. 93-523, 88 Stat. 1660 (1974).

33 H.R. Rep. No. 93-1185 (1974); *accord* Miami-Dade Cnty. v. U.S. Env't Prot. Agency, 529 F.3d 1049, 1052 (11th Cir. 2008).

34 42 U.S.C. § 300h(b); *Miami-Dade*, 529 F.3d at 1053.

35 42 U.S.C. § 300h(b)(1). Part C defines "underground injection" as being "the subsurface emplacement of fluids by well injection." *Id.* § 300h(d)(1)(A).

36 *Id.* § 300h(b)(1)(A).

injection which endangers drinking water sources."[37] The federal regulations promulgated pursuant to the SDWA recognize six classes of injection wells, with Class VI being wells used for the permanent disposal of CO_2.[38]

Part of the analysis that regulators perform in evaluating an application for a permit to operate an injection well is to make sure that there does not appear to be any pathway for the fluid injected into the subsurface via the injection well to migrate upward, out of the formation into which the fluid was injected, to shallower formations, nearer the surface, where the injected fluid might contaminate underground sources of drinking water. Of course, to definitively rule out the possibility of an upward migration of injected fluid is difficult, but the likelihood of a dangerous leak of CO_2 upward through a natural seep to the surface seems extremely low.

A more likely leak pathway is other wells in the area where the carbon dioxide plume will spread. An area of review analysis is done as part of the permitting process to obtain a SDWA permit required to conduct CCS injections. It is designed to identify and require the remediation of any potential leakage paths before a permit will be granted to allow CCS, though it cannot be guaranteed that a nearby well will not serve as a path for leakage. Another possible leakage path is the injection well itself. Well construction techniques and standards are designed to prevent this possibility, but again, there can be no guarantee that a well failure will not occur.[39]

A final potential path for leakage is a significant pipeline failure. Thousands of miles of carbon dioxide pipelines have existed in the United States for a few decades,[40] and there have been few significant safety

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37 *Id.* § 300h(b)(1)(B).

38 40 C.F.R. § 144.6.

39 *See Class VI Wells*, *supra* note 30 ("Well construction requirements to ensure the Class VI injection well is constructed in a manner that will prevent any CO2 from leaking outside of the injection zone.").

The CCS operator has a strong incentive to avoid leaks of carbon dioxide. In addition to any potential civil liability in the event that anyone was injured by a carbon dioxide leak, the operator would have to compensate the federal government for the value of any 45Q tax incentives previously received by the operator for carbon dioxide injections. Regulators might also order remedial action and a shutdown of injection operations. *See* 26 U.S.C. § 45Q(f)(4); 26 C.F.R. § 1.45Q-5.

40 *Annual Report Mileage for Hazardous Liquid or Carbon Dioxide Systems*, U.S. DEP'T OF TRANSP., PIPELINE & HAZARDOUS MATERIALS SAFETY ADMIN., https://www.phmsa.dot.gov/data-and-statistics/pipeline/annual-report-mileage-hazardous-liquid-or-carbon-dioxide-systems [https://perma.cc/X7L2-RDJX].

events, but a pipeline failure is possible.[41] Indeed, a significant CO_2 pipeline failure occurred near Satartia, Mississippi in February 2020.[42] The rupture occurred in a twenty four-inch diameter buried CO_2 pipeline, operated by Denbury Gulf Coast Pipelines LLC (Denbury), after heavy rains in a hilly area caused a landslide that put "excessive axial strain on a pipeline weld."[43] The U.S. Department of Transportation's Pipeline and Hazardous Materials Safety Administration (PHMSA) concluded that "weather conditions and unique topography" at the site of the accident "significantly delayed dissipation of the [CO_2 that escaped]."[44]

This pipeline was Denbury's "Delhi Pipeline," an approximately seventy-seven-mile pipeline that carries CO_2 from east to west, from the Jackson Dome in Mississippi to the Delhi Oil Field in Louisiana, where the CO_2 was used for enhanced oil recovery (EOR).[45] The pipeline was operating at about 1400 psig, which means that the CO_2 was in a supercritical state.[46] Forty-five people sought medical attention at local

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41 *See, e.g.*, PIPELINE & HAZARDOUS MATERIALS SAFETY ADMIN., U.S. DEP'T OF TRANSP., FAILURE INVESTIGATION REPORT – DENBURY GULF COAST PIPELINE 2 (2022), https://www.phmsa.dot.gov/news/phmsa-failure-investigation-report-denbury-gulf-coast-pipelines-llc [https://perma.cc/MVT9-H5QM].

42 *Id.*

43 *Id.* A copy of PHMSA's proposed notice of violation to Denbury is available at Notice of Probable Violation, Proposed Civil Penalty, and Proposed Compliance Order to David Sheppard, Senior Vice President of Denbury Guld Coast Pipeline, LLC (May 26, 2022) [hereinafter Notice], https://www.phmsa.dot.gov/news/phmsa-notice-proposed-violation-proposed-civil-penalty-and-proposed-compliance-order-denbury [https://perma.cc/GNT8-J6EK].

44 PIPELINE & HAZARDOUS MATERIALS SAFETY ADMIN., U.S. DEP'T OF TRANSP., *supra* note 41, at 2–3.

45 *Id.* at 3. It is not possible to recover one hundred percent of the oil in a subsurface formation during "primary production"—a phase of production in which oil is either pumped to the surface or, if the reservoir pressure is sufficient, is allowed to flow to the surface without pumping. HYNE, *supra* note 29, at 459, 593. Some oil will remain in the pore spaces of the subsurface formation. *Id.* at 459. Typically, additional oil can be produced by "secondary recovery" methods, such as a "waterflood," in which water (some of which already is often found naturally in the same formation as the oil) is pumped down injection wells and into the formation to push or sweep oil to other wells that are used to recover the oil. *Id.* at 459–62. But even secondary recovery does not recover all of the oil that remains in the formation. *Id.* at 459. "Enhanced oil recovery" or "EOR" is a process that can involve the use of injection wells to inject a fluid or fluids that are not naturally found in a producing reservoir (such as CO_2) for the purpose of producing more oil. *Id.* at 462–63, 529. When CO_2 is injected, it helps produce more oil in two ways. First, it is miscible in oil and will dissolve into it, which makes the oil less viscous, thereby making it flow more easily. *Id.* at 462–63. Second, the CO_2 also helps push the oil to other wells that are used to produce the oil. *Id.* at 463.

46 PIPELINE & HAZARDOUS MATERIALS SAFETY ADMIN., U.S. DEP'T OF TRANSP., *supra* note 41, at 4. "Supercritical" refers to a phase of matter that has some characteristics of a gas and some characteristics of a liquid.

hospitals, though apparently none had to be admitted to the hospital as a result of the CO_2 release.[47] There were no fatalities.[48]

C. Noise

Industrial activity generally creates noise. This is true of CCS. The drilling of injection wells and monitoring wells will last for a relatively short time, compared to the life of a CCS project, but the drilling will create noise while it is ongoing. Further, compressors often are noisy, and compressors will be used in CCS projects to elevate the pressure of carbon dioxide to move it through pipelines and to reach required injection pressures. So far, opposition to CCS has focused on other externalities or risks relating to CCS, but at some point local citizens may raise concerns about noise, particularly if drilling locations or compressors are located near property lines.

D. Traffic and Roads Impacts

The process of drilling will necessitate the movement of heavy equipment. To the extent that public roads are used, this could affect traffic and increase wear and tear on roads. The impacts should not be as significant as those associated with hydraulic fracturing, which can require the movement of large amounts of sand and water,[49] but CCS could have some effects on traffic and roads. So far, opposition to CCS has not focused on this issue, and this issue is not likely to be severe, but it is possible that some community leaders will raise traffic or road concerns.

E. Fear of Groundwater Contamination

Some opponents of CCS have raised concerns that CCS operations might cause contamination of groundwater.[50] The SDWA is designed to prevent this, and the risks appear to be low, but not zero. Carbon dioxide in water is not toxic or carcinogenic. It is possible that contaminants in injected carbon dioxide would be hazardous, but carbon capture technologies can yield CO_2 purities of 99.9%,[51] and, in addition to requiring safeguards to ensure that the CO_2 will not migrate to an underground

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47 Notice, *supra* note 43, at 2.

48 *Id.*

49 For a general discussion of hydraulic fracturing, including a discussion of the quantities of water and sand used, see HYNE, *supra* note 29, at 440–42.

50 This fear was expressed, for example, at meetings of the Task Force on Local Impacts of CCS described elsewhere in this Article. *See infra* Part II.I.

51 INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CARBON DIOXIDE CAPTURE AND STORAGE 116 (Bert Metz et al. eds., 2005) [hereinafter CARBON DIOXIDE CAPTURE AND STORAGE], https://www.ipcc.ch/site/assets/uploads/2018/03/srccs_wholereport-1.pdf [https://perma.cc/Y57N-KQQ4].

source of drinking water,[52] federal regulations require CCS operators to analyze the chemical composition of their carbon dioxide stream to ensure that the absence of hazardous substances.[53] Concerns have been raised about the possibility that impurities in the carbon dioxide could react with substances naturally found in the subsurface storage formation, but the Class VI regulatory program is designed to protect against this too.[54]

F. Effect of Pipeline Construction on Productivity of Soil

Many farmers oppose pipelines of any type—including CO_2 pipelines—being routed across their land.[55] Sometimes this opposition is based in part on concerns that the construction of a buried pipeline will diminish the crop yield of the land actually disturbed by the digging and construction, even after the land supposedly has been returned to its pre-construction condition. Whether the pipeline company obtains a right-of-way by voluntary agreement with the landowner or by the exercise of eminent domain, the farmer presumably will receive compensation for the market value of the right-of-way, and in theory the market value should take into account any diminished productivity of the land. However, some farmers believe that right-of-way payments will not fully capture the value of the land's diminished productivity.[56]

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[52] *See* 40 C.F.R. §§ 144.12 (prohibiting migration of contaminants into underground sources of drinking water), 146.83 (requirements for siting of Class VI wells to ensure containment of injected fluids), 146.86 (required construction standards for Class VI wells to prevent migration of fluids to underground sources of drinking water), 146.86 (operating requirements for Class VI wells to ensure against movement of fluid that would endanger underground sources of drinking water), 146.90 (testing and monitoring requirements to verify that injections are not endangering underground sources of drinking water).

[53] 40 C.F.R. §§ 146.82(a)(7)(iv), 146.90(a); *see also* U.S. ENV'T PROT. AGENCY, GEOLOGIC SEQUESTRATION OF CARBON DIOXIDE: UNDERGROUND INJECTION CONTROL (UIC) PROGRAM CLASS VI IMPLEMENTATION MANUAL FOR UIC PROGRAM DIRECTORS § 6.1.1 ("Characteristics of the Carbon Dioxide Stream"), https://www.epa.gov/sites/default/files/2018-01/documents/implementation_manual_508_010318.pdf [https://perma.cc/L8E5-KHBH].

[54] 40 C.F.R. §§ 146.82(a)(7)(iv), 146.90(a); *see also* U.S. ENV'T PROT. AGENCY, *supra* note 53, § 6.1.1.

[55] *See, e.g.*, Nara Schoenberg, *Illinois Farmers and Activists Celebrate the Defeat of $3 Billion CO_2 Pipeline*, CHI. TRIB. (Nov. 8, 2023, 11:00 AM), https://www.chicagotribune.com/2023/11/08/illinois-farmers-and-environmentalists-celebrate-the-defeat-of-3-billion-co2-pipeline-we-have-thrown-so-many-stones-at-goliath/ [https://perma.cc/ACU4-AUQ7]; Joshua Haiar, *'It's About Property Rights': Some Farmers Resent Ethanol Industry's Push for Carbon Pipelines*, NEB. EXAM'R (May 8, 2023), https://nebraskaexaminer.com/2023/05/08/its-about-property-rights-some-farmers-resent-ethanol-industrys-push-for-carbon-pipelines/ [https://perma.cc/5QDE-MB86].

[56] Ariel Wittenberg, *Strange Bedfellows: Farmers and Big Greens Square Off Against Biden and the GOP*, POLITICO (May 30, 2022, 7:00 AM), https://www.politico.com/news/2022/05/29/iowa-manchin-carbon-capture-pipeline-00030361.

Certain academic studies support the belief of some farmers that the construction of buried pipelines diminishes the long-term crop yield on the area where the soil is disturbed, probably through compaction and the mixing of topsoil and subsoil.[57] Best practices during underground pipeline construction call for excavated topsoil to be stored separately from excavated subsoil, and for the subsoil to be returned first, then the topsoil.[58] Ideally, this should restore the excavated area to a condition approximating the pre-excavation condition, with the topsoil on top. But the cited studies suggest that soil quality and crop yields are often adversely affected, whether because of a failure of the construction company to follow best practices or because the best practices are not adequate.[59]

G. Opposition to Fossil Fuels

Many individuals and organizations that support efforts to transition away from fossil fuels to address climate change believe that such a transition will not be sufficient, and that large-scale deployment of CCS will be an essential, additional tool in society's effort to address climate change.[60] They believe this for a variety of reasons, including their belief that:

- it will take time to transition away from fossil fuels,[61]

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[57] *See, e.g.*, Elnaz Ebrahini et al., *Buried Pipeline Installation Impacts on Soil Structure and Crop Decomposition*, 7 AGRIC. & ENV'T LETTERS 20057 (2021), https://acsess.onlinelibrary.wiley.com/doi/epdf/10.1002/ael2.20057 (referring to compaction and mixing of topsoil and subsoil); Theresa Brehm & Steve Culman, *Pipeline Installation Effects on Soils and Plants: A Review and Quantitative Synthesis*, 5 AGROSYSTEMS, GEOSCIENCES & ENV'T 20312 (2022), https://acsess.onlinelibrary.wiley.com/doi/epdf/10.1002/agg2.20312; Peng Shi et al., *Quantifying the Effects of Pipeline Installation on Agricultural Productivity in West China*, 107 AGRONOMY J. 524 (2015), https://doi.org/10.2134/agronj14.0023; Theresa Brehm & Steve Culman, *Soil Degradation and Crop Yield Declines Persist 5 Years After Pipeline Installations*, 87 SOIL SCI. SOC'Y AM. J. 250, 350–64 (2022) https://acsess.onlinelibrary.wiley.com/doi/epdf/10.1002/saj2.20506; Mehari Z. Tekeste et al., *Effect of Subsoil Tillage During Pipeline Construction Activities on Near-Term Soil Physical Properties and Crop Yields in The Right-of-Way*, 37 SOIL USE & MGMT. 545 (2021), https://doi.org/10.1111/sum.12623.

[58] Theresa Brehm & Steve Culman, *Pipeline Installation Effects on Soils and Plants: A Review and Quantitative Synthesis*, 5 AGROSYSTEMS, GEOSCIENCES & ENV'T 20312, no. 4, May 2022, at 1, 2 (2022), https://acsess.onlinelibrary.wiley.com/doi/epdf/10.1002/agg2.20312.

[59] *See, e.g.*, *id.* at 7.

[60] *See, e.g.*, INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2023 SYNTHESIS REPORT: SUMMARY FOR POLICYMAKERS 21, 21 n.47 (Core Writing Team, Hoesung Lee & José Romero eds., 2023) [hereinafter 2023 SYNTHESIS REPORT], https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_SPM.pdf [https://perma.cc/D3PW-RBDY].

[61] This is not seriously disputed. The Intergovernmental Panel on Climate Change talks about "transitioning" from fossil fuels, not ceasing use abruptly. *E.g.*, *id.* at 21 ¶ B.6.3. Further, the U.S. Energy Information Administration, which projects energy

- some industrial processes (e.g., cement making, ethanol production, etc.) produce greenhouse gases as an inherent part of the process, no matter what source of energy is used to drive the process—that is, the processes would emit carbon dioxide even if a renewable source of energy, rather than fossil fuels, was used to run the process,[62] and
- society may need to reach a point where net carbon emissions are negative if society is to meet its climate change goals.[63]

Thus, the deployment of CCS need not equate to avoiding a transition to renewable energy and away from fossil fuels. However, certain environmental organizations oppose CCS, and the opposition of some of them is based on their fear that deployment of CCS will delay the transition away from fossil fuels.[64] Arguably, this is evidence that these environmental organizations hate fossil fuels more than they love efforts to address climate change. However, to the extent that one of their major motivations is to eliminate fossil fuels, even if the climate impacts of those industries could be minimized or eliminated, these groups' opposition to CCS is not wholly irrational. Indeed, many supporters of fossil fuels hope that deployment of CCS will at least slow, if not eliminate, a transition away from fossil fuels.

H. Effect on Property Values

Some opponents of CCS express concern that CCS might adversely affect property values near the CCS operation.[65] This fear is similar to the

production and consumption trends to the year 2050, predicts that society still will be using significant amounts of oil and gas in 2050. *See Annual Energy Outlook 2023*, U.S. ENERGY INFO. ADMIN. (Mar. 16, 2023), https://www.eia.gov/outlooks/aeo/ [https://perma.cc/E9TF-N7XB].

62 *See, e.g.*, CARBON DIOXIDE CAPTURE AND STORAGE, *supra* note 51, at 3 (noting sources of carbon dioxide emissions including manufacturing cement); OFF. OF RES. CONSERVATION & RECOVERY, U.S. ENV'T PROT. AGENCY, DOCUMENTATION FOR GREENHOUSE GAS EMISSIONS AND ENERGY FACTORS USED IN THE WASTE REDUCTION MODEL (WARM) 1-20 (2020), https://www.epa.gov/sites/default/files/2020-12/documents/warm_organic_materials_v15_10-29-2020.pdf [https://perma.cc/GA89-WWB9] (noting that the manufacture of fertilizer releases carbon dioxide).

63 *See* 2023 SYNTHESIS REPORT, *supra* note 60, at 23.

64 Katie Lebling et al., *7 Things to Know About Carbon Capture, Utilization and Sequestration*, WORLD RES. INST. (Nov. 13, 2023), https://www.wri.org/insights/carbon-capture-technology [https://perma.cc/BNQ3-JMD9] ("Some nongovernment organizations and other stakeholders oppose CCUS, arguing that it creates a moral hazard and that it's only a band-aid over what they see as the real problem: ending use of fuels.").

65 *See, e.g.*, Wesley Muller, *Lake Maurepas Carbon Capture Project Draws Increasing Opposition*, LA. ILLUMINATOR (Dec. 3, 2023), https://lailluminator.com/2023/12/03/lake-maurepas-carbon-capture-project-draws-increasing-opposition/ [https://perma.cc/SC2M-6YG8]; Application of Navigator Heartland Greenway, LLC, No. HP22-002, at 10 (S.D.

concerns that have been expressed when almost any type of industrial or commercial facility (including large stores or shopping centers) is proposed.

I. Miscellaneous Arguments Against CCS and Reasons for Opposing CCS

There are various other reasons people become opponents of CCS, and various arguments they assert in opposition. One is fear of the unknown, which can include exaggerated fears of actual risks and vague fears of potential unknown risks. The Author has seen evidence of this firsthand. He is Chair of the "Task Force on Local Impacts of Carbon Sequestration" (Task Force) established by the Louisiana State Senate in 2023.[66] The Senate Resolution that established the Task Force charged the Task Force with collecting input from various stakeholders, including landowners in areas where CCS projects might be constructed and other citizens of the State.[67]

At one Task Force meeting,[68] a woman who has a Louisiana residence in the vicinity of a proposed CCS project near Lake Maurepas said that, if the project is constructed, she would never again be able to host a visit from her granddaughter because of the risk of a CO_2 pipeline leak.[69] Her fear is highly exaggerated, and seems to be an example of the common

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Pub. Utils. Comm'n, Sept. 26, 2023) (available at https://puc.sd.gov/commission/dockets/HydrocarbonPipeline/2022/HP22-002/HP22-002FinalOrder.pdf and 2023 WL 6373966).

However, one academic study concluded that proximity to a CCS project results in a price premium, rather than a decrease in value. *See* Kaifong Luo et al., *Estimation of Property Values from Nearby Carbon Capture, Utilization, and Storage Projects in the United States*, (U.S. Ass'n Energy Econ. Working Paper No. 23-586, 2023), https://papers.ssrn.com/sol3/Delivery.cfm/SSRN_ID4642707_code5759480.pdf?abstractid=4377406&mirid=1 [https://perma.cc/BZM2-ETFE].

66 S. Res. 179, 2023 Leg., Reg. Sess. (La. 2023) (available at https://www.legis.la.gov/legis/ViewDocument.aspx?d=1330961).

67 *Id.* at 2.

68 Video recordings of the meetings are available on the Louisiana State Senate's website. A video recording of the November 6, 2023, meeting is available at Nov. 6 Carbon Capture Sequestration T.F., *supra* note 9.

The video of the November 29, 2023, meeting is available at *Carbon Capture Sequestration T.F.*, LA. STATE SENATE (Nov. 29, 2023) [hereinafter Nov. 29 Carbon Capture Sequestration T.F.], https://www.senate.la.gov/s_video/VideoArchivePlayer?v=senate/2023/11/112923CCS [https://perma.cc/H43D-JLBJ].

A video of the December 18, 2023, meeting is available at *Local Impacts of Carbon Capture and Sequestration T.F.*, LA. STATE SENATE (Dec. 18, 2023) [hereinafter Dec. 18 Carbon Capture Sequestration T.F.], https://www.senate.la.gov/s_video/VideoArchivePlayer?v=senate/2023/12/121823LICC.

A video of the January 18, 2024, meeting is available at *Carbon Capture*, LA. STATE SENATE (Jan. 18, 2024), https://www.senate.la.gov/s_video/VideoArchivePlayer?v=senate/2024/01/011824CCS.

69 Nov. 29 Carbon Capture Sequestration T.F., *supra* note 68.

human trait of fearing unfamiliar risks more than familiar risks that are actually greater. A CO_2 leak that is large enough to be dangerous is possible, but so is a leak from a natural gas pipeline, and such pipelines already exist in the area around Lake Maurepas.[70] But apparently that risk is not sufficient to prompt the woman to bar visits from her granddaughter.

Further, if the woman takes her visiting granddaughter by car to visit a local ice cream shop, the risk of a traffic accident causing injury is likely greater than the risk of injury from a pipeline leak.[71] Experience shows that CO_2 pipelines have a good safety record compared to automobile travel. The United States has more than 5000 miles of CO_2 pipelines, with much of the network having been in place for decades,[72] and the leak near Satartia is the only major incident. Further, an existing CO_2 pipeline crosses the entire width of Louisiana, carrying CO_2 from east to west.[73] Likewise, Interstate 10 crosses the width of Louisiana, east to west.[74] Louisiana Department of Natural Resources officials stated to the Author they do not recall there being a serious safety incident involving that pipeline within Louisiana, but on a fairly regular basis there are traffic deaths or serious injuries on Interstate 10 within Louisiana.[75] The greater fear that some people have of CO_2 pipelines than automobile travel is a common example of someone having a greater fear of a novel or new risk than they

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[70] *See Public Viewer*, NAT'L PIPELINE MAPPING SYS., https://pvnpms.phmsa.dot.gov/PublicViewer/ (to view pipeline transmission lines near Lake Maurepas, select Louisiana and Livingston Parish).

[71] There has never been a significant safety incident involving the carbon dioxide pipeline that crosses Louisiana from east to west, roughly parallel to the route of Interstate 10, but certainly there have been traffic fatalities on the Interstate.

[72] *See Annual Report Mileage for Hazardous Liquid or Carbon Dioxide Systems*, PIPELINE & HAZARDOUS MATERIALS SAFETY ADMIN., U.S. DEP'T TRANSP. (Aug. 1, 2024), https://www.phmsa.dot.gov/data-and-statistics/pipeline/annual-report-mileage-hazardous-liquid-or-carbon-dioxide-systems.

[73] *See Active CO2 Pipelines in the NPMS*, PIPELINE & HAZARDOUS MATERIALS SAFETY ADMIN., U.S. DEP'T TRANSP. (June 18, 2024), https://www.npms.phmsa.dot.gov/Documents/NPMS_CO2_Pipelines_Map.pdf [https://perma.cc/2YF4-L8LG].

[74] *See The Dwight D. Eisenhower System of Interstate and Defense Highways*, FED. HIGHWAY ADMIN., U.S. DEP'T TRANSP., https://highways.dot.gov/highway-history/interstate-system/50th-anniversary/dwight-d-eisenhower-system-interstate-and (last visited Aug. 7, 2024).

[75] The Louisiana Highway Safety Commission (LHSC) reported that, in 2021, there were 149 fatal crashes and 6,190 other crashes that involving injuries, but no fatalities. These statistics include all interstate highways in Louisiana, not just Interstate 10, but many of these accidents were on Interstate 10. HELMUT SCHNEIDER, LOUISIANA TRAFFIC RECORDS DATA REPORT 2021 *passim* (2021), https://carts.lsu.edu/admin/uploads/2021_Fact_Book_338dfd9cba.pdf?updated_at=2022-11-18T21:24:05.522Z [https://perma.cc/A9TM-SSZS].

have of a much greater risk they encounter on a regular basis and take for granted.[76]

Another source of fear is misinformation. At Task Force meetings, many of the persons who spoke in opposition to CCS claimed CO_2 is toxic. It is not toxic in any meaningful way. In an effort to allay this unfounded fear, the Task Force provided experts who explained CO_2 could be an asphyxiant in the event of a massive leak but CO_2 is not toxic.[77] Nonetheless, opponents continued to state during testimony to the Task Force that CO_2 is toxic.[78]

Opponents also made other statements that included various bits of misinformation. One witness made the odd and erroneous comment that CO_2 molecules in the air are 900 degrees colder than the other molecules in the ambient air.[79] Whether expressing temperature in the Fahrenheit, Rankin, Celsius, or Kelvin system, this is a physical impossibility given that absolute zero—the lowest temperature that is physically possible—is -460°F or -273°C,[80] which is not anywhere near 900 degrees below ambient temperatures. The same witness claimed to have read a study that some types of plant life grow much better at CO_2 concentrations twice that in our atmosphere.[81] She implied we would be better off if we significantly increased the CO_2 concentration in the atmosphere, a conclusion (to say the least) that does not have widespread support in the scientific community.[82]

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76 Indeed, there already is a CO_2 pipeline supplying carbon dioxide to an EOR project in Livingston Parish, Louisiana one of the parishes that includes part of Lake Maurepas. Many citizens and public officials from Livingston Parish appeared at meetings of the Task Force and expressed opposition to the CCS project proposed for the Lake Maurepas area, with several expressing concerns about a leak of CO_2. But none of them cited any example of a problem from the existing CO_2 pipeline in their Parish, and it is not clear that many of them even know that a CO_2 pipeline already exists in their Parish.

77 Dec. 18 Carbon Capture Sequestration T.F., *supra* note 68.

78 *Id.*

79 Nov. 29 Carbon Capture Sequestration T.F., *supra* note 68.

80 *Absolute Zero*, BRITANNICA, https://www.britannica.com/science/absolute-zero [https://perma.cc/N6RG-B5G3] (last visited Aug. 7, 2024).

81 Nov. 29 Carbon Capture Sequestration T.F., *supra* note 68.

82 The Intergovernmental Panel on Climate Change is the United Nations' body for assessing science relating to climate change. *About the IPCC*, INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, https://www.ipcc.ch/about/ [https://perma.cc/9UQQ-4FRU] (last visited Aug. 7, 2024). The IPCC assesses thousands of scientific papers each year on climate change, *see id.*, with reports being prepared by experts selected by an elected "Bureau of scientists," *see Structure of the IPCC*, INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, https://www.ipcc.ch/about/structure/ [https://perma.cc/CPQ9-YA5J] (last visited Aug. 7, 2024), and with other scientists being invited to review the reports. *See Preparing Reports*, INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE,

Another motivation for opposition to CCS is the "not in my backyard" (NIMBY) factor. The reasons a person might not want a CCS project to be located near them likely will be one of the reasons previously discussed, but NIMBY opposition is notable because some people who oppose a CCS project being located near them do not oppose CCS in general. That is, they do not think that the drawbacks of CCS mean that it should not be pursued at all. Rather, they just do not want a CCS project to be located near them. During meetings of the Task Force chaired by the Author, multiple witnesses made a point of stating they do not oppose CCS in general, but rather they simply believe the area where they live is not the right location.[83]

Some persons have questioned whether CCS will actually work to reduce the amount of CO_2 that goes into the atmosphere,[84] but evidence and experience suggests that it will.[85] Further, the question regarding efficacy of CCS does not seem to be the *motivation* for opposition to CCS. Some people also complain about the federal 45Q tax credit for CCS, or the fact that state law in some jurisdictions gives CCS operators the power of eminent domain,[86] but again this does not seem to be the main motivation for opposition.

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https://www.ipcc.ch/about/preparingreports/ [https://perma.cc/CKV2-CW25] (last visited Aug. 7, 2024). The IPCC recommends limiting the amount of CO_2 in the atmosphere. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, GLOBAL WARMING OF 1.5 °C 50–51 (Valérie Masson-Delmotte et al. eds., 2019), https://www.ipcc.ch/site/assets/uploads/sites/2/2022/06/SR15_Full_Report_HR.pdf [https://perma.cc/L5VJ-WPBT].

[83] This was stated on multiple occasions. For links to video recordings of the Task Force meetings, see *supra* note 68.

[84] Casey Johnston, *Carbon Sequestration Too Leaky to Stop Global Warming*, ARS TECHNICA (July 6, 2010, 6:30 PM) https://arstechnica.com/science/2010/07/carbon-sequestration-too-leaky-to-stop-global-warming/ [https://perma.cc/JHQ7-CJ78].

[85] In the U.S., Archer Daniels Midland Company began injecting CO_2 captured at its ethanol production facility in Decatur, Illinois in 2011. Jessica Lyons Hardcastle, *DOE Project Captures, Stores 1 Million Metric Tons of Carbon*, ENV'T + ENERGY LEADER (Jan. 12, 2015), https://www.environmentenergyleader.com/2015/01/doe-project-captures-stores-1-million-metric-tons-of-carbon/ [https://perma.cc/CS4T-UATX]. Norway's Sleipner CCS facility has been in operations since 1996, and Norway's Snøhvit CCS facility has been in operation since 2008. *See* GLOB. CCS INST., GLOBAL STATUS OF CCS 2023 77 (2023), https://res.cloudinary.com/dbtfcnfij/images/v1700717007/Global-Status-of-CCS-Report-Update-23-Nov/Global-Status-of-CCS-Report-Update-23-Nov.pdf?_i=AA [https://perma.cc/45QS-JNWM]. These facilities seem to be operating to successfully sequester carbon.

[86] There are ample examples of CCS opponents complaining about statutes that authorize the use of eminent domain to support such projects. For example, in the 2024 Regular Session of the Louisiana Legislature, State Representative Robby Carter, who has opposed CCS, introduced House Bill No. 729, which sought to amend Louisiana Revised Statute 30:1108 to remove the authority it grants to use eminent domain for CCS projects.

III. TYPES OF LOCAL REGULATION

Because CCS has not yet been widely deployed, most local governments have not yet considered whether they will attempt to regulate it. But some local governments have enacted regulations. Further, local governments have regulated or attempted to regulate various other energy industry activities in the past, including oil and gas drilling, hydraulic fracturing, injection disposal, compressor stations, and utility-scale solar facilities. Based on some of the early local efforts to regulate CCS, and based on past attempts to regulate other energy industry activities, it is possible to discuss numerous ways in which local governments *might* choose to regulate CCS.

A. Moratoria

Some local governments might enact an ordinance placing a moratorium on any CCS activity within their jurisdictions while they take time to study CCS and perhaps enact other regulations. In Louisiana, for example, Livingston Parish enacted Ordinance No. 22-45 in September 2022 to place a twelve-month moratorium on construction of Class VI injection wells.[87] Later, in October 2022, Livingston Parish enacted Ordinance No. 22-49 to place a twelve-month moratorium on any Class V stratigraphic test wells that would be used to obtain geologic information that a prospective CCS operator needs to apply for a Class VI injection well permit.[88] In South Dakota, Moody County placed a moratorium on the construction of hazardous liquids pipelines, including CO_2 pipelines, within the county.[89] Often when a local government enacts a moratorium,

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A copy of the original bill is available at H.B. 729, 2024 Leg., Reg. Sess. (La. 2024), https://www.legis.la.gov/Legis/ViewDocument.aspx?d=1353654 [perma.cc/6GGQ-YMG3].

87 *See Minutes of the Livingston Parish Council*, LIVINGSTON PAR. COUNCIL (Sep. 8, 2022), https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=https://www.livingstonparishcouncil.com/sites/default/files/fileattachments/parish_council/meeting/14533/09-08-2022.docx&ved=2ahUKEwihltqgx72GAxUT6ckDHeb9BjIQFnoECBYQAQ&usg=AOvVaw0vfd7dnoLqZr3XylHHpKbj.

88 *See Minutes of the Livingston Parish Council*, LIVINGSTON PAR. COUNCIL (Oct. 13, 2022), https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=https://www.livingstonparishcouncil.com/sites/default/files/fileattachments/parish_council/meeting/14535/10-13-2022.pdf&ved=2ahUKEwixo96yyb2GAxUw8MkDHY3DHSYQFnoECBEQAQ&usg=AOvVaw1jgzAA3Psc6PzTiKiqf_ho. The adoption of Livingston Parish Ordinance No. 22-49 also is discussed in Air Prods. Blue Energy, LLC v. Livingston Par. Gov't, No. 3:22-cv-809-SDD-RLB, 2022 WL 17904535, at *1 (M.D. La. Dec. 26, 2022).

89 MOODY CNTY., S.D., ORDINANCE NO. 2023-01 (2023), https://www.moodycounty.net/wp-content/uploads/2023/06/Moody-Pipeline-05092023-1.pdf [https://perma.cc/ZB4W-5RTQ].

the local government states that it is doing so while it studies or considers enactment of other regulations.

The local opposition to CCS that is appearing in several communities has reminded some people of the opposition to hydraulic fracturing that occurred when fracturing was receiving attention ten to fifteen years ago. When this happened some local governments enacted ordinances placing a moratorium on any hydraulic fracturing within their jurisdiction.[90]

B. Zoning

A local government might attempt to use zoning to regulate the location of Class VI injection wells, pipeline compressors, and pipelines. For example, a local government might attempt to ban such facilities from areas zoned for residential use. Further, as noted below, a local government could use zoning as a means of banning CCS and activities related to CCS by banning those activities in *all* zoning districts within the jurisdiction.

Zoning laws typically establish three levels of regulation for various types of activities or "uses." First, there are activities or uses "as of right." For an activity that is an "as of right" use within a particular type of zone, the zoning regulations allow any person to engage in that activity or use without obtaining a permit from the local government that established the zoning rules. Second, there are discretionary or "conditional uses." If a type of activity is a "conditional use" within a particular type of zone, that type of activity is generally allowed, but the zoning rules require a person to obtain a "conditional use" or "special use" permit before engaging in the activity, and the zoning authority might attach certain conditions to the permit. Finally, there are "prohibited uses." If an activity is a prohibited use within a particular type of zone, the zoning laws generally prohibit that type of activity within the zone, though zoning laws often allow for the possibility that local authorities will grant a "variance"—permission to engage in the otherwise prohibited activity—typically based on hardship or some other strong reason.

Typically, zoning laws are enacted by the legislative body for a local government. Often, there will be a "Zoning Commission" or "Planning Commission" that hears requests for conditional use permits. And there will often be a group called a "Zoning Board of Adjustment" or "Board of Appeals" that hears requests for variances and appeals from the grant or denial of a conditional use permit.

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90 *E.g.*, City of Fort Collins v. Colo. Oil & Gas Ass'n, 369 P.3d 586 (Colo. 2016).

C. Setbacks

A "setback" is a requirement that a type of activity be conducted at least a specified distance from certain types of locations. For example, a regulation stating that no oil or gas well can be located within 500 feet of an occupied dwelling would be a setback. Setbacks are closely related to and may be included as part of zoning laws. Other times, setbacks are enacted outside the zoning context as part of the regulations enacted for a certain type of activity, as opposed to being part of a broad set of zoning laws.

Setbacks could be used to keep certain facilities—such as injection wells,[91] compressor stations, or CO_2 pipelines,[92] a minimum distance from certain types of locations, such as occupied dwellings or schools. Setbacks can be set at a reasonable distance that would still allow the placement of compressors, the routing of a pipeline, etc., and setbacks included in the regulations promulgated under the federal Pipeline Safety Act (PSA).[93] On the other hand, as noted below, setbacks also could be used as a disguised means of banning an activity. A local government would merely need to make the required setbacks so large or the types of locations that trigger a setback so numerous that there is nowhere an activity can take place.

D. Effective Bans

Some local governments might enact ordinances that are not outright bans on CCS but effectively operate as bans by imposing requirements or restrictions that are impossible or nearly impossible for a prospective CCS operator to satisfy. One way to do this is with overly restrictive setbacks. Setbacks can be a legitimate tool of land use planning and zoning, and reasonable setbacks do not necessarily make it unduly difficult to engage in a particular type of activity. However, setbacks can also be used as a disguised means of banning an activity by requiring setback distances that are large or by requiring that the regulated activity be setback from so many locations that it becomes impossible to find a location where the regulated activity is allowed.

For example, Story County in Iowa enacted an ordinance that required all portions of pipelines carrying supercritical CO_2 be located at least one-

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[91] One such regulation that applied to Class II wells is discussed in Vanguard Env't, LLC v. Terrebonne Par. Consol. Gov't, No. 2012-CA-1998, 2013 WL 4426508 (La. App. 1 Cir. 6/11/13).

[92] Examples of local ordinances in Iowa that seek to impose setbacks for CO_2 pipelines are discussed *infra* Part VI.C.

[93] *E.g.*, 49 C.F.R. § 195.210.

fourth of a mile from numerous types of locations.[94] The United States District Court for the Southern District of Iowa concluded it would be "essentially impossible" to route a CO_2 pipeline through Story County that complied with this setback requirement.[95] In *Vanguard Environmental, LLC v. Terrebonne Parish Consolidate Govt.*, a parish government enacted an ordinance that required a one-mile setback between Class II injection disposal wells and any residence or commercial building.[96] In many areas, such a large setback from a type of activity would essentially constitute a ban of that activity. A local government could also implement jurisdiction-wide zoning and make CCS an activity that is banned in each of the types of zoning districts.

E. Outright Bans

Local governments might enact ordinances to ban Class VI injection wells, carbon dioxide pipelines, or activities necessary to obtain a CCS permit. Such ordinances would be similar in some ways to ordinances that certain local governments enacted to ban hydraulic fracturing.[97]

F. Construction, Operational, or Safety Standards

Local government could impose requirements relating to construction standards or methods, operational standards, or safety. For example, in May 2023, the local government in Story County, Iowa enacted an ordinance that required trenchless construction of pipelines in some areas.[98] It is easy to imagine that a local government could regulate the well construction standards for injection wells in an effort to ensure well integrity. Such regulations are part of federal SDWA regulations for Class VI injection wells,[99] but a local government may also seek to impose its own regulations.

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[94] Couser v. Story Cnty., No. 4:22-cv-00383-SMR-SBJ, 2023 WL 8366208, at *4 (S.D. Iowa Dec. 4, 2023). Ordinance No. 311 added this requirement by amending Section 86.16(A) of Story County's land development regulations. STORY CNTY., IOWA, ORDINANCE NO. 311, https://www.storycountyiowa.gov/DocumentCenter/View/14480/Ordinance-311. Story County's land development regulations as a whole can be found at https://codelibrary.amlegal.com/codes/storycounty/latest/storycount_ia/0-0-0-1820.

[95] *Story Cnty.*, 2023 WL 8366208, at *11.

[96] *Vanguard Env't, LLC*, 2013 WL 4426508, at *1. The one-mile setback is found at TERREBONNE PAR., LA., ORDINANCE § 11-56 (2024), https://library.municode.com/la/terrebonne_parish/codes/code_of_ordinances.

[97] *See, e.g.*, City of Longmont v. Colo. Oil & Gas Ass'n, 369 P.3d 573 (Colo. 2016).

[98] STORY CNTY., IOWA, ORDINANCE NO. 311. The trenchless construction requirement is found in an amendment that Ordinance No. 311 made to section 86.16(B) of Story County's land development rules.

[99] *See* 40 C.F.R. § 146.86 (well construction standards); *see also* 40 C.F.R. § 146.89 (mechanical integrity).

G. Permit Requirements

A local ordinance might state that no person could construct or operate a CCS project without obtaining a permit from the local government, and a permit application fee might be imposed. Further, as a condition of granting a permit, the permitting authority may attempt to put conditions on the location of a facility or its operations.

H. Bonds or Other Financial Assurance

To guarantee compliance with restoration duties, any other duties, or to give some assurance that other liabilities will be satisfied, a local government could require a prospective CCS operator to provide financial security or assurance. This might involve posting a bond, certificate of deposit, letter of credit, or similar security for performance.[100]

I. Emergency Planning

A local government might seek to impose obligations for emergency planning relating to possible carbon dioxide leaks or other potential mishaps associated with a CCS project.[101]

J. Restoration

A local government may attempt to impose restoration duties.[102] For example, an ordinance might seek to impose duties for the restoration of the surface after installation of a buried underground pipeline. A local government might pass an ordinance purporting to require that the surface location of CCS facilities be restored to approximately its original condition after the CCS project is no longer operating. An ordinance might even require the removal of a pipeline after it is no longer being used.[103]

K. Noise

Certain activities associated with CCS or CO_2 pipelines can be noisy. For example, compressors are used to help move a gas through a pipeline, and compressors can be noisy. During the drilling of a well, the drilling rig

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100 Commentators have noted this type of regulation in the context of local efforts to regulate oil and gas development. *See, e.g.*, Bruce M. Kramer, *Local Land Use Regulation of Oil and Gas Development: Pumpjacks and Preemption*, 56 ANN. INST. ON MIN. L. 198 (2009) [hereinafter *Local Land Use*] (available at https://digitalcommons.law.lsu.edu/mli_proceedings/vol56/iss1/13/).

101 *See, e.g.*, KOSSUTH CNTY., IOWA, ORDINANCE NO. 300 § 25.11 (2023).

102 *See, e.g.*, *id.* § 25.12.

103 *Id.*

will make a lot of noise. Some local governments regulate noise levels.[104] This is another possible means of local regulation of CCS.

L. Light

Some industrial facilities are brightly lit at night to facilitate around-the-clock work. This might be the case for a compressor station or for a drilling rig during the process of drilling a well. If such lighting is near a residential area, the lighting could disturb residents. Regulations could be used to require that lighting at an industrial facility be designed so as to limit the amount of light that is projected to the surrounding area.

M. Screening and Fencing

If a local government is worried about the visual impacts of CCS, it might require that fencing or vegetation be used to block the surrounding area's view of a CCS facility.[105]

N. Road Use Agreements

The vehicular traffic associated with industrial activities can generate noise, contribute to traffic, and contribute to the wear and tear on local roads. Some local governments might attempt to regulate a CCS operator's road use or seek to enter a voluntary road use agreement with the operator. This could involve restrictions or agreements regarding the route that trucks will use to reach a CCS location. It could also involve the CCS operator making payments to compensate for the wear and tear on local roads that comes from the vehicular traffic associated with a CCS project.[106]

IV. POTENTIAL BASES FOR LEGAL CHALLENGES TO LOCAL REGULATION OF CCS

There are at least three potential bases for challenging local ordinances. These are a challenge to the local ordinance as being *ultra vires*, the local ordinance being preempted, or the local ordinance constituting a taking. Each of these three potential bases for challenging a local ordinance is

[104] Commentators have noted this. *See, e.g.*, *Local Land Use*, *supra* note 100, § II.5; Bruce M. Kramer, *The State of State and Local Governmental Relations as it Impacts the Regulation of Oil and Gas Operations: Has the Shale Revolution Really Changed the Rules of the Game?*, 29 J. LAND USE & ENV'T L. 69, 73, 74, 81 (2013) [hereinafter *State and Local Governmental Relations*].

[105] Some local governments have enacted such ordinances in other contexts—such as requiring screening around solar farms. Commentators have noted this type of regulation in the oil and gas context. *See, e.g.*, *Local Land Use*, *supra* note 100, § II.5.

[106] Commentators have noted this type of local regulation in the oil and gas context. *See, e.g.*, *id.*

discussed below, but as will be shown, preemption will probably most often be successful.

A. Is local regulation of CCS ultra vires*?*

A traditional premise regarding local governmental authority is that local governments were "creatures" of state government, and that local governments only had the authority that a state delegated to them.[107] Further, the grant of authority had to be specific and express.[108] If a local government attempted to exercise any greater authority, the attempt was *ultra vires* and therefore unenforceable. This limitation on local government authority is distinct and different from the concept of preemption, which will be discussed later.[109] Even if no federal or state law existed that would preempt a particular local ordinance, the ordinance might be one that was simply beyond the authority of the local government because the local government had not been granted authority to regulate on the subject addressed by the ordinance.

But starting in the late 1800s, it became more common for states to grant *home rule authority* to local governments.[110] A grant of home rule authority is a delegation of the state's full police power, with perhaps some exceptions.[111] A local government with home rule authority thus has the authority to regulate on any subject that the state itself could regulate, unless the subject matter of a local ordinance concerned a subject that had specifically been made an exception to home rule authority.[112] Thus, a local ordinance would not be *ultra vires* unless the subject of the ordinance concerned a matter that had been made an exception to home rule

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107 *See, e.g.*, Huntley & Huntley, Inc. v. Borough Council of Oakmont, 964 A.2d 855, 862 (Pa. 2009) ("Municipalities are creatures of the state and have no inherent powers of their own."); *State and Local Governmental Relations*, *supra* note 104, at 69–70 (referring to the "creature theory").

108 See, e.g., *Huntley & Huntley, Inc.*, 964 A.2d at 862 ("[Municipalities] 'possess only such powers as are expressly granted to them and as are necessary to carry the same into effect.'" (quoting City of Philadelphia v. Schweiker, 858 A.2d 75, 84 (2004)); *State and Local Governmental Relations*, *supra* note 104, at 69, 70 ("It used to be that sub-state units had to look for a specific state enabling act before it could exercise any police power, including the power to zone or otherwise regulate land use.").

109 Commentators have recognized the distinction. *See, e.g.*, *State and Local Governmental Relations*, *supra* note 104, at 84 (noting that, although local governments typically are granted greater authority than in the past, so that local governments "no longer have to worry about the ultra vires issue," it is possible that an ordinance might be preempted).

110 *See id.* at 70 ("The 'home rule' movement is generally believed to have been initiated with amendments to the Missouri Constitution in 1875.").

111 *Id.*

112 *Id.*

authority. Of course, an ordinance might be subject to challenge on other grounds, but the ordinance would not be *ultra vires*.

Not all local governments have home rule authority, but many do. Further, the delegation of authority to local governments that lack home rule authority often is broader than was common in the first century of the United States, and this is particularly true with respect to the authority to enact zoning and land use controls. Accordingly, although a lawyer whose client opposes a local regulation should not overlook the possibility that a regulation might be *ultra vires*, local government regulations will rarely be vulnerable to an *ultra vires* challenge today.[113]

B. Preemption

"Preemption" is a doctrine that "establishes a priority between potentially conflicting laws enacted by various levels of government"—federal, state, and local.[114] Under this doctrine, the law enacted by the higher level of government will be given priority, and the law enacted by the lower level of government will be "preempted" in some circumstances, rendering the law enacted by the lower level of government unenforceable. Thus, federal law will sometimes preempt state and local laws, and state laws will sometimes preempt local laws.

1. Federal Preemption of State and Local Laws

The preemption of state or local laws by federal law is based on the Supremacy Clause of the United States Constitution, which states that federal law "shall be the supreme Law of the Land; and the Judges in every State shall be bound thereby, any Thing in the Constitution or Laws of any State to the Contrary notwithstanding."[115] The United States Supreme Court has identified various circumstances in which federal law preempts state or local law.[116] Courts and commentators often state that these various circumstances establish three basic types of preemption: (1) express preemption; (2) conflict preemption; and (3) field preemption.[117]

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[113] Several sources provide a more thorough discussion of the historic limits on local government authority under the "creature theory." *See, e.g.*, *id.* at 69–71.

[114] Huntley & Huntley, Inc. v. Borough Council of Oakmont, 964 A.2d 855, 862 (Pa. 2009).

[115] U.S. CONST. art. VI, cl. 2.

[116] *See, e.g.*, Arizona v. United States, 567 U.S. 387, 399 (2012); Altria Grp., Inc. v. Good, 555 U.S. 70, 76 (2008); Geier v. Am. Honda Motor Co., Inc., 529 U.S. 861, 884 (2000); Gade v. Nat'l Solid Waste Mgmt. Ass'n, 505 U.S. 88, 98 (1992); English v. Gen. Elec. Co., 496 U.S. 72, 78 (1990); Felder v. Casey, 487 U.S. 131, 137 (1988); Perez v. Campbell, 402 U.S. 637, 649 (1971); Fla. Lime & Avocado Growers, Inc. v. Paul, 373 U.S. 132 (1963).

[117] *Arizona*, 567 U.S. at 399.

Under this three-types-of preemption terminology, *express preemption* exists when federal law expressly prohibits state or local laws on a subject.[118] *Conflict preemption* exists by implication[119] when either "compliance with both federal and state regulations is a physical impossibility,"[120] or "state law 'stands as an obstacle to the accomplishment and execution of the full purposes and objectives of Congress.'"[121] Finally, *field preemption* exists when the federal government has adopted "a framework of regulation 'so pervasive . . . that Congress left no room for the States to supplement it.'"[122]

This Article will use the three-types-of-preemption terminology, which may be the most common way of discussing preemption. Readers should note, however, courts and commentators do not always use consistent terminology regarding the types of preemption. Sometimes, courts or commentators state that there are two types of preemption—express preemption when federal law expressly prohibits state or local preemption and implied preemption whenever any of the other circumstances that lead to preemption exist.

2. State Preemption of Local Laws

Just as federal laws can preempt state or local laws, state laws can preempt local laws.[123] The analysis of whether state law preempts local law can vary by jurisdiction, but it is common for state jurisprudence to adopt a preemption framework similar to that used for federal preemption of state and local laws.[124] Accordingly, when discussing whether state law preempts local laws, courts and commentators often refer to three types

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118 *Good*, 555 U.S. at 76; *English*, 496 U.S. at 78.

119 *Geier*, 529 U.S. at 884; *Gade*, 505 U.S. at 98.

120 *Gade*, 505 U.S. at 98 (quoting *Paul*, 373 U.S. at 142–43); *accord English*, 496 U.S. at 78.

121 *Gade*, 505 U.S. at 98 (quoting Hines v. Davidowitz, 312 U.S. 52, 67 (1941)); *see also* Felder v. Casey, 108 S. Ct. 2302, 2306 (1988); Perez v. Campbell, 91 S.Ct. 1704, 1711, (1971); *English*, 496 U.S. at 79.

122 *Arizona*, 567 U.S. at 399 (quoting Rice v. Santa Fe Elevator Corp., 331 U.S. 218, 230 (1947); *English*, 496 U.S. at 78. Readers should note, however, that there can be overlap in these categories or other ways of grouping these circumstances. For example, in *Arizona*, the Court referred to three circumstances, one of which was the circumstance in which federal law expressly prohibits state and local regulation. 567 U.S. at 399. The second is when "Congress . . . has determined"—though not in express terms—that a subject matter is subject to exclusive federal governance. *Id.* Such an intent can be inferred from a comprehensive system of regulation or from the existence of a dominant federal interest. *Id.* The circumstance in which it is impossible for a person to comply with both federal law and either state or local law is a third circumstance.

123 *See, e.g.*, Air Prods. Blue Energy, LLC v. Livingston Par. Gov't, No. 3:22-cv-809-SDD-RLB, 2022 WL 17904535 (M.D. La. Dec. 26, 2022); *see also State and Local Governmental Relations*, *supra* note 104, at 84–85.

124 *State and Local Governmental Relations*, *supra* note 104, at 84.

of state law preemption of local laws: (1) express preemption; (2) conflict preemption; and (3) field preemption.[125]

C. Takings Challenge

Under the United States Constitution, and under the constitutions of most states, the taking of private property by the government is prohibited unless it is for a public purpose and compensation is paid.[126] An outright taking of title or physical occupation of property can justify a takings claim, but in most cases an attempt by local government to regulate CCS will not involve a taking of title or a physical occupation. Prior to *Pennsylvania Coal Co. v. Mahon*, the general view was that the Takings Clause only applied to a "'direct appropriation' of property"[127] or "a practical ouster of [the owner's] possession."[128] But *Mahon* recognized the principle that, "while property may be regulated to a certain extent, if regulation goes too far it will be recognized as a taking."[129] The Court has generally avoided establishing a "set formula" for determining when a regulation goes too far and constitutes a taking, typically preferring to engage in an ad hoc evaluation of the facts in a particular case.[130]

Nonetheless, the Court will recognize two types of situations as takings without need for a case-specific inquiry.[131] The first is if a regulation requires the owner of property to suffer a permanent, physical invasion of his property, even if the invasion is small.[132] The second is if a "regulation denies all economically beneficial or productive use of land."[133]

A local regulation that prohibits or restricts CCS would not constitute a physical invasion. Further, such a regulation probably would not deny all economically beneficial or productive use of property. Thus, a successful takings claim may be challenging. Perhaps if a landowner has created a severed subsurface storage estate or granted a subsurface storage lease and

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125 *See, e.g.*, *State and Local Governmental Relations*, *supra* note 104, at 84 ("Mirroring the federal approach to preemption, almost all states follow a tri-partite approach to the preemption issue. In general, there are three different ways by which a state may preempt sub-state unit power: (1) express preemption, (2) implied preemption by occupation of the field, and (3) implied preemption by conflict." (footnote omitted)).

126 U.S. CONST. amend. V.

127 Lucas v. S.C. Coastal Council, 505 U.S. 1003, 1014 (1992) (quoting Legal Tender Cases, 79 U.S. 457, 551 (1870)).

128 *Id.* (quoting Transp. Co. v. Chicago, 99 U.S. 635, 642 (1879) (alteration in original)).

129 *Id.* at 1014 (quoting Pa. Coal Co. v. Mahon, 260 U.S. 393, 415 (1922).

130 *Id.* at 1015 (quoting Penn Cent. Transp. Co. v. City of New York, 438 U.S. 104, 124 (1978)).

131 *Lucas*, 505 U.S. at 1015.

132 *Id.*

133 *Id.*

the government later bans CCS activities, a viable regulatory takings claim might exist, but successful regulatory takings claims likely will be rare in disputes involving CCS regulations. A thorough discussion of regulatory takings claims is beyond the intended scope of this Article, but other authors have covered the topic.[134]

V. SOME POTENTIAL SOURCES OF PREEMPTION

A few federal statutes and types of state statutes deserve special mention as potential sources of preemption of local laws that might attempt to regulate CCS or CO_2 pipelines.

A. The Safe Drinking Water Act and State UIC Programs

The federal SDWA and the regulations promulgated under it provide a comprehensive set of underground injection control (UIC) regulations to protect underground sources of drinking water (USDWs) from subsurface injections, including the Class VI regulations that apply to subsurface injections of CO_2 for CCS.[135] Neither the SDWA nor the federal SDWA regulations provide for express preemption. Further, although the regulations are comprehensive, a "savings clause"[136] in the SDWA may undermine arguments that the SDWA preempts local regulations that are aimed at purposes other than protecting USDWs and may even undermine arguments that local regulations aimed at protecting USDWs are undermined.[137] This savings clause is found at 42 U.S.C. § 300h-2(d), which states:

> Nothing in this subchapter shall diminish any authority of a State or political subdivision to adopt or enforce any law or regulation respecting underground injection but no such law or regulation shall relieve any person of any requirement otherwise applicable under this subchapter.[138]

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134 *See, e.g.*, Brad Berge, *Regulatory Takings: What it Really Means to Plead the Fifth*, *in* ROCKY MTN. MIN. L. FDN. SPECIAL INST. ON THE L. OF FRACKING 6c-1 (2019); James Hudson, *Federal Regulatory Takings and Inverse Condemnation: A Practical Primer of Do's and Don'ts for Mineral Resource Project Proponents and Legal Practitioners*, *in* 48 ROCKY MTN. MIN. L. ANN. INST. (2002).

135 Various commentators provide introductory overviews of the Safe Drinking Water Act. *See, e.g.*, Keith B. Hall, *Regulation of Hydraulic Fracturing Under the Safe Drinking Water Act*, 19 BUFFALO ENV'T L.J. 1, 10–14 (2012).

136 In this context, a "savings clause" is a section of a statutory act which states that the act does not override or preempt application of some other provision of law that is thus "saved." *See, e.g.*, Air Prods. Blue Energy, LLC v. Livingston Par. Gov't, No. 3:22-cv-809-SDD-RLB, 2022 WL 17904535, at *5 (M.D. La. Dec. 26, 2022) (referring to 42 U.S.C. § 300h-2(d) as a "savings clause").

137 *Id.*

138 42 U.S.C. § 300h-2(d).

Indeed, some courts have held that this provision prevents the SDWA from giving rise to field preemption.[139]

In states that have primacy under the SDWA, there may be a stronger argument that the state UIC program preempts local efforts to regulate. For example, Louisiana has primacy for all types of injection wells.[140] When a local government in Louisiana enacted a moratorium on stratigraphic test wells (regulated as Class V wells under the SDWA) that would be used in testing a formation for purposes of preparing a Class VI CCS injection well application, a federal court held that the ordinance was preempted by the state's UIC regulations.[141] Years before, a state appellate court in Louisiana held that a local government's ban on Class II injection disposal wells was preempted by state law.[142] West Virginia has primacy for most classes of injection wells, including Class II, and a federal court held that a local government's ban on Class II wells was preempted by the state's UIC rules.[143]

B. Pipeline Safety Act

The PSA is found at 49 U.S.C. §§ 60101–60143.[144] The Act contains a provision stating, "A State authority may not adopt or continue in force safety standards for interstate pipeline facilities or interstate pipeline transportation."[145]

The legislation does not define "interstate pipeline facilities," but it states that "'pipeline facility' means a gas pipeline facility and a hazardous liquid pipeline facility."[146] It states that "'gas pipeline facility' includes a pipeline, a right of way, a facility, a building, or equipment used in transporting gas or treating gas during its transportation," and that "'gas' means natural gas, flammable gas, or toxic or corrosive gas."[147] Carbon dioxide itself is not corrosive, though carbon dioxide in the presence of moisture can be corrosive.[148] Thus, it is not clear that a carbon dioxide pipeline would be a "gas pipeline facility."

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139 *Id.*

140 40 C.F.R. § 147.950.

141 *Air Prods. Blue Energy, LLC*, 2022 WL 17904535, at *1, *6; *see infra* Part VI.A.1.

142 Vanguard Env't, LLC v. Terrebonne Par. Consol. Gov't, No. 2012-CA-1998, 2013 WL 4426508 (La. App. 1 Cir. 6/11/13); *see infra* Part VI.A.3.

143 EQT Prod. Co. v. Wender, 870 F.3d 322, 327 (4th Cir. 2017); *see infra* Part VI.F.

144 49 U.S.C. §§ 60101–60143.

145 *Id.* § 60104(c).

146 *Id.* § 60101(a)(18).

147 *Id.* § 60104(a)(2)–(3).

148 *See* Aprael S. Yaro Khalid R. Abdul-Khalik & Anees A. Khadom, *Effect of CO_2 Corrosion Behavior of Mild Steel in Oilfield Produced Water*, 38 J. LOSS PREVENTION PROCESS INDUS. 24 (2015).

The PSA states that "'hazardous liquid pipeline facility' includes a pipeline, a right of way, a facility, a building, or equipment used or intended to be used in transporting hazardous liquid," and that "hazardous liquid" means either "petroleum or a petroleum product," or a "nonpetroleum fuel, including biofuel, that is flammable, toxic, or corrosive or would be harmful to the environment if released in significant quantities," or "a substance the Secretary of Transportation decides may pose an unreasonable risk to life or property when transported by a hazardous liquid pipeline facility in a liquid state."[149] Thus, CO_2 could be a "hazardous liquid" if the Secretary of Transportation decides that it "pose[s] an unreasonable risk to life or property when transported by a hazardous liquid pipeline facility in a liquid state."[150]

Finally, the PSA was amended to include a provision on "[c]arbon dioxide regulation," which includes a sub-provision entitled "[t]ransportation in liquid state."[151] This sub-provision requires the Secretary of Transportation to "regulate carbon dioxide transported by a hazardous liquid pipeline facility" and requires that the Secretary "prescribe standards related to hazardous liquid to ensure the safe transportation of carbon dioxide."[152] Although this does not expressly state that carbon dioxide in a liquid state is a "hazardous liquid"—the term used in the preemption section quoted above—this sub-provision could be read as implicitly including liquid carbon dioxide within the category of "hazardous liquid." If it is read this way, state or local laws imposing safety requirements or standards for pipelines carrying carbon dioxide in a liquid state would be preempted. This would not expressly require preemption of state or local safety requirements for pipelines carrying carbon dioxide in a gaseous state.

Even if express preemption does not apply, it is possible that federal pipeline safety rules applicable to carbon dioxide pipelines would preempt state or local regulations by conflict preemption or field preemption. Courts have held, however, that the PSA does not preempt state or local rules that regulate for purposes other than safety.[153]

As discussed in more detail below, a federal district court concluded that the ordinances enacted by two counties in Iowa were preempted by

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149 49 U.S.C. § 60101(a)(4)–(5).

150 *Id.*

151 *Id.* § 60102(i)(1).

152 *Id.*

153 *See, e.g.*, Washington Gas Light Co. v. Prince George's Cnty. Council, 711 F.3d 412, 420–21 (4th Cir. 2013); Tex. Midstream Gas Servs. v. City of Grand Prairie, 608 F.3d 200, 210–11 (5th Cir. 2010); Portland Pipe Line Corp. v. City of South Portland, 288 F. Supp. 3d 321, 429–30 (D. Me. 2017).

the PSA.[154] In the case of one of the counties, the court rejected the county's argument that a setback provision in its ordinance was a matter of land use planning unrelated to safety concerns.[155] The court concluded that the county's setbacks were a safety regulation and that they were preempted.[156] The court relied at least in part on the fact that the safety regulations promulgated by PHMSA include setbacks that are designed for safety, but the facts of the case also suggested that the county was thinking about safety when it enacted its ordinance.[157]

The other county's ordinance included a requirement for a hazard mitigation plan and provisions regarding pipeline abandonment that appeared to be aimed at safety.[158] The court held that these were preempted by the PSA.[159]

C. State Pipeline Rules

Federal law does not preempt states from regulating the safety of intrastate CO_2 pipelines.[160] In some cases, if states have enacted regulations to do so, there may be a viable argument that those state safety rules preempt local efforts to regulate intrastate CO_2 pipelines.

VI. EXAMPLES OF LOCAL REGULATIONS AND PREEMPTION STATUTES OR LITIGATION

This Part includes discussion of relevant examples of local or state laws and litigation relevant to the subject of preemption. These include examples of local ordinances that attempt to regulate injection wells (whether Class VI wells or other classes of wells) or CO_2 pipelines, and for most of these examples, a discussion of litigation regarding whether the local ordinances were preempted. This Part also discusses a Utah statute that expressly preempts local regulation of CCS.

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154 *See infra* Part VI.C.1–2.

155 Couser v. Story Cnty., No. 4:22-cv-00383-SMR-SBJ, 2023 WL 8366208 (S.D. Iowa Dec. 4, 2023).

156 *Id.* at *15.

157 *Id.* at *13.

158 Couser v. Shelby Cnty., 681 F. Supp. 3d 920, 930 (S.D. Iowa 2023).

159 *Id.* at 944.

160 49 U.S.C. § 60105(a) provides that, except for "One-Call" rules and certain rules regarding actions for violations of a state's pipeline safety rules, PHMSA "may not prescribe or enforce safety standards and practices for an intrastate pipeline facility or intrastate pipeline transportation to the extent that the safety standards and practices are regulated by a State authority" and the State submits certain annual certifications to PHMSA. This recognizes that a State may regulate the safety of intrastate pipelines.

A. Local Regulation of Injection Wells in Louisiana

There have been efforts by local governments to regulate injection wells in Louisiana. These include regulations of Class II, V, and VI wells. In an action reminiscent of the attempts by some local governments to block the use of hydraulic fracturing several years ago, two parishes,[161] Livingston Parish and St. Helena Parish, in Louisiana have enacted ordinances designed to place moratoria on any carbon capture and storage projects within their borders.

1. Livingston Parish, Louisiana—Class V Wells and Class VI CCS Wells

i. Background—the State Grants Pore Space Leases

The State of Louisiana, through its State Mineral and Energy Board, has granted six leases granting the lessee the right to use pore spaces beneath certain state-owned lands for CCS.[162] One of the leases was granted to Air Products Blue Energy, LLC (Air Products) in October 2022. This lease covers a large area, including some areas beneath Lake Maurepas in Livingston Parish. Air Products plans to make hydrogen from natural gas in a reaction that creates carbon dioxide as a by-product and plans to capture the carbon dioxide and inject it into the subsurface for permanent sequestration. It is common to use the term "blue hydrogen" to refer to hydrogen that is made from natural gas in a process that is paired with carbon capture and storage.

Many residents of Livingston Parish have expressed opposition to Air Products' proposed CCS project. The opponents have expressed various fears, including fears expressed by commercial fisherman that the storage of carbon dioxide in the subsurface or the construction of a CCS facility might harm the productivity of Lake Maurepas for crabs and shrimp. Some citizens from nearby parishes have also voiced opposition.

ii. Parish Council Adopts Moratoria

On September 8, 2022, the Livingston Parish Council voted unanimously to enact Livingston Parish Ordinance No. 22-45, which imposes a one-year moratorium on the construction or operation of Class VI injection wells. Under the SDWA's UIC regulations, "Class VI" is the

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[161] In Louisiana, the main sub-state units of government are called "parishes," rather than "counties."

[162] The leases are styled as "operating agreements." Under certain circumstances, the State Mineral and Energy Board can grant leases through direct negotiation, rather than through a bidding process. The leases granted through direct negotiations are called "operating agreements." *See* LA. STAT. ANN. § 30:209. Copies of the agreements are available at *Special Notices and Announcements*, *supra* note 17.

category of wells used for injecting carbon dioxide for permanent storage.[163] The council asserted the one-year moratorium would allow time for the council to study the issue of CCS wells.

On October 13, 2022, the Livingston Parish Council voted, by a five-to-two margin, to adopt Livingston Parish Ordinance No. 22-49.[164] It places a one-year moratorium on the construction or operation of Class V injection wells.[165] Under the SDWA's UIC regulations, "Class V" is a category that includes various types of wells, including monitoring wells or any other wells that do not fit under Classes I, II, III, IV, or VI.[166] Air Products had planned on drilling Class V monitoring wells to study the subsurface geology in the area leased from the State for CCS. This would be part of Air Products' work in advance of actually constructing a CCS facility, and could be important for evaluating the safety of Air Products' plans.

The ordinance that the Parish Council adopted on October 13, 2022 also placed a one-year moratorium on conducting any seismic surveys associated with injection wells.[167] Seismic surveys involve the use of sound waves to map subsurface structures. Air Products had obtained seismic permits from the State of Louisiana and had planned to use seismic surveys to study the subsurface geology of the area it leased from the State. The information obtained from seismic studies could assist Air Products in planning its proposed CCS project.

iii. Lawsuit challenging Livingston Parish moratorium

Air Products responded by filing suit in the United States District Court for the Middle District of Louisiana on October 18, 2022.[168] In the suit, Air Products challenged Livingston Parish Ordinance No. 22-49, which places a one-year moratorium on any Class V monitoring wells and seismic surveys. Air Products contended that the ordinance is preempted by both federal and state law.

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163 Jacqueline DeRobertis, *Livingston Parish Imposes Year-Long Moratorium on Injection Wells, Pausing Carbon Capture Efforts*, THE ADVOCATE (Sept. 8, 2022), https://www.theadvocate.com/baton_rouge/news/environment/livingston-parish-imposes-year-long-moratorium-on-injection-wells-pausing-carbon-capture-efforts/article_913e8740-2fae-11ed-bd50-4bf62bd72d8c.html [https://perma.cc/ZPH3-BVZV].

164 Air Prods. Blue Energy, LLC v. Livingston Par. Gov't, No. 3:22-cv-809-SDD-RLB, 2022 WL 17904535, at *1 (M.D. La. Dec. 26, 2022).

165 *Id.*

166 *See* 40 C.F.R. § 144.6(e).

167 *Air Prods. Blue Energy, LLC*, 2022 WL 17904535, at *4.

168 The suit was styled *Air Products Blue Energy, LLC v. Livingston Parish Government*, 3:22-cv-809 and was assigned to Judge Shelly D. Dick, with the assigned Magistrate Judge being Richard L. Bourgeois, Jr.

Air Products sought: (1) a declaratory judgment that the ordinance is preempted, to the extent it put a one-year moratorium on seismic surveys; (2) an injunction barring enforcement of the one-year moratorium on seismic surveys; (3) a declaratory judgment that the one-year moratorium on Class V wells is preempted; and (4) an injunction barring enforcement of the moratorium on Class V wells.[169]

In support of its suit, Air Products noted: the State of Louisiana granted a lease to Air Products for CCS, and the area where Air Products intends to construct Class V wells and conduct seismic surveys are state-owned area; the SDWA is a federal law that, together with its regulations, provides for a comprehensive regulation of subsurface injections, including injections using Class V wells; the EPA has granted the State of Louisiana "primacy" to administer the SDWA's Class V well regulations within the State, and Louisiana has its own injection well regulations; the State of Louisiana has exclusive authority to grant permits for seismic surveys on state-owned land; and the State of Louisiana had granted a permit to Air Products to conduct a seismic survey.[170]

Livingston Parish argued that Air Products lacked standing, but the court rejected that argument.[171] The court noted that Air Products has acquired a lease from the State of Louisiana to conduct CCS operations, the seismic testing and Class V monitoring wells that are prohibited by the challenged moratorium provide information that is essential for preparing a CCS permit application, and Air Products had acquired permits from the state regulator to conduct seismic activities and drill a Class V monitoring well. Thus, Air Products' objection to the ordinance was not merely theoretical or philosophical, and Air Products had standing.

Livingston Parish also argued that Air Products' claim was not ripe, but the court rejected that argument too. Air Products provided evidence that it planned to start the sort of work that would be prohibited by the ordinance in December 2022. Thus, the effect of the ordinance on Air Products was not something that would arise in the distant future, and the claim was ripe.

The court then considered whether Air Products was entitled to a preliminary injunction to block enforcement of the ordinance. The court stated that, to be entitled to a preliminary injunction, a party must show four things: (1) a substantial likelihood of success on the merits; (2) a substantial threat that the party seeking the injunction will incur irreparable

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169 Complaint for Declaratory and Injunctive Relief, Air Prods. Blue Energy, LLC v. Livingston Par. Gov't, No. 3:22-cv-809 (M.D. La. Oct. 18, 2022).

170 *See id.*

171 *Air Prods. Blue Energy, LLC*, 2022 WL 17904535.

injury in the absence of an injunction; (3) the threatened injury to the party seeking the injunction outweighs any damage that the injunction would cause to the adverse party; and (4) the injunction would not do disservice to the public interest.[172]

The court first considered the likelihood that Air Products would succeed on the merits. The court rejected Air Products' argument that the Livingston Parish ordinance is preempted by federal law—namely, the SDWA. The SDWA does not contain an express preemption provision. Further, the court noted that the SDWA contains a savings clause in 42 U.S.C. § 300h-2(d) that allows states to regulate underground injections, provided that doing so does not impinge on federal regulations. Specifically, the savings clause states: "Nothing in this subchapter shall diminish any authority of a State or political subdivision to adopt or enforce any law or regulation respecting underground injection but no such law or regulation shall relieve any person of any requirement otherwise applicable under this subchapter."

Given this savings clause, the court concluded that federal law did not preempt the challenged ordinance by field preemption.[173] Further, the court concluded that the ordinance did not directly interfere with federal law.[174] For these reasons, the court held that the challenged Livingston Parish ordinance was not preempted through conflict preemption. Thus, federal law would not preclude enforcement of the ordinance.

Next, the court addressed the possibility that Livingston Parish's moratorium on Class V wells is preempted by state law.[175] The court noted that the Louisiana First Circuit Court of Appeal determined in a prior case involving other parties that Louisiana's underground injection control laws preempted a local ordinance that sought to regulate the location of Class II injection wells.[176] The court reasoned that if Louisiana's injection control laws preempt local efforts to regulate Class II injection wells, then Louisiana law would preempt local efforts to regulate Class V wells.[177]

The federal court also noted that Louisiana has a pervasive set of statutes and regulations governing underground injections.[178] This convinced the court that Livingston Parish's moratorium on Class V wells

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172 *Id.* at *4 (citing Tex. Med. Providers Performing Abortion Servs. v. Lakey, 667 F.3d 570, 574 (5th Cir. 2012)).

173 *Id.* at *5.

174 *Id.*

175 *Id.* at *6.

176 *Id.* (citing Vanguard Env't, LLC v. Terrebonne Par. Consol. Gov't, No. 2012-CA-1998, 2013 WL 4426508 (La. App. 1 Cir. 6/11/13)).

177 *Id.* at *7.

178 *Id.* at *6.

was preempted. The federal district court concluded that Livingston Parish's moratorium on seismic surveys was likewise preempted because it was linked to the ban on Class V wells. For these reasons, the court reasoned that Air Products was likely to succeed on the merits.

The court concluded that the other requirements for a preliminary injunction were also satisfied, and that the Livingston Parish ordinance would cause irreparable harm to Air Products' goodwill and competitive advantage. The court explained that the threatened harm to Air Products outweighed any harm to Livingston Parish because a governmental entity has no legally valid interest in enforcing an illegal law. Finally, the court stated that an injection that requires compliance with the law is in the public interest. Accordingly, the court issued a preliminary injunction to bar enforcement of the Livingston Parish's October 2022 ordinance that imposed a one-year moratorium on Class V wells and seismic surveys.[179] Livingston Parish later agreed to entry of a consent judgment that the ordinance was not enforceable.

2. St. Helena Parish, Louisiana—Class VI CCS Wells

St. Helena Parish has adopted a moratorium on CCS projects,[180] but no CCS project is yet scheduled for that parish and no legal challenge has been filed.

3. Terrebonne Parish, Louisiana—Class II Wells

If a state has primacy for Class VI wells—North Dakota, Wyoming, and Louisiana have primacy[181]—local government ordinances that attempt to regulate Class VI wells might be preempted by state law. *Vanguard Environmental, LLC v. Terrebonne Parish Consolidated Government*[182] demonstrates this by analogy. The issue in this case was whether Louisiana's state laws preempt a local government's effort to regulate Class II wells, a class of injection wells for which Louisiana has primacy. Under Louisiana's rules governing Class II wells, a commercial disposal well generally may not be located within 500 feet of a residential, commercial,

179 *See Air Prods. Blue Energy, LLC*, 2022 WL 17904535.

180 Jacqueline DeRobertis & Lara Nicholson, *Residents In Livingston, St. Helena Continue Pushback Against Carbon Capture Technology*, THE ADVOCATE (Oct. 13, 2022), https://www.theadvocate.com/baton_rouge/news/residents-in-livingston-st-helena-continue-pushback-against-carbon-capture-technology/article_cfbe392c-4b22-11ed-956a-f7fa7d94b2b2.html [https://perma.cc/GD35-UGXD]. A copy of the ordinance is available at St. Helena Parish, La., Ordinance to Adopt a Twelve Month Moratorium (Oct. 13, 2022) (available at https://library.municode.com/la/st._helena_parish_police_jury/ordinances/code_of_ordinances?nodeId=1236235).

181 40 C.F.R. §§ 147.950 (Louisiana), 147.1751 (North Dakota), and 147.2550 (Wyoming).

182 No. 2012-CA-1998, 2013 WL 4426508 (La. App. 1 Cir. 6/11/13).

or public building, or a church, school, or hospital.[183] A Terrebonne Parish ordinance prohibited any Class II well from being located within one mile of a residence or commercial structure.[184] Vanguard Environmental, LLC obtained a permit from the Louisiana Office of Conservation to construct and operate a Class II well, but Terrebonne Parish tried to block the well on grounds that the well was less than a mile from certain buildings.[185]

Vanguard sued, asserting that the Terrebonne Parish ordinance was preempted by state law. The district court granted summary judgment in favor of Vanguard, holding that the ordinance was preempted. Terrebonne Parish appealed to the Louisiana First Circuit Court of Appeal, which affirmed the district court's ruling. The appellate court noted that Louisiana has comprehensive oil and gas regulations. Further, the state regulates Class II wells, which are used to dispose of oilfield wastes.[186] The appellate court concluded that the rules governing injection disposal wells "are pervasive and clearly manifest a legislative intention to preempt the field in its entirety."[187] In other words, "field preemption" of local law by state law rendered the ordinance unenforceable.

Given that the First Circuit discussed the pervasive nature of state oil and gas regulations before concluding that Louisiana's injection well regulations are sufficient to support preemption, *Vanguard* arguably could be distinguished. After all, the case concerned a local government's effort to regulate an injection well that would be used to dispose of oilfield wastes. However, the ultimate holding was that Louisiana's Class II regulations were sufficiently pervasive that field preemption applied and thereby invalidated Terrebonne Parish's ordinance.[188] The Louisiana Supreme Court has not ruled on whether Louisiana's underground injection control regulations preempt local attempts to regulate injections, but assuming that *Vanguard* is a correct expression of Louisiana law—that is, that Louisiana's Class II rules preempt local attempts to regulate Class II wells—it seems highly probable that Louisiana's state laws preempt local efforts to regulate Class V or Class VI injection wells.

B. Monterey County, California – Ban on Class II Wells

In 2016, Monterey County, California enacted an ordinance by local referendum to ban certain oil and gas activities, including hydraulic fracturing, injection disposal of oil and gas wastewater, the drilling of new wells for oil and gas production or oil and gas wastewater disposal, and

183 LA. ADMIN. CODE tit. 43, pt. XIX, § 507.
184 *Vanguard Env't, LLC*, 2013 WL 4426508 at *1.
185 *Id.*
186 *See* LA. ADMIN. CODE tit. 43, pt. XIX, §§ 401–33.
187 *Vanguard Env't, LLC*, 2013 WL 4426508 at *6.
188 *Id.*

impoundment of wastewater in the county's unincorporated areas.[189] Chevron U.S.A. Inc. (Chevron) and other oil and gas companies filed a total of six actions challenging the ordinance on various grounds, including state and federal preemption.[190] A group called "Protect Monterey County" (PMC) which had supported passage of the ordinance intervened to help defend it.[191]

After a bench trial, the district court dismissed the plaintiffs' challenge regarding a portion of the ordinance that bans hydraulic fracturing.[192] The court did so on ripeness and standing grounds, based on the fact neither the plaintiffs nor anyone else was using or proposing to use hydraulic fracturing in Monterey County.[193] The court otherwise ruled in favor of the plaintiffs, holding that the other restrictions in the ordinance were invalid based on state and federal preemption.[194] The trial court concluded that California's state laws completely occupy the field of oil and gas regulation with respect to oil and gas production techniques.[195] The court also concluded that the ban on injections of wastewater was preempted by federal law—in particular, by the SDWA.[196]

Monterey and PMC appealed, but the county abandoned the appeal.[197] PMC continued to pursue it, but the appellate court affirmed based on state preemption.[198] However, the California Supreme Court agreed to hear the case.[199]

PMC argued that local governments can engage in land use planning or zoning that regulates where oil and gas activity takes place or zoning that prohibits oil and gas activity throughout a jurisdiction.[200] The California Supreme Court agreed that local governments can use zoning to regulate oil and gas activity, but the court disagreed with PMC's argument that the challenged ordinance was an example of zoning.[201] The court believed that the county was regulating oil and gas production techniques, rather than the location of activities.[202]

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189 Chevron U.S.A., Inc. v. Cnty. of Monterey, 532 P.3d 1120, 1122 (Cal. 2023).
190 *Id.* at 1122.
191 *Id.*
192 *Id.* at 1123.
193 *Id.*
194 *Id.*
195 *Id.*
196 *Id.*
197 *Id.*
198 *Id.*
199 *Id.* at 1122.
200 *Id.* at 1126–27.
201 *Id.* at 1126.
202 *Id.* at 1126, 1127.

The court noted that the oil and gas in Monterey County is very viscous and that steam injection is used to heat the oil, thereby lowering its viscosity so that the oil can be pumped more easily.[203] Further, Chevron argued that, because oil and gas wastewater is the source of the water heated to make the steam used in the steam injections, a prohibition on injection of wastewater would interfere with a production technique used in the County.[204] The California Supreme Court noted that state law gives the state regulator the authority to approve all oil and gas production techniques the regulator finds "suitable."[205]

Under Article XI, Section 7 of the California Constitution, a county may enforce any ordinance "not in conflict with general laws" enacted by the State.[206] If, however, local law conflicts with state law, it is preempted.[207] The California Supreme Court noted that it has identified three ways in which a local ordinance can be preempted based on a conflict.[208] These three ways are if the local ordinance duplicates state law, contradicts state law, or enters a field state law expressly or implicitly has fully occupied.[209]

The court elaborated that local law duplicates state law when it is "coextensive therewith."[210] Local law that contradicts state law is "inimical" to state law.[211] State law fully occupies a field when state law expressly manifests an intent to do so.[212] State law impliedly occupies a field when: (1) state law so thoroughly regulates a subject as to "clearly indicate it has become exclusively a matter of state concern," (2) state law partially regulates a subject and the state law has language suggesting that the subject has become one of exclusive state concern, so that local laws will not be tolerated, or (3) state law partially regulates a subject and the adverse effect of a local ordinance on the citizens of the state outweighs the possible benefit to the locality.[213]

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203 *Id.* at 1127.

204 *See* Respondent Chevron U.S.A., Inc's Answering Brief at 22, Chevron U.S.A., Inc. v. Cnty. of Monterey, 532 P.3d 1120, 1122 (Cal. 2023) (No. S271869), 2022 WL 20093682, at *22.

205 *Chevron U.S.A., Inc.*, 532 P.3d at 1125.

206 CAL. CONST. art. IX § 7 ("A county or city may make and enforce within its limits all local, police, sanitary, and other ordinances and regulations not in conflict with general laws.").

207 *Chevron U.S.A., Inc.*, 532 P.3d at 1123.

208 *Id.*

209 *Id.* at 1123–24.

210 *Id.* at 1124 (quoting Sherwin-Williams Co. v. City of Los Angeles, 844 P.2d 534, 537).

211 *Id.*

212 *Id.*

213 *Id.*

The California Supreme Court noted that state law directs the state regulator to "supervise" oil production and "to permit" operators to "utilize all methods and practices" the regulator believes "are suitable for th[e] purpose."[214] The court concluded that because the challenged Monterey ordinance prohibited a production technique that the state regulator might conclude is appropriate—namely, steam and water injection—the local ordinance was inimical to state law and therefore was preempted.[215] For similar reasons, the other restrictions at issue were also preempted.

The court expressly noted that it was not stating an opinion on the authority of local governments to use zoning to restrict oil and gas activity.[216] And, because the court concluded the local ordinance was preempted by state law, the California Supreme Court—like the appellate court[217]—did not reach the question of whether the ordinance was preempted by federal law or whether it constituted a taking of the plaintiffs' property.[218]

C. Iowa CO_2 Pipeline Litigation

At least five counties in Iowa—Shelby, Story, Kossuth, Emmet, and Palo Alto—passed ordinances to regulate the location of carbon dioxide pipelines. As will be discussed below, a company that was attempting to develop a carbon dioxide pipeline network filed separate lawsuits against two of these counties (Shelby and Story) and obtained in each case a preliminary injunction to block enforcement of the ordinances on grounds that they are preempted by state law. Each of the two cases is on appeal. The company has filed similar actions against Kossuth, Emmet, and Palo Alto, but those cases have not yet progressed very far.

1. Story County Litigation

Iowa farmers produce a large amount of corn, the state's most valuable agricultural commodity.[219] Much of the corn is sold to ethanol refineries located in the Midwest. These refineries convert corn starch to ethanol that is used for fuel. One of the byproducts of this ethanol production is CO_2, which typically is vented to the air by ethanol refineries. Carbon dioxide is

214 *Id.* at 1125 (alteration in original).

215 *Id.*

216 *Id.* at 1127.

217 Chevron U.S.A., Inc. v. Cnty. of Monterey, 285 Cal. Rptr. 3d 247, 250 (Cal. Ct. App. 2021).

218 *Chevron U.S.A., Inc.*, 532 P.3d at 1129 n.9.

219 Couser v. Story Cnty., No. 4:22-cv-00383-SMR-SBJ, 2023 WL 8366208, at *1 (S.D. Iowa Dec. 4, 2023). The docket number of this case is Civil No. 4:22-cv-00383, which was assigned to Chief Judge Stephanie M. Rose.

also a byproduct of fertilizer production, and the CO_2 produced in fertilizer plants typically is vented to the atmosphere. An alternative to venting all this CO_2 is to capture it and inject it underground for permanent storage.

Summit Carbon Solutions, LLC (Summit) has begun a project to construct an interstate network of pipelines across five states—South Dakota, North Dakota, Minnesota, Nebraska, and Iowa—to receive CO_2 that would be captured from more than thirty facilities, mostly ethanol and fertilizer plans.[220] Summit would then use the network to transport the CO_2 to an injection site in North Dakota.[221] The portion of the pipeline network that would be located in Iowa would pass through thirty counties, including Story County.[222]

On January 28, 2022, Summit filed a "Petition for a Hazardous Liquid Pipeline Permit" with the Iowa Utilities Board (IUB).[223] In October 2022, while Summit's application with the IUB was still pending, the Story County Board of Supervisors (Story County Board) began consideration of a proposed ordinance to establish setbacks and other requirements for hazardous materials pipelines.[224] The Story County Planning and Development Department presented the proposed ordinance to the Story County Board prior to a hearing on October 18, explaining that the proposed ordinance would address safety concerns.[225] At a meeting held on October 25, 2022, the Story County Board enacted the proposal as Ordinance No. 306.[226]

Ordinance No. 306 required that carbon dioxide pipelines be located at least a specified "setback" distance from various types of locations—such as homes, schools, hospitals, parks, churches, and so forth—with the minimum setback distance depending on the type of location and the type

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220 A map showing the proposed pipeline network appears on Summit's website. *See Project Footprint*, SUMMIT CARBON SOLS., https://summitcarbonsolutions.com/project-footprint/[https://perma.cc/R95F-2TWP] (last visited Aug. 8, 2024). The website also notes that the network would be collecting CO_2 from ethanol plan and "agricultural industries." *Project Benefits*, SUMMIT CARBON SOLS., https://summitcarbonsolutions.com/project-benefits/ [https://perma.cc/L4MK-SQ7P] (last visited Aug. 8, 2024).

221 *See Project Footprint*, *supra* note 220.

222 Summit stated in November 2023 that "75% of impacted landowners in Iowa have signed voluntary easements with Summit." Press Release, Summit Carbon Sols., Summit Carbon Solutions Concludes Iowa Utilities Board Hearings for CO2 Pipeline Project (Nov. 9, 2023), https://summitcarbonsolutions.com/progress/ [https://perma.cc/4EMS-CVBE].

223 *Story Cnty.*, 2023 WL 8366208, at *1.

224 *Id.* at *2.

225 *Id.*

226 *Id.*

of hazardous substance carried by the pipeline.[227] Ordinance No. 306 also imposed other requirements, including an emergency planning requirement and a minimum depth or "cover" requirement for pipelines.[228]

In November 2022, Summit filed suit in the United States District Court for the Southern District of Iowa, seeking an injunction to bar enforcement of Ordinance No. 306 on grounds that it is preempted by federal and state law, including the safety provisions of the PSA and the pipeline routing authority of the IUB.[229] In May 2023, while the litigation was still pending, Story rescinded Ordinance No. 306, but enacted Ordinance No. 311.[230] The new ordinance imposed certain requirements similar to those imposed by Ordinance No. 306, such as setbacks and an emergency plan requirement, as well as trenchless construction requirements for certain areas and a requirement that no construction begin until a company acquired all required federal, state, and local permits.[231]

But the Story County Board made a point of stating that its motivation for enacting Ordinance No. 311 was different than for enacting Ordinance No. 306.[232] This time, the Story County Board contended that it was concerned about traditional land use issues, not safety.[233] In August 2023, both Story County and Summit filed motions for summary judgment.[234]

i. State law preemption and pipeline regulation in Iowa

Before analyzing Summit's contention that state law preempts the challenged Story County ordinances, the court provided an overview of relevant legal principles.[235] The court noted that, in 1978, Iowa amended its state constitution to grant home rule authority to local governments.[236] Under this authority, local governments may enact ordinances on any matter that they wish, unless a state statute denies them the authority to do so.[237] A state statute may preempt or deny local governments the authority to regulate certain matters in either an express or an implied manner.[238] The court explained that express preemption occurs when a state statute

227 *Id.*
228 *Id.* at *3.
229 *Id.*
230 *Id.* at *3–4.
231 *Id.* at *3.
232 *Id.* at *4.
233 *Id.*
234 *Id.* at *5.
235 *Id.* at *6–9.
236 *Id.* at *6 (citing IOWA CONST. art. III, § 39A).
237 *Id.* (citing City of Des Moines v. Master Builders of Iowa, 498 N.W.2d 373, 373 (Iowa 1993)).
238 *Id.* (citing Goodell v. Humboldt Cnty., 575 N.W.2d 486, 492 (Iowa 1998)).

"has directly prohibited local action" on a subject.[239] Implied preemption occurs in one of two main ways. First, it occurs if an ordinance "prohibits an act permitted by a [state] statute, or permits an act prohibited by statute."[240] Second, implied preemption occurs if state legislation covers a subject "in such a manner as to demonstrate a legislative intention that the field is preempted by state law."[241]

The court noted that Iowa has legislation that governs pipelines and liquid storage facilities, with this legislation being found at Iowa Code §§ 479B.1 through 479.B.33.[242] The legislation prohibits anyone from building a pipeline without obtaining a permit from the IUB, which can set conditions on the route of the pipeline.[243]

ii. Federal pipeline regulation

The court stated that "[f]ederal statutes and regulations govern nearly every part of the construction and operation of hazardous liquids pipelines," and that part of the federal law includes the PSA.[244] The PSA directs the U.S. Department of Transportation (DOT) to "prescribe minimum safety standards for pipeline transportation and pipeline facilities,"[245] including regulations regarding the "the design, installation, inspection, emergency plans and procedures, testing, construction, extension, operation, replacement, and maintenance of pipeline facilities."[246] Within DOT, this authority is delegated to the PHMSA, which has promulgated regulations relating to setbacks, construction standards, and emergency planning.[247]

iii. Preemption of Ordinance No. 306

Summit's motion for summary judgment addressed Ordinance No. 311, but also Ordinance No. 306, which in large part had been repealed with the enactment of Ordinance No. 311.[248] Summit did so in case Ordinance No. 311 was ruled to be invalid and someone then would raise the question whether the invalidation of Ordinance No. 311 revoked the

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239 *Id.* (citing Chelsea Theater Corp. v. City of Burlington, 258 N.W.2d 372, 373 (Iowa 1977)).

240 *Id.* (quoting City of Des Moines v. Gruen, 457 N.W.2d 340, 342 (Iowa 1990)).

241 *Id.* (quoting City of Council Bluffs v. Cain, 342 N.W.2d 810, 812 (Iowa 1993)).

242 *Id.* at *7.

243 IOWA CODE §§ 479B.3, 479B.4.

244 *Story Cnty.*, 2023 WL 8366208, at *7.

245 *Id.* (quoting 49 U.S.C. § 60102(a)(2)).

246 *Id.* (quoting 49 U.S.C. § 60102(a)(2)(B)).

247 *Id.* at *7–8. These regulations are found in the Code of Federal Regulations at Title 49, Subtitle B, Chapter I, Subchapter D (49 C.F.R. §§ 190.1–190.411).

248 *Story Cnty.*, 2023 WL 8366208 at *8.

repeal of Ordinance No. 306.[249] The Story County Board contended, however, that the challenge to Ordinance No. 306 was moot because Ordinance No. 306 would not be revived by a ruling that invalidated Ordinance No. 311.[250] Further, the Board conceded that the challenged portions of Ordinance No. 306 would be preempted.[251] The court acknowledged these representations, but the court also stated that its preemption analysis regarding Ordinance No. 311 would apply equally to Ordinance No. 306.[252]

iv. Preemption of Ordinance No. 311

The parties disputed the intent of Ordinance No. 311.[253] Summit contended that, in enacting Ordinance No. 311, the Story County Board was attempting to address safety concerns. The Board conceded that it was addressing safety concerns when it enacted Ordinance No. 306, but the Board argued that its intent in enacting Ordinance No. 311 was merely to address traditional land planning issues, even though the provisions of Ordinance No. 311 are similar to those in Ordinance No. 306. The court described the Board's argument as "particularly unconvincing," but stated the Board's intent was not relevant to the preemption analysis.[254]

The court concluded that Ordinance No. 311's setback rules were unenforceable because of implied preemption. Iowa law gives the IUB the authority to approve pipelines, and a company that seeks the IUB's approval for a proposed pipeline must show the proposed route. Thus, noted the court, the possibility exists that the IUB might approve Summit's proposed pipeline, including the proposal to route the pipeline through Story County. But Ordinance No. 311 imposes setbacks, including the relatively large setback of one-quarter of a mile, from so many types of locations that routing a pipeline through the county in compliance with the setbacks established by the Ordinance would be "essentially impossible."[255] This "will create a serious possibility the IUB would approve the construction of the pipeline but Summit would be unable to build" it in compliance with the Ordinance.[256] Because Ordinance No. 311 might have the effect of prohibiting an act permitted by state statute, the Ordinance was unenforceable under implied preemption.[257]

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249 *Id.*
250 *Id.*
251 *Id.*
252 *Id.*
253 *Id.* at *9.
254 *Id.*
255 *Id.* at *11.
256 *Id.* at *10.
257 *Id.*

The court also found that the minimum depth or cover requirement, the trenchless construction requirement, and the requirement that the commencement of construction wait until a company has all necessary federal, state, and local permits, are each impliedly preempted by Iowa Code § 479B. The state statute requires an applicant for IUB approval to submit information about construction techniques and the company's acquisition of required permits.[258]

The court concluded that provisions of Ordinance No. 311 (and Ordinance No. 306) are preempted by federal law too. The PSA contains setbacks, emergency planning requirements, and other provisions aimed at safety. Further, a portion of the PSA, namely 49 U.S.C. § 60104(c) states, "[a] [s]tate authority may not adopt or continue in force safety standards for interstate pipeline facilities or interstate pipeline transportation." Further, the PSA delegates sole authority to enact safety regulations for interstate pipelines to PHMSA.[259] Concluding that setbacks are safety standards, the court stated that Ordinance No. 311's setbacks are preempted by federal law. For similar reasons, the court held that Ordinance No. 311's emergency planning requirements are preempted.

2. Shelby County Litigation

In 2022, the Shelby County Board of Supervisors (Shelby County Board) enacted Ordinance No. 2022-4 in response to the plans of Summit to develop an interstate network of CO_2 pipelines, part of which would pass through Shelby County, Iowa.[260] The planned network would involve more than 650 miles of pipelines in five states, including Iowa. The pipeline would carry CO_2 captured at thirty-one locations, including twelve ethanol and fertilizer plants in Iowa. The pipeline network would pass through thirty of Iowa's counties.

State statutes in Iowa delegate authority over pipelines to the IUB. As part of the process required to obtain approval for the portion of its pipeline network planned for Iowa, Summit held information meetings in

258 *Id.* at *11–12.

259 49 U.S.C. § 60102(a)(2).

260 Couser v. Shelby Cnty., 681 F. Supp. 3d 920 (S.D. Iowa 2023). William Couser was one of two plaintiffs, with Summit being the other. Mr. Couser does not reside or own land in Shelby County. He resides in Story County, Iowa and owns a feed lot that produces corn that he sells to a company that uses it to make ethanol. Couser asserts that, if a CCS project is developed in Iowa, and captures CO_2 from the ethanol refineries there, he will be able to sell this corn at a higher price because there will be increased demand for ethanol that has a lower carbon footprint. Further, he asserted that Shelby County's ordinance would prevent development of CCS, thereby causing him injury. The court concluded that this alleged injury was too speculative and that Couser therefore lacked standing to sue. *Id.* at 937. The court held, on the other hand, that Summit had standing. *Id.*

the thirty counties of Iowa through which its planned pipeline network would run.[261] Summit then filed a Petition for a Hazardous Liquid Pipeline Permit with the IUB.[262]

While Summit's permit application with the IUB was pending, some residents of Shelby County submitted a petition to the Shelby County Board, requesting they enact an ordinance to regulate pipelines.[263] The Shelby County Board referred the petition to the Shelby County Planning and Zoning Commission in August 2022.[264] The Commission recommended that the Shelby County Board adopt an ordinance to govern hazardous liquids pipelines. The Shelby County Board did so in November 2022, enacting Ordinance No. 2022-4.[265]

This Ordinance asserted that a rupture of its pipeline "could threaten the health and lives of county residents."[266] Ordinance No. 2022-4 provided that anyone seeking to operate a pipeline within Shelby County must first apply for a "conditional use permit." The permit application must include a copy of the person's complete application to the IUB, maps indicating the pipeline route, an emergency response and hazard mitigation plan, a template of the proposed agreement that the person would use in attempting to negotiate for pipeline easements, certain fees, and other information.[267] The ordinance also prohibited local landowners from entering into easement agreements with a pipeline company unless the landowners first paid a fee to the county and obtained their own conditional use permit.[268] In addition, Ordinance No. 2022-4 imposed certain obligations to restore the land and remove pipelines at the end of the life of the CCS facility. Finally, Ordinance No. 2022-4 imposed setback requirements. Some of the setback distances were large—such as at least half a mile from certain locations, at least one-quarter of a mile from others, and at least 1,000 feet from various others.[269]

On November 15, 2022, the plaintiffs filed suit against the Shelby County Board in the United States District Court for the Southern District of Iowa. They asserted in their complaint that Ordinance No. 2022-4 is preempted by the federal PSA and by Iowa Code § 479B, which gives the

261 *Id.* at 938.

262 *Id.*

263 *Id.* at 929.

264 *Id.*

265 *Id.*

266 *Id.*

267 *Id.* at 928–29.

268 *Id.* at 931. The Shelby County Planning and Zoning Commission later sent letters to some landowners who had granted easements to Summit, threatening the landowners with fines of up to $750 per day, unless the landowners somehow terminated the easement agreements that they already had granted. *Id.* at 932.

269 *Id.* at 931.

IUB authority to issue permits approving the construction of pipelines.[270] The parties later agreed to a temporary restraining order to bar enforcement of the Ordinance until the court held a hearing and ruled on a motion for a preliminary injunction. The court held a hearing in March 2023, and in July 2023 the court issued its decision, granting the preliminary injunction sought by Summit to enjoin enforcement of the Ordinance.[271]

The court noted that, in 1978, Iowa amended its constitution to grant home rule authority to local governments. This expanded the authority of local governments, which previously could not regulate on a subject unless they had been delegated specific authority to do so. Under home rule authority, however, local governments were given authority to enact ordinances on any subject they choose, unless a state statute denies them authority to regulate on that subject.

A state statute can deny this authority "in an express or an implied manner."[272] Express preemption occurs when the state legislature expressly prohibits local regulation.[273] An implied preemption occurs when the legislature regulates a subject in a manner that "demonstrate[s] a legislative intention that the field is preempted by state law" or when a local ordinance purports either to prohibit an act permitted by a state statute or to permit an act prohibited by state statute.[274]

3. Litigation in Kossuth, Emmet, and Palo Alto Counties, Iowa

Summit has also filed actions in federal courts in Iowa against Kossuth,[275] Emmet,[276] and Palo Alto[277] Counties. All of those cases are in the early stages of litigation at the time this is being written in early 2024.

D. Utah—Express Preemption of Local CCS Regulations

Utah's CCS statutes contain a section designed to preempt most local regulation of CCS.[278] Although the relevant section does not expressly state

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270 *Id.*

271 *Id.*

272 *Id.* at 933.

273 *Id.*

274 *Id.* Notably, this preemption scheme for determining whether state law preempts local law is similar to that used to analyze whether federal law preempts state or local law.

275 Summit Carbon Sols., LLC v. Kossuth Cnty., No. 3:24-cv-03002 (N.D. Iowa filed Jan. 2, 2024).

276 Couser v. Emmet Cnty., No. 3:23-cv-03007 (N.D. Iowa filed Mar. 28, 2023).

277 Summit Carbon Sols., LLC v. Palo Alto Cnty., No. 3:24-cv-3006 (N.D. Iowa filed Jan. 19, 2024).

278 UTAH CODE ANN. §§ 40-11-1 to -22.

that local regulation of CCS is generally preempted, the statute makes this intent clear in multiple ways. First, the section, Utah Code § 40-11-2, is entitled "Preemption." Second, the opening paragraph of § 40-11-2 establishes a foundation for preemption by declaring that the "[r]egulation of geologic carbon storage is of statewide concern." In some jurisprudence governing the circumstances in which state law will preempt local ordinances, courts use the term "statewide concern" to describe subjects on which state laws preempt local laws.[279] In addition, the first paragraph of § 40-11-2 goes on to state that "the state regulation of geologic carbon storage activity occupies the whole field of geologic carbon storage subject to" relevant federal law and the State of Utah acquiring primacy for Class VI wells.[280] Under preemption jurisprudence, local regulation is preempted if state law on a subject "occupies the whole field."

The second paragraph of Utah Code § 40-11-2 goes on to specify a narrow ground on which local regulation is allowed. This provision states that a political subdivision may enact ordinances that are: (1) "consistent with the political subdivision's general land use authority," (2) "regulate[] only surface activity that is incidental to geologic carbon storage activity," (3) "does not effectively or unduly limit, ban or prohibit" CCS, and (4) is not "preempted by federal law."[281]

E. New York Regulation of Class III Injection Wells

In *Bath Petroleum Storage, Inc. v. Sovas*,[282] the plaintiff was the operator of an underground liquified petroleum gas (LPG)[283] storage facility in Steuben County, New York. The plaintiff—Bath Petroleum Storage, Inc. (Bath)—stored LPG in underground salt caverns created by solution mining of salt.[284] In the solution mining process, an injection well is drilled into an underground salt formation. Water is then pumped into the salt, dissolving a portion of the salt. The briny water can then be pumped back to the surface, leaving behind a cavern in the salt.

Sometimes, solution mining of a salt formation is done for the purpose of recovering the salt. Other times, solution mining of a salt formation is done for the primary purpose of creating a cavern. Such salt caverns can serve as excellent storage reservoirs for natural gas or liquid hydrocarbons. Indeed, the United States' Strategic Petroleum Reserve stores crude oil in underground salt dome caverns.

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279 Gade v. Nat'l Solid Waste Mgmt. Ass'n, 505 U.S. 88, 98 (1992).
280 UTAH CODE ANN. § 40-11-2(1).
281 *Id.* § 40-11-2(2).
282 309 F. Supp. 2d 357 (N.D.N.Y. 2004).
283 LPG is typically propane. HYNE, *supra* note 29, at 561.
284 *Sovas*, 309 F. Supp. 2d at 364.

Injection wells used for solution mining are regulated as Class III wells under the SDWA, while injection wells used to pump liquid hydrocarbons into the subsurface for storage are Class II wells. If the briny water recovered from the solution mining process is itself injected into the subsurface for disposal, an injection well permit of some type would also be needed.

New York does not have primacy under the SDWA. Thus, the EPA administers the SDWA in New York. In the first half of 1996, Bath filed an application with the EPA for a Class III UIC permit for a solution mining well and a Class II permit for disposal of brine from the solution mining operation.[285] Bath and the New York Department of Environmental Conservation (DEC) disagreed regarding whether the DEC had authority to impose requirements of its own to supplement those required by the EPA under the SDWA.

DEC argued that, for Bath to operate its Class II disposal well, it needed to obtain a State Pollution Discharge Elimination System (SPDES) permit.[286] Unlike the UIC regulations and permitting process under the SDWA, which is designed to protect USDWs, SPDES regulations and permits are designed to protect surface waters from pollution, pursuant to New York's Environmental Conservation Law. The EPA has granted New York primary enforcement authority under the Clean Water Act, which is designed to protect surface waters, and New York's SPDES rules are part of the state program that has been approved under the Clean Water Act. Bath contended that obtaining the SDWA permit from the EPA was sufficient and that DEC's additional permit requirements were preempted by federal law—namely, by the SDWA.

As for salt dome caverns produced by operation of Bath's Class III well, the DEC asserted that it had authority to require that Bath obtain a permit from DEC, in addition to obtaining a permit from the EPA, before storing liquid hydrocarbons in the salt cavern.[287] In addition, DEC asserted

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[285] Class II wells are injection wells used for disposal of oil and gas wastewater, the secondary recovery or enhanced recovery of oil or natural gas, or the storage of liquid hydrocarbons. Most of oil and gas wastewater is "produced water" that is co-produced with oil and gas. This water is briny, and this water is sometimes called "brine." The water recovered from the solution mining of salt is also briny, but it is not oil and gas wastewater. Thus, Bath's decision to apply for a Class II well seems questionable.

About 20% of Class II wells are used for injection disposal of oil and gas wastewater and most of the rest are used for secondary and enhanced recovery, with a smaller number being used for emplacement of liquid hydrocarbons for subsurface storage. *See Class II Oil and Gas Related Injection Wells*, U.S. ENV'T PROT. AGENCY (July 10, 2024), https://www.epa.gov/uic/class-ii-oil-and-gas-related-injection-wells [https://perma.cc/X7YU-CEVR].

[286] *Sovas*, 309 F. Supp. 2d at 365.

[287] *Id.*

that it had authority to require that Bath provide seismic surveys as part of its application to DEC for a permit to store hydrocarbons in a cavern.[288] Bath contended that these requirements were preempted by EPA's decisions during the EPA's action on Bath's Class III permit application.[289]

There was no dispute that the SDWA does not expressly preempt state or local regulations.[290] However, Bath contended that the SDWA preempts state and local regulations by field preemption or conflict preemption. In a somewhat confusing discussion, the court stated that the SDWA's UIC program "preempts the field it occupies,"[291] but that "even though the field has been preempted, there is room for state regulation over areas in which the SDWA and its UIC program don't enter."[292] In addition, the court stated that "[a]t least one circuit has recognized that when field preemption is established, if a federal agency nonetheless instructs an applicant to obtain the relevant state permits," this allows for "some exercise of state authority."[293] The court stated that the EPA had told some permit applicants that DEC also regulated hydrocarbon storage. Finally, the court noted that, within the SDWA, 42 U.S.C. § 300h-2(d) includes a savings clause that means that states maintain some authority.[294] Based on these things, the court concluded that DEC's requirement that Bath obtain a permit from the DEC and that Bath provide seismic surveys was not preempted.

Presumably, this same reasoning supported DEC's argument that its requirement that Bath obtain a SPDES permit was not preempted under field preemption. In addition, the court noted that the SPDES program is an EPA-approved program for New York to exercise primary enforcement authority under the Clean Water Act, a federal statute. Thus, asserted the court, unless the SDWA superseded the Clean Water Act, the DEC's requirement that Bath obtain a SPDES permit should not be preempted under field preemption. Further, the SDWA did not supersede the Clean Water Act. Thus, the DEC's requirement that Bath obtain a SPDES permit was not preempted under field preemption.

The court then considered conflict preemption. The court stated that it was not impossible for Bath to comply with both the SDWA and the DEC's requirements.[295] Further, the court concluded, the DEC's requirements did not act as an obstacle to the objectives of federal law.

288 *Id.*
289 *Id.*
290 *Id.* at 366.
291 *Id.*
292 *Id.* at 367.
293 *Id.*
294 *Id.*
295 *Id.* at 371.

The EPA had not required Bath to provide seismic surveys, but it would not undermine federal policy if DEC required Bath to do so.[296] The court also concluded that requiring Bath to obtain a SPDES permit would not interfere with federal policy.[297] Thus, neither requirement was preempted under conflict preemption.[298]

F. Fayette County, West Virginia – Ban on Class II Injection Wells

EQT Production Company (EQT) operates numerous conventional, vertical oil and gas wells in Fayette County, West Virginia.[299] The company temporarily stores produced water from those wells in storage tanks at the well sites, and uses trucks to periodically transport the accumulated water to a Class II injection disposal well that the company operates in the county.[300] EQT's oil and gas wells operate under permits granted by the West Virginia Department of Environmental Protection (DEP), pursuant to the West Virginia Oil and Gas Act.[301]

The injection well is subject to regulation under the Oil and Gas Act, which requires the DEP to protect against water pollution arising from oil and gas operations.[302] The injection well is also regulated under the West Virginia Water Pollution Control Act, which contains a UIC program, and EQT acquired a permit for the injection well pursuant to the Act's UIC regulations.[303] This permit serves as EQT's SDWA permit for the injection well because West Virginia has primacy for Class II UIC wells.[304]

Fayette County's Commissioners became concerned that two UIC wells operated by a different company than EQT were leaking wastewater into the County's waterways.[305] The Commissioners did not believe that EQT's UIC well was leaking. Nevertheless, on January 12, 2016, the Commissioners enacted an ordinance to ban disposal or permanent storage of wastewater within the County, including the disposal via injection wells.[306] The ordinance also banned temporary storage of wastewater in the County, though the County later amended the ordinance

296 *Id.*

297 *Id.* at 372.

298 *Id.* at 371–72.

299 EQT Prod. Co. v. Wender, 870 F.3d 322, 327 (4th Cir. 2017).

300 *Id.* at 325, 327.

301 *Id.* at 327. The Oil and Gas Act is found at W. VA. CODE § 22-6-1 to -41.

302 *Wender*, 870 F.3d at 326.

303 *Id.* The West Virginia Water Pollution Control Act is found at W. VA. CODE § 22-11-1 to -30.

304 *Wender*, 870 F.3d at 326; *see also* West Virginia Department of Natural Resources; Underground Injection Control Program Approval, 48 Fed. Reg. 55127 (Dec. 9, 1983).

305 *Wender*, 870 F.3d at 327.

306 *Id.*

to allow temporary storage if the wastewater was going to be transported outside the County for permanent disposal or storage.[307]

The day after the ordinance was enacted, EQT filed suit in federal court, contending that the ordinance was preempted by state and federal law, seeking a permanent injunction to enjoin enforcement of the ordinance.[308] The district court entered a temporary injunction, then a preliminary injunction to enjoin enforcement, and both sides moved for summary judgment.[309] The district court granted summary judgment for EQT, granting a permanent injunction on grounds that the ban on injection disposal wells was preempted by the state's UIC program, by the SDWA, and because the restrictions on storage of wastewater were preempted by the West Virginia Oil and Gas Act.[310] The County appealed to the Fourth Circuit of the United States Court of Appeals.[311]

The Fourth Circuit characterized the preemption question as being: "Under West Virginia law, may the County prohibit EQT from engaging in precisely the activity—permanent disposal of wastewater at the UIC well—that has been sanctioned by a state permit, effectively nullifying the license issued by West Virginia's DEP pursuant to statutory authority?"[312] The Fourth Circuit decided the County could not do so because, under West Virginia law, "[w]hen a provision of a municipal ordinance is inconsistent or in conflict with a statute enacted by the Legislature the statute prevails and the municipal ordinance is of no force and effect."[313] Because the ordinance banned an activity expressly allowed under state law, the ordinance conflicted with state law and therefore was preempted.[314]

One of the County's main arguments on appeal was that the ordinance was not preempted because the West Virginia Water Pollution Control Act contains a "savings clause."[315] That savings clause, found at West Virginia Code § 22-11-27, states in part:

> [N]othing herein contained shall abridge or alter rights of action or remedies . . . nor shall any provisions . . . be construed as estopping the state, municipalities, public

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307 *Id.* at 327–28.

308 *Id.* at 328.

309 *Id.*

310 *Id.*

311 *Id.* at 330.

312 *Id.* at 332.

313 *Id.* at 333 (quoting Davidson v. Shoney's Big Boy Rest., 380 S.E.2d 232, 235 (W. Va. 1989)).

314 *Wender*, 870 F.3d at 333.

315 *Id.*

> health officers, or persons . . . in the exercise of their rights to suppress nuisances or to abate any pollution.[316]

The County argued that this savings clause allows a local government to prohibit anything that it declares to be a public nuisance.[317]

The Fourth Circuit disagreed. The court stated that the County's interpretation of the savings clause would mean that counties could "prohibit the very same conduct that is specifically sanctioned and permitted by the state, so long as the counties label that conduct a 'nuisance.'"[318] The Fourth Circuit found this interpretation to be "counterintuitive."[319] The Fourth Circuit concluded that the better interpretation of the savings clause is that it preserves counties' authority to assert common law public nuisance claims.[320] In this case, Fayette County had not filed a common law nuisance claim and there was no evidence in the record that EQT's injection disposal well constituted a common law public nuisance.[321]

Therefore, the County's ban on injection disposal wells was preempted by the state's UIC laws.[322] The Fourth Circuit also held that the County's restrictions on storage of wastewater were preempted by the West Virginia Oil and Gas Act.[323]

G. South Dakota Counties' Setback Distances for Pipelines

Navigator Heartland Greenway, LLC had a proposed CCS project that would collect CO_2 from various sources, including ethanol and fertilizer plants, across five states in the Midwest for permanent disposal via injection wells.[324] The project's planned CO_2 pipeline network would run through several states, including South Dakota.[325] In September 2022, Navigator sought approval for its pipeline routing from the South Dakota

316 *Id.* (alterations in original) (quoting W. Va. Code § 22-11-27).

317 *Id.*

318 *Id.* at 334. The Fourth Circuit also noted that the injection well is regulated under both the West Virginia Oil and Gas Act, as well as the Water Pollution Control Act, and that the Oil and Gas Act (unlike the Water Pollution Act) does not contain a savings clause. *Id.*

319 *Id.*

320 *Id.* at 334–35.

321 *Id.* at 335.

322 *Id.* at 336.

323 *Id.* at 336–37.

324 Application of Navigator Heartland Greenway LLC, *supra* note 65, at 10. The pipeline network would cross South Dakota, Nebraska, Minnesota, Iowa, and Illinois. *Id.* at 7. In addition, to transporting CO_2 to injection wells for permanent sequestration, the project also contemplated the possibility of some of the CO_2 carried by the pipeline network being utilized for industrial uses. *Id.* at 1–2.

325 *Id.*

Public Utilities Commission, which has authority over such matters within the State.[326] While Navigator's application was pending, at least two South Dakota counties, Minnehaha and Moody, enacted ordinances to regulate CO_2 pipelines.[327]

Moody County first enacted a moratorium on new hazardous liquids pipelines on March 24, 2022, asserting that it would be considering enacting provisions to regulate such pipelines.[328] In March 2023, the County extended the moratorium.[329] Then, in June 2023, Moody County enacted Ordinance No. 2023-01, which prohibited location of any hazardous liquids pipeline unless the owner of the pipeline obtained a conditional use permit from the County.[330] Further, the Ordinance prohibited issuance of a conditional use permit unless a proposed pipeline would satisfy certain setbacks established by the Ordinance, including a 1500-foot setback between these pipelines and any dwelling, school, daycare, or church, as well as from any permitted "Concentrated Animal Feeding Operation."[331] The Ordinance also requires these pipelines to stay at least one mile from any municipal boundary.[332]

In June 2023, Minnehaha County enacted Ordinance MC16-179-23, which established setbacks for "transmission pipelines" of 330 feet from the boundary of any parcel of land containing a dwelling, church, or business, as well as 1,000 feet from public parks and schools.[333] The Ordinance also required transmission pipelines to avoid the boundaries of municipalities by a distance that varies from half-a-mile to one mile,

326 *Id.* at 1.

327 Minnehaha County adopted its ordinance in June 2023. *Id.* at 9. Moody County also adopted its ordinance in June 2023. *Id.* at 10.

328 A copy of the minutes of the Mach 24, 2022 meeting of the Moody County Commissioners is available at *Unapproved Minutes of March 24, 2022*, MOODY CNTY. COMM'RS (Mar. 24, 2022), https://www.moodycounty.net/wp-content/uploads/2022/04/20220324.pdf [https://perma.cc/P6JE-P2J8].

A PDF copy of the resolution enacting the moratorium is available at MOODY CNTY., RESOLUTION 22032401 (2022), https://www.moodycounty.net/wp-content/uploads/2022/03/Resolution-22032401.pdf [https://perma.cc/PE7W-TVMH].

329 A copy of the minutes of the March 21, 2023 meeting of the Moody County Commissioners is available at *Unapproved Minutes of March 21, 2023*, MOODY CNTY. COMM'RS (Mar. 21, 2023), https://www.moodycounty.net/wp-content/uploads/2023/03/20230321.pdf [https://perma.cc/E5LN-K2NA].

330 A copy of the minutes of the June 26, 2023 meeting of the Moody County Commissioners is available at *Unapproved Minutes of June 26, 2023*, MOODY CNTY. COMM'RS (June 26, 2023), https://www.moodycounty.net/wp-content/uploads/2023/06/20230626.pdf [https://perma.cc/JH39-QK22].

331 Application of Navigator Heartland Greenway, LLC, *supra* note 65, at 10.

332 This provision is found on the first page of Ordinance 2023-01, a copy of which is available at MOODY CNTY., S.D., ORDINANCE NO. 2023-01, https://www.moodycounty.net/wp-content/uploads/2023/06/Moody-Pipeline-05092023-1.pdf [https://perma.cc/ZB4W-5RTQ].

333 Application of Navigator Heartland Greenway, LLC, *supra* note 65, at 10.

depending on the population of the municipality.[334] The Ordinance also gave the County discretion to require that a transmission pipeline obtain a conditional use permit from the County.[335]

The South Dakota Public Utilities Commission (PUC) has authority to grant permits for "transmission facilities," including CO_2 pipelines.[336] The PUC also has authority, under South Dakota Codified Law § 49-41B-28, to "supersede or preempt" any local zoning or other ordinance that would apply to the route of a "transmission facility . . . upon a finding by the Public Utilities Commission that" the zoning or other ordinance is "unreasonably restrictive in view of existing technology, factors of cost, or economics, or needs of parties where located in or out of the county or municipality." But absent such a finding, § 49-41B-28 prohibits a pipeline route that "violates local land-use zoning, or building rules, or regulations, or ordinances."

Navigator filed a motion with the PUC, asking it to use its authority to preempt the setback rules enacted by Moody County and Minnehaha County.[337] Navigator asserted that the counties' ordinances would have the effect of prohibiting Navigator from constructing its pipeline along the route it had planned, that the counties had not enacted their ordinances until after Navigator already had planned a route, that it would be difficult and time-consuming for the company to redo its route planning, and that it would be challenging to plan a route that complied with the ordinances.[338] In September 2023, the PUC denied Navigator's motion, thereby allowing the ordinances to stand.[339]

The Minnehaha and Moody County ordinances effectively doomed Navigator's pending application with the PUC for approval of its planned route. As noted above, South Dakota Codified Law § 49-41B-28 prohibits a pipeline route that "violates local land-use zoning, or building rules, or regulations, or ordinances" that have not been preempted. In addition, South Dakota Codified Law § 49-41B-22 states that a permit applicant has the burden of proof to establish several things, including that the proposed pipeline "will comply with all applicable law and rules." As noted below, the PUC denied Navigator's application. The PUC's order stated that it denied the application because Navigator had not shown that its proposed

334 *See* MINNEHAHA CNTY., S.D. CODE 12.18 (1990) (as revised by MC16-179-23), https://minnweb.minnehahacounty.gov/wp-content/uploads/2024/05/1990_revised_ordinance.pdf [https://perma.cc/88VP-PCY4].

335 *Id.*

336 S.D. CODIFIED LAWS §§ 49-41B-1, 49-41B-4 (requiring transmission facilities to obtain permits from the PUC), 49-41B-2.1 (defining "transmission facility").

337 Application of Navigator Heartland Greenway, LLC, *supra* note 65, at 10.

338 *Id.* at 10.

339 *Id.* at 20.

pipeline route would comply with all applicable laws—in particular, the Moody County and Minnehaha County setback rules.

H. Opposition to CO_2 Pipelines in North Dakota and South Dakota

In North Dakota and South Dakota, there has been significant opposition to applications filed with state regulators for permits to construct and operate pipelines that would carry CO_2 for CCS, and the permit applications were denied. For example, on August 4, 2023, the North Dakota Public Service Commission denied the applications of SCS Carbon Transport LLC for a "certificate of corridor compatibility" and a "route permit."[340] The denial of permits by a state regulator is not an example of local regulation, but the opposition that may have contributed to the permit denials is another example of opposition to CCS facilities and CO_2 pipelines by persons who live in the general area where the facilities or pipelines would be located.

On September 13, 2023, the PUC rejected an application from Summit to construct a CO_2 pipeline for CCS.[341] On September 26, 2023, the PUC denied an application by Navigator to construct and operate a CO_2 pipeline

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[340] The Docket Number for the applications is PU-22-391, and the docket page is available at *Case PU-22-391 Detail*, N.D. GOV'T, https://apps.psc.nd.gov/webapps/cases/pscasedetail?getId=22&getId2=391# [https://perma.cc/3HKL-J9QQ] (last visited Aug. 8, 2024). The Commission's order denying the applications is available at SCS Carbon Transport LLC Midwest Carbon Express CO2 Pipeline Project Siting Application, No. PU-22-391 (N.D. Pub. Serv. Comm'n Aug. 4, 2023), https://www.psc.nd.gov/database/documents/22-0391/375-030.pdf [https://perma.cc/VPA9-DPPY]. "SCS Carbon Transport LLC" is associated with Summit Carbon Solutions.

Summit stated in December 2023 that it had entered agreements with landowners for "80% of the Right-of-Way (ROW) needed for its proposed carbon capture, transport, and storage project across North Dakota." Press Release, Summit Carbon Sols., Summit Carbon Solutions Signs 80 Percent of North Dakota Landowners (Dec. 19, 2023), https://summitcarbonsolutions.com/summit-carbon-solutions-signs-80-percent-of-north-dakota-landowners/ [https://perma.cc/5YDJ-TL58].

[341] The Docket Number for the application is HP22-001. The docket page is available at *HP22-001*, S.D. PUB. UTILS. COMM'N, https://puc.sd.gov/Dockets/HydrocarbonPipeline/2022/hp22-001.aspx [https://perma.cc/WVF7-W4VA] (last visited Aug. 8, 2024), and the Commission's order denying the application is available at Order Granting Motion To Deny Application of SCS Carbon Transport LLC, HP22-001 (S.D. Pub. Utils. Comm'n Sept. 13, 2023), https://puc.sd.gov/commission/dockets/HydrocarbonPipeline/2022/HP22-001/HP22-001OrdertoDeny.pdf [https://perma.cc/YH5M-984F].

In a press release in September, Summit referred to "73% of landowners who have signed voluntary easements" in South Dakota. Press Release, Summit Carbon Sols., Summit Carbon Solutions Announces It Will Refile Permit Application in Response to County Ordinances and PUC Decision (Sept. 11, 2023), https://summitcarbonsolutions.com/summit-carbon-solutions-announces-it-will-refile-permit-application-in-response-to-county-ordinances-and-puc-decision/ [https://perma.cc/9U5W-SQCV].

for CCS.[342] These rejections were made by a state regulator, not a local regulator, but the rejection was triggered by local zoning laws. In particular, the South Dakota PUC's rejections of Navigator's and Summit's proposed pipeline routes were based on the fact that state law requires a pipeline to comply with local zoning laws, unless the PUC decides to preempt those local laws. Neither the Summit pipeline route nor the Navigator pipeline route would comply with local zoning regulations and the PUC did not choose to preempt those zoning laws.

I. Denial of Conditional Use Permit for CO_2 Pipeline in Stanton County, Nebraska

Under the zoning ordinances of Stanton County, Nebraska, carbon dioxide transmission pipelines are a conditional use in all zoning districts.[343] On February 20, 2024, the Stanton County Board denied Summit's application for a conditional use permit, stating that the Board wanted more information about health risks and foreign ownership of the company.[344]

J. Navigator CO_2 Ventures' Heartland Greenway Project Cancelled

Navigator, the owner of the Heartland Greenway project that had planned to build a multi-state CO_2 pipeline network to collect carbon dioxide from sources in five Midwest states for injection disposal in Illinois, announced a cancellation of its project in a press release dated October 20, 2023.[345] The press release cited "government processes . . . particularly in South Dakota and Iowa."[346]

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342 The Docket Number for the application is HP22-002, and the docket page is available at *HP22-002*, S.D. PUB. UTILS. COMM'N, https://puc.sd.gov/Dockets/HydrocarbonPipeline/2022/HP22-002.aspx [https://perma.cc/FB95-HK6Z] (last visited Aug. 8, 2024). The order denying the application is available at Final Decision and Order Denying Permit to Construct Facility, HP22-002 (S.D. Pub. Utils. Comm'n Sept. 26, 2023), https://puc.sd.gov/commission/dockets/HydrocarbonPipeline/2022/HP22-002/HP22-002FinalOrder.pdf [https://perma.cc/E7KW-N85A].

343 *See* STANTON CNTY., NEB. ZONING RESOLUTION § 4.07 https://stantoncounty.nebraska.gov/sites/default/files/doc/2017%20Zoning%20Regulations%20approved%20nov%202017%20-%20amended%202023.pdf [https://perma.cc/89HJ-Y8KW].

344 Paul Hammel, *Northeast Nebraska County Delivers Blow to Plans For Carbon Pipeline*, NEB. EXAM'R (Feb. 21, 2024, 10:17 AM), https://nebraskaexaminer.com/2024/02/21/northeast-nebraska-county-delivers-blow-to-plans-for-carbon-pipeline/ [https://perma.cc/4C8E-9EA6]. A spokeswoman for Summit was quoted as stating, "More than 90% of the landowners in Stanton County have signed voluntary easement agreements." *Id.*

345 Press Release, Navigator CO_2, Heartland Greenway Project Update (Oct. 20, 2023) (available at https://web.archive.org/web/20240221105227/https://navigatorco2.com/press-releases/heartland-greenway-project-update).

346 *Id.*

VII. POTENTIAL LOCAL BENEFITS

Companies planning CCS projects should not overlook the possibility of significant local opposition to their proposed projects. These companies should consider beginning early with public education and outreach campaigns. Such campaigns probably will not eliminate local opposition, but the campaigns may blunt some of the opposition because it is based in part on misinformation and lack of information. The outreach could include explanations to local officials and citizens of some of the economic benefits associated with CCS, including potential increase in property tax and sales tax revenue to local governments, the creation of temporary construction jobs and some permanent jobs associated with operation of the CCS facilities, and revenue to landowner from pore space agreements.

Further, if a local area's process of manufacturing a product would normally involve the emission of significant amounts of carbon dioxide, but the CO_2 that otherwise would be emitted is captured and injected into the subsurface for permanent storage, the product will be more competitive in some markets. This is because of the European Union's Carbon Border Adjustment Mechanism, which imposes a tax on imports based on the amount of carbon dioxide emitted during the manufacturing of the product,[347] as well as any similar regulatory initiatives elsewhere, and also the voluntary efforts by some persons or companies to lower their carbon footprint. Finally, a local community also could take pride in being on the frontlines of decarbonization.

VIII. CONCLUSION

In several of the areas where prospective CCS operators have planned to locate CCS facilities or CO_2 pipelines, many local citizens have objected to these plans and some of the local governments have responded with attempts to ban or regulate such facilities within their boundaries. Some of the local regulations have targeted CCS facilities, at least one regulation has targeted the geophysical work (including Class V stratigraphic test wells) that must be done to prepare a permit application for a Class VI injection well for CCS, and some of the local regulations have targeted CO_2 pipelines that would carry CO_2 to a CCS injection site.

These attempts at regulation have some similarity to efforts that local governments have made in the past to regulate oil and gas activity or injection disposal wells. These local regulations can take the form of moratoria on projects, outright bans, effective bans in which the local

347 *Carbon Border Adjustment Mechanism*, EUR. COMM'N: TAX'N & CUSTOMS UNION, https://taxation-customs.ec.europa.eu/carbon-border-adjustment-mechanism_en [https://perma.cc/3M5P-E2CG] (last visited Aug. 8, 2024).

government enacts regulations that a company would find it impossible to satisfy, zoning, setbacks, and various permitting or safety standards.

A person or company that opposes such ordinances can of course lobby against passage of them. If the ordinances are enacted, an opponent may have one or more bases for a legal challenge. In some cases, an *ultra vires* challenge or takings challenge might have merit, but a preemption argument is more likely to have merit. In some cases, the federal PSA or state pipeline safety or routing regulations might preempt local rules. Also, the federal SDWA or state underground injection control regulations promulgated by a state may preempt local regulations.