Clean Energy Infrastructure and Private Property: Lessons from the Midwest

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ABSTRACT: The transition to a clean energy economy is underway. But the amount of climate mitigation that it produces will depend on the speed of the transition. One of the largest impediments to a speedy transition is local opposition to clean energy infrastructure such as high-voltage transmission lines and carbon pipelines. Private landowners often do not view clean energy infrastructure as a public benefit. Quite the opposite: They often view these projects as boondoggles for wealthy corporate actors that seek to cash in on federal subsidies. Given these views, it is hardly surprising that some landowners refuse to sell the easements that companies need to build this infrastructure across private property. Also unsurprising is their opposition to the use of eminent domain to force these sales.

Unfortunately, recent federal subsidies designed to incentivize the clean energy transition cannot solve the local opposition problem. In fact, they may be exacerbating the problem by furthering the perception that infrastructure benefits only private corporate interests. Demand-side policies, like a carbon tax, that create better markets for this infrastructure would help, but they would not address the concerns of all landowners. In addition, the fact that clean energy infrastructure supports new technologies and markets may make state eminent domain laws, drafted with fossil fuels and regulated utilities in mind, susceptible to legal challenges.

These challenges make a federal siting regime for clean energy infrastructure a necessity. This Article lends support to the scholarship calling for federal siting authority by examining local opposition to clean energy infrastructure in critical midwestern states. The first Part outlines the urgency of the clean energy transition and the recent federal legislation designed to support it, followed by an overview of recent opposition to utility-scale renewables in the

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Midwest. The focus then turns to clean energy infrastructure and the use of eminent domain with a particular focus on the intense opposition in the Midwest to carbon pipelines designed to capture and transport carbon emissions from ethanol refineries.

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[T]he Board's unjust decision can hardly shake [Iowans'] resolve to stop this crooked scheme. The unconstitutional use of eminent domain to seize private land for the profit of a few C-suite executives will not go unchallenged. We will continue to stand strong and fight against this egregious overreach.

– Emma Schmit, Pipeline Fighters Director at Bold Alliance[1]

Are we going to have an electric bill we can't afford all for the sake of being green? I don't think anyone who supports green energy has really looked at how that is going to affect them. I just don't think they're being reasonable.

– Marilyn O'Bannon, Missouri landowner[2]

INTRODUCTION

We are embarking on a transformation of our electric grid. Even though politicians still debate the role of fossil fuels, the cost of renewable energy like wind and solar is falling and coal plants are shuttering. The transition to a clean energy economy is underway. And this movement toward a carbon-free grid will result in less air pollution from conventional pollutants like particulate matter and ozone in addition to reducing the electric sector's greenhouse gas emissions and mitigating climate change.

But the amount of mitigation depends on the speed of the transition. According to a recent National Renewable Energy Laboratory ("NREL") report, utility-scale wind and solar must make up sixty percent to eighty percent of our energy mix to achieve the Biden Administration's goal of carbon-free electricity by 2035.[3] This means that we need to deploy renewables faster than ever while also tripling the capacity of the transmission system and upgrading distribution systems. Fortunately, Congress passed landmark legislation to stimulate the clean energy transition. Building on the Bipartisan Infrastructure Law of 2021,[4] the Inflation Reduction Act of 2022 promises hundreds of billions of dollars in federal subsidies to incentivize a range of clean energy goodies, including renewable energy generation, grid infrastructure, electric

1. Mark Hefflinger, *Landowners Outraged After Iowa Utilities Board Approves Summit Carbon Pipeline Permit and Eminent Domain*, PIPELINE FIGHTERS HUB (June 25, 2024), https://pipelinefighters.org/news/landowners-outraged-after-iowa-utilities-board-approves-summit-carbon-pipeline-permit-and-eminent-domain [https://perma.cc/H3HV-AGKL] (quote responding to the Iowa Utilities Board's approval of a permit to construct a carbon-capture pipeline across twenty-nine counties in Iowa).

2. Michael Holtz, *The Holdouts in the Quest for a Better Power Grid*, NEW YORKER (Jan. 26, 2024), https://www.newyorker.com/news/dept-of-energy/the-holdouts-in-the-quest-for-a-better-power-grid (on file with the *Iowa Law Review*) (quote opposing the Grain Belt Express, a planned high-capacity transmission line that will connect wind farms in southwestern Kansas with urban areas further east).

3. PAUL DENHOLM ET AL., NAT'L RENEWABLE ENERGY LAB'Y, EXAMINING SUPPLY-SIDE OPTIONS TO ACHIEVE 100% CLEAN ELECTRICITY BY 2035, at xi (2022), https://www.nrel.gov/docs/fy22osti/81644.pdf [https://perma.cc/3ZGU-JDXZ].

4. Infrastructure Investment and Jobs Acts, Pub. L. No. 117-58, 135 Stat. 429 (2021) (codified as amended in scattered sections of 23 U.S.C.).

vehicles, and new technologies designed to capture carbon and produce clean hydrogen.[5]

To meet the 2035 goal, however, the transition needs to happen quickly. Even if grid operators could move quickly to interconnect the renewable generation waiting in the queues, the wind and solar from windy and sunny places need high-voltage transmission lines to travel to places where energy demand is greatest. If this transition happens more slowly, we will need to rely more heavily on carbon-capture technologies. (In fact, models show that carbon management technologies are necessary to meet the global climate goal holding warming to well under two degrees Celsius above preindustrial levels.[6]) This means that we need to build out the pipeline infrastructure necessary to transport carbon from industrial facilities and natural gas power plants to sites where it can be sequestered underground.

High-voltage transmission lines and carbon pipelines must cross private property, a reality that poses the largest threat to a speedy transition. As the opening quotes reflect, private landowners (many in rural areas of the Midwest) do not view clean energy infrastructure as a public benefit. Quite the opposite: They often view these projects as boondoggles for wealthy corporate actors that seek to cash in on federal subsidies or as misguided efforts to support an unnecessary, costly transition to a carbon-free grid.

Given these views, it is hardly surprising that some landowners refuse to sell the easements that companies need to build this infrastructure. Also unsurprising is their opposition to the use of eminent domain to force these sales. Indeed, the holdout problem for linear infrastructure such as power lines and pipelines is well known. And although courts may uphold challenges to the use of eminent domain in these cases, litigation will cause further delay.

Energy law scholars have written substantially about the growing need to use eminent domain to site energy infrastructure given the predictable opposition to its use at the local level.[7] Even though the use of federal eminent domain can be controversial, these scholars often conclude that federal oversight of siting is nevertheless preferable to state-by-state permitting and exercise of

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5. Inflation Reduction Act of 2022, Pub. L. No. 117-169, 136 Stat. 1818 (codified as amended in scattered sections of 26 U.S.C.).

6. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2022 MITIGATION OF CLIMATE CHANGE 613, 674 (Priyadarshi R. Shukla et al. eds., 2022) [hereinafter IPCC Report], https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC_AR6_WGIII_Chapter06.pdf [https://perma.cc/U8W7-FKSE].

7. *See, e.g.*, James W. Coleman, *Pipelines & Power-Lines: Building the Energy Transport Future*, 80 OHIO ST. L.J. 263, 288–89 (2019); James W. Coleman & Alexandra B. Klass, *Energy and Eminent Domain*, 104 MINN. L. REV. 659, 700–04 (2019); Alexandra B. Klass & Danielle Meinhardt, *Transporting Oil and Gas: U.S. Infrastructure Challenges*, 100 IOWA L. REV. 947, 1006–09 (2015); Alexandra B. Klass & Elizabeth J. Wilson, *Climate Change, Carbon Sequestration, and Property Rights*, 2010 U. ILL. L. REV. 363, 401–08 (describing the use of eminent domain to acquire subsurface rights to sequester carbon); Tara K. Righetti, *Siting Carbon Dioxide Pipelines*, 3 OIL & GAS NAT. RES. & ENERGY J. 907, 937–46 (2017).

eminent domain.[8] Moreover, in the absence of federal legislation conferring such authority on a federal agency such as the Federal Energy Regulatory Commission ("FERC"), scholars have recommended various state-level reforms to facilitate the use of eminent domain for new clean-energy infrastructure such as high-voltage power lines and carbon pipelines.[9]

This Article lends support to the scholarship predicting a need for a federal siting regime for clean energy infrastructure by examining local opposition to such infrastructure in critical midwestern states. The first Part of the Article outlines the urgency of the clean energy transition and the recent federal legislation designed to support it, followed by an overview of recent opposition to utility-scale renewables in the Midwest. The Article then turns to clean energy infrastructure and the use of eminent domain with a particular focus on the intense opposition to carbon pipelines in the Midwest. The proposed pipeline project seeks to use the new federal subsidies to expand the nation's pipeline network for carbon capture in support of a clean energy economy.

Unfortunately, federal subsidies cannot solve the local-opposition problem. In fact, they may be exacerbating the problem by furthering the perception that infrastructure benefits only private corporate interests. Condemnation of private property for public use has always produced opposition, but it may have even more political force (and fortune in the courts) today because of signals from a Supreme Court protective of private property. In addition, the fact that clean energy infrastructure supports new technologies and markets may make state eminent domain laws, drafted with fossil fuels and regulated utilities in mind, susceptible to legal challenges.

I. THE CLEAN ENERGY TRANSITION

To keep warming well under two degrees Celsius beyond preindustrial levels, the world must stop emitting greenhouse gases. This means we must stop burning fossil fuels, namely coal, oil, and natural gas. Of course, these fuels have been the backbone of our energy economy since the Industrial Revolution. Transitioning that economy away from fossil fuels to low-carbon

8. *See, e.g.*, Coleman, *supra* note 7, at 295–98; Alexandra B. Klass & Elizabeth J. Wilson, *Interstate Transmission Challenges for Renewable Energy: A Federalism Mismatch*, 65 VAND. L. REV. 1801, 1858–65 (2012); Robert R. Nordhaus & Emily Pitlick, *Carbon Dioxide Pipeline Regulation*, 30 ENERGY L.J. 85, 100–03 (2009). Alexandra Klass has also proposed a regional siting regime for interstate transmission lines. Alexandra B. Klass, *The Electric Grid at a Crossroads: A Regional Approach to Siting Transmission Lines*, 48 U.C. DAVIS. L. REV. 1895, 1946–48 (2015).

9. *See* Alexandra B. Klass, *Eminent Domain Law as Climate Policy*, 2020 WIS. L. REV. 49, 50–52 (exploring possible state reforms to eminent domain laws to limit fossil fuel development while supporting clean energy development); Coleman & Klass, *supra* note 7, at 724–25 (proposing state reforms to definitions of public use, state use of dormant Commerce Clause challenges, and changes to just compensation methods and procedures); Alexandra B. Klass & Jim Rossi, *Revitalizing Dormant Commerce Clause Review for Interstate Coordination*, 100 MINN. L. REV. 129, 133–35 (2015) (arguing that state restrictions on eminent domain for interstate infrastructure may violate the dormant Commerce Clause).

sources such as wind, solar, nuclear, and clean hydrogen requires the transformation of many sectors of the economy, the deployment of new technologies, and the buildout of new infrastructure.

The scope of the transition can seem daunting, but the biggest challenge is the timing. According to the latest IPCC report on mitigation, climate models that keep warming close to 1.5 degrees Celsius assume that carbon emissions peak by 2025 followed by "rapid and deep [greenhouse gas] reductions" that achieve net-zero emissions by the early 2050s.[10] The good news is that emissions may indeed be at their peak, but without "rapid and deep" reductions, emissions will fall only twenty-seven percent from current levels in 2050, and temperatures will climb to 2.6 degrees Celsius by the end of the century.[11] Every increment of warming increases the risk and severity of climate disruptions such as sea-level rise, extreme weather, heat waves, drought, and ocean acidification.

Ideally, the United States would have acted years ago to put a price on carbon via a tax or trading regime and invested heavily in the research and development of clean energy technologies. We should be further along in reducing fossil-fuel emissions. The time for "rapid and deep" reductions is now. This requires that we "electrify everything," moving away, for example, from natural gas for home and water heating and oil to fuel our vehicles. Of course, the electricity consumed must come from low-carbon sources such as wind and solar rather than coal or natural gas. And this carbon-free grid must expand to accommodate the ever-increasing demand for electricity as temperatures rise, electric vehicles proliferate, and data centers boom.

The Biden Administration clearly understood the urgency. It embraced the 2050 net-zero goal with an intermediate goal of fifty percent reductions from 2005 levels by 2030 and a net-zero electricity grid by 2035.[12] Achieving the second goal (a net-zero grid) would significantly advance decarbonization generally. In meeting the net-zero electricity goal by 2035, we would reduce greenhouse-gas emissions by fifty-four percent compared to 2020 levels.[13] In addition to mitigating climate change, a net-zero grid reduces conventional air pollutants such as particulate matter and sulfur dioxide, which could avoid 40,000 to 130,000 "premature deaths between 2020 and 2035."[14]

Consistent with this agenda, congressional Democrats also passed legislation: the Infrastructure Investment and Jobs Act ("IIJA") from 2021 and the Inflation Reduction Act of 2022 ("IRA"). These acts create tax credits, grants, loans, and other federal subsidies in support of the clean energy

10. IPCC Report, *supra* note 6, at 685.

11. David Gelles, *The Right Kind of Tipping Point*, N.Y. TIMES (May 30, 2024), https://www.nytimes.com/2024/05/30/climate/carbon-emissions-falling-global.html (on file with the *Iowa Law Review*).

12. *President Biden's Historic Climate Agenda*, WHITE HOUSE (Jan. 27, 2021), https://bidenwhitehouse.archives.gov/climate [https://perma.cc/7ZVA-FXWM].

13. DENHOLM ET AL., *supra* note 3, at xv.

14. *Id.*

transition in various sectors and at all levels of government.[15] To further the goal of electrification, Congress expanded tax credits for utility-scale solar and wind, along with a new direct-pay option for nonprofits like rural cooperatives. It also established tax credits and rebates for building electrification and energy efficiency improvements. Consumers can also access tax credits for electric vehicles and rooftop solar, and local governments (cities, counties, school districts) can apply for federal funding to further climate mitigation and adaptation measures.[16]

This is far from a complete list. The bottom line is that the IRA, along with the IIJA and the CHIPS and Science Act,[17] is more than climate policy: It is industrial policy, a fact reflected in the commitments to union labor, equity, and domestic manufacturing. Many of the projects that qualify for tax credits can earn bonus credits if they adopt prevailing wage and apprenticeship standards, (thereby incentivizing union labor) and if they locate in communities historically tied to the fossil-fuel industry or otherwise "disadvantaged" based on income, pollution exposure, and other metrics.[18] The law also includes a bonus for clean energy manufacturing that meets specified domestic content requirements.

For purposes of the present discussion, the subsidies that are most relevant are those designed to further clean energy infrastructure, namely transmission and distribution lines for electric power and pipelines to support carbon capture, transport, and storage. The charging infrastructure for electric vehicles is also on this list, but subsidies to build out charging stations do not trigger property owners' opposition because they contemplate the use of public or publicly accessible properties.[19] The subsidies will also support the infrastructure to transport renewably sourced hydrogen or other low-carbon fuels that can be stored and used to address the seasonal mismatch between

15. Infrastructure Investment and Jobs Acts, Pub. L. No. 117-58, 135 Stat. 429 (2021) (codified as amended in scattered sections of 23 U.S.C.); Inflation Reduction Act of 2022, Pub. L. No. 117-169, 136 Stat. 1818 (codified as amended in scattered sections of 26 U.S.C.).

16. *See generally* BIPARTISAN POL'Y CTR, INFLATION REDUCTION ACT SUMMARY: ENERGY AND CLIMATE PROVISIONS (2022), https://bipartisanpolicy.org/download/?file=/wp-content/uploads/2022/08/Energy-IRA-Brief_R04.pdf [https://perma.cc/N4NP-UKLW] (discussing the energy and climate provisions of the IRA).

17. CHIPS Act of 2022, Pub. L. No. 117-167, 136 Stat. 1366. This legislation invests in the manufacturing and supply-chain development of semiconductors, which are essential to solar and wind energy generation and clean energy infrastructure. *See also* Mariana Ambrose, John Jacobs & Natalie Tham, *CHIPS and Science Act Summary: Energy, Climate, and Science Provisions*, BIPARTISAN POL'Y CTR. (Nov. 14, 2022), https://bipartisanpolicy.org/blog/chips-science-act-summary [https://perma.cc/Q2A8-HAB3].

18. *See Fact Sheet: How the Inflation Reduction Act's Tax Incentives Are Ensuring All Americans Benefit from the Growth of the Clean Energy Economy*, U.S. DEP'T TREASURY (Oct. 20, 2023), https://home.treasury.gov/news/press-releases/jy1830 [https://perma.cc/2UFJ-NTXE].

19. *See State Planning and Funding for Electric Vehicle Charging Infrastructure*, U.S. DEP'T OF ENERGY, https://afdc.energy.gov/fuels/electricity-infrastructure-state-planning [https://perma.cc/8P76-37PG].

renewables and demand (as in winter when demand peaks and solar output is reduced), but clean hydrogen is in earlier stages of development.

This last piece of the transition to a clean energy grid is critical only after we meet about ninety percent of generation needs with clean energy.[20] The ninety percent goal is achievable using new renewables, storage, transmission, and other established technologies. Renewable generation is currently at a little over twenty percent, and nuclear power contributes about eighteen percent.[21] But renewable generation is now the least expensive energy source and growing rapidly. Solar energy generation is projected to grow by seventy-five percent and wind generation by eleven percent by 2025.[22] Renewable projects are waiting for interconnection approvals from grid operators.

These approvals must happen quickly. To meet the 2035 net-zero goal, the rates for siting and interconnecting new renewable generation and storage must be three to six times faster than they are now, and the transmission system needs to double or triple its capacity.[23] The less we rely on renewables and expanded intra- and interregional transmission, and as energy costs rise, the more nuclear energy becomes cost competitive and is deployed to meet a larger percentage of demand. In addition, in scenarios with less renewable generation, costs rise and the need for new technologies such as carbon capture and removal, including direct air capture, increases.

The bottom line is we need clean energy infrastructure no matter the path to net-zero emissions. More transmission—particularly high-voltage and interregional transmission—will enable the most efficient, least costly transition, but even with a transmission "renaissance," a net-zero grid will require carbon management and seasonal-storage technologies that are not currently deployed at scale.[24]

Fortunately, the IIJA and IRA provide incentives for clean energy infrastructure. The Department of Energy ("DOE") has the potential to award billions in loans and other financial assistance to support transmission and distribution—some of the funding is available to transmission developers and

20. DENHOLM ET AL., *supra* note 3, at xii.

21. *Frequently Asked Questions (FAQs)*, U.S. ENERGY INFO. ADMIN. (Feb. 29, 2024), https://www.eia.gov/tools/faqs/faq.php?id=427&t=3 [https://perma.cc/PU2N-QAVE].

22. *Solar and Wind to Lead Growth of U.S. Power Generation for the Next Two Years*, U.S. ENERGY INFO. ADMIN. (Jan. 16, 2024), https://www.eia.gov/todayinenergy/detail.php?id=61242 [https://perma.cc/C9TK-PHBK].

23. DENHOLM ET AL., *supra* note 3, at xix.

24. Recognized pathways toward a net-zero future also incorporate bioenergy with carbon capture and storage, especially in industrial sectors such as cement and steel that are difficult to decarbonize with electrification. IPCC Report, *supra* note 6, at 104; *Bioenergy with Carbon Capture and Storage*, INT'L ENERGY AGENCY (Apr. 25, 2024), https://www.iea.org/energy-system/carbon-capture-utilisation-and-storage/bioenergy-with-carbon-capture-and-storage [https://perma.cc/3MX9-4SGT].

some is available to states, tribes, and local governments.[25] Increases to the 45Q tax credit, along with new ways to monetize the credits, provide strong incentives for carbon management projects. For example, owners of carbon-capture equipment that captures, transports, and stores (or reuses) carbon oxides from industrial facilities or power plants can receive tax credits of $60 to $85 per metric ton for up to twelve years.[26] In addition, projects that remove carbon directly from the ambient air (direct air capture) can claim up to $180 per metric ton.[27] These credits are transferable to other tax-paying entities, and in some cases, a new direct-pay option is available, allowing tax-exempt entities (e.g., municipalities) to benefit from the incentives.[28]

II. CONTEXT: GROWING LOCAL OPPOSITION TO CLEAN ENERGY GENERATION IN THE MIDWEST

Some wind-rich states in the Midwest were early leaders in wind energy. Iowa, the first state with a renewable portfolio standard in 1983, generated fifty-nine percent of its electricity from wind in 2023.[29] In 2023, South Dakota produced fifty-five percent of its net electricity generation from wind.[30] Wind is also the largest contributor of Kansas's electricity generation at forty-six percent.[31] All three states have far exceeded historical state renewable energy targets.[32]

Today, these states are among those where opposition to the clean energy transition is strong and growing. Their early embrace of wind energy may play a small part in this shift, as wind turbines changed rural landscapes in these

25. *See Transmission Funding Opportunities*, AMS. FOR A CLEAN ENERGY GRID (2023), https://www.cleanenergygrid.org/portfolio/transmission-funding-ira-iija-bil [https://perma.cc/M5JV-BUVM].

26. ANGELA C. JONES & DONALD J. MARPLES, CONG. RSCH. SERV., IF11455, THE SECTION 45Q TAX CREDIT FOR CARBON SEQUESTRATION 2 (2023), https://sgp.fas.org/crs/misc/IF11455.pdf [https://perma.cc/WKC2-PEK4]. Projects that geologically sequester carbon receive the most generous credit, followed by geologic storage coupled with enhanced oil recovery, and then qualified reuses of carbon at the lower end. To receive the full value of a credit, the developer must comply with prevailing "wage and apprenticeship requirements." *See id.* at 2.

27. CARBON CAPTURE COAL., PRIMER: 45Q TAX CREDIT FOR CARBON CAPTURE PROJECTS 2 (2023), https://carboncapturecoalition.org/wp-content/uploads/2023/11/45Q-primer-Carbon-Capture-Coalition.pdf [https://perma.cc/X2B8-ZC58].

28. *Id.* at 1.

29. *Iowa State Profile and Energy Estimates*, U.S. ENERGY INFO. ADMIN. (Sept. 19, 2024), https://www.eia.gov/state/analysis.php?sid=IA [https://perma.cc/5W32-FSVE].

30. *South Dakota State Profile and Energy Estimates*, U.S. ENERGY INFO. ADMIN. (Aug. 15, 2024), https://www.eia.gov/state/analysis.php?sid=SD [https://perma.cc/9VWS-97Z7].

31. *Kansas State Profile and Energy Estimates*, U.S. ENERGY INFO. ADMIN. (July 18, 2024), https://www.eia.gov/state/analysis.php?sid=KS [https://perma.cc/293W-GRHG].

32. *See* RENEWABLE & CLEAN ENERGY STANDARDS, DATABASE OF STATE INCENTIVES FOR RENEWABLES & EFFICIENCY (2023), https://ncsolarcen-prod.s3.amazonaws.com/wp-content/uploads/2023/12/RPS-CES-Dec2023-1.pdf [https://perma.cc/LEJ4-5VJ5].

states.[33] As others have noted, the easiest places to site wind turbines were likely among the first to host them.[34] What remains is much more complicated: neighbors divided over the costs and benefits of wind farms to their communities, their properties, and their way of life.

Communities are divided in their support of utility-scale solar as well, even though it is newer than wind turbines to the rural landscape. Unlike wind turbines, solar panels preclude some agricultural land uses, such as commodity crops like corn and soybeans. Although solar panels are more concentrated and therefore less widespread across the rural landscape, they are less easily characterized as compatible with conventional agriculture.

As detailed in the previous Section, without large-scale wind and solar generation, the clean energy transition will be more expensive and more dependent on carbon capture technologies and nuclear energy, which would also face opposition. Understanding and addressing the objections of landowners is therefore essential to the larger transition that clean energy infrastructure will support. In addition, some of these concerns overlap with the concerns expressed by landowners opposed to transmission lines and pipelines.

But there is a critical difference between the siting of renewable generation and the siting of infrastructure: Eminent domain is not available to developers who wish to build renewable generation. Wind and solar farms require leases from landowners. Opposition not surprisingly comes from the leaseholders' neighbors who then push for zoning reforms that limit or ban projects at the county level. In contrast, landowners opposed to infrastructure can draw on politically salient and sometimes legally defensible arguments against government takings of private property. As the following discussion makes clear, however, arguments about the value of land and property are also at the heart of opposition to large-scale renewables. The value of one's property—understood to mean much more than land—is a common thread.

A. GROWING OPPOSITION TO LARGE-SCALE RENEWABLES

There are different studies documenting the increase in local opposition, but they all agree that opposition is increasing. The 2023 Sabin Center study found "a [thirty-five percent] increase in local restrictions between March 2022 and May 2023 (from 169 to 228)."[35] These are restrictions that are so

33. Robert Zullo, *Across the Country, a Big Backlash to New Renewables Is Mounting*, IOWA CAP. DISPATCH (Feb. 18, 2023, 9:00 AM), https://iowacapitaldispatch.com/2023/02/18/across-the-country-a-big-backlash-to-new-renewables-is-mounting [https://perma.cc/82UJ-H9CN].

34. *Wind Farms: Are All the Best Spots Taken?*, RENEWABLE ENERGY WORLD (May 31, 2010), https://www.renewableenergyworld.com/wind-power/wind-farms-are-all-the-best-spots-taken [https://perma.cc/6KCE-54W5].

35. MATTHEW EISENSON, SABIN CTR. FOR CLIMATE CHANGE L., COLUM. CLIMATE SCH., COLUM. L. SCH., OPPOSITION TO RENEWABLE ENERGY FACILITIES IN THE UNITED STATES 3–5 (2023), https://scholarship.law.columbia.edu/cgi/viewcontent.cgi?article=1201&context=sabin_climate_change [https://perma.cc/3WG2-83UQ].

severe that they could have the effect of blocking a renewable energy project. An update to the study in June 2024 found 395 local restrictions in 41 states, 19 state-level restrictions, and 378 renewable energy projects in 47 states facing serious opposition.[36] A 2022 NREL study also highlighted the extent to which local governments are engaged in zoning reform to address wind and solar; during the four-year study, wind ordinances "increased more than [six]-fold."[37] Using geospatial modeling, the study's authors found that existing setback ordinances had a much larger impact on wind resources, reducing them by thirteen percent while reducing solar resources only two percent.[38]

In February 2024, USA Today conducted a study using data from the Sabin Center study, as well as NREL data.[39] The study found that fifteen percent of counties nationwide now have some kind of impediment to siting utility-scale solar and wind.[40]This includes bans and moratoria, as well as height restrictions (in this case of 500 feet or below), setbacks (greater than 1000 feet), sound limits (below thirty decibels), restrictions on mountain ridgetop siting, and restrictions on amounts of farmland.[41]

Studies vary in the number of restrictions that they document because restrictions come in so many forms. Another 2024 study, sponsored by the Center for Progressive Reform, concluded "that 775 counties ([making up twenty-five percent of all counties]) in the contiguous United States have" enacted laws that restrict renewable energy.[42] This study also found that "roughly [thirty-two percent of these counties] are located in areas with

36. MATTHEW EISENSON, JACOB ELKIN, HARMUKH SINGH & NOAH SCHAFFIR, SABIN CTR. FOR CLIMATE CHANGE L., COLUM. CLIMATE SCH., COLUM. L. SCH., OPPOSITION TO RENEWABLE ENERGY FACILITIES IN THE UNITED STATES 5 (2024), https://scholarship.law.columbia.edu/cgi/viewcontent.cgi?article=1227&context=sabin_climate_change [https://perma.cc/6YRV-B55J].

37. Wesley Cole et al., *Understanding How Siting Ordinances Impact Wind and Solar Resource Availability*, NREL (Mar. 28, 2023), https://www.nrel.gov/docs/fy23osti/85461.pdf [https://perma.cc/YW3F-YWW5].

38. *Id.* The study identified more than "1,800 ordinances for wind and over 800 ordinances for solar in 2022." *Id.* The authors used geospatial modeling data to determine the impact on land availability for wind and solar if current setback requirements spread across the country. They conclude that this would reduce wind by eighty-seven percent and solar by thirty-eight percent. Anthony Lopez et al., *Impact of Siting Ordinances on Land Availability for Wind and Solar Development*, 8 NATURE ENERGY 1034, 1034 (2023).

39. Elizabeth Weise, Karina Zaiets, Ramon Padilla & Suhail Bhat, *Counties Are Blocking Wind and Solar Across the US — Maps Show Energy Capacity in Your Area*, USA TODAY (Feb. 27, 2024, 9:31 AM), https://www.usatoday.com/story/graphics/2024/02/27/renewable-energy-sources-ban-map/72630315007 [https://perma.cc/6VTC-X3KX].

40. *See id.*

41. Elizabeth Weise & Suhail Bhat, *Local Governments Block Green Energy: Here's How USA Today Measured the Limits Nationwide*, USA TODAY (Feb. 4, 2024, 5:18 AM), https://www.usatoday.com/story/news/investigations/2024/02/04/green-energy-nationwide-bans/71841275007 [https://perma.cc/87SZ-Y8QW].

42. FEDERICO HOLM & JAMES GOODWIN, CTR. FOR PROGRESSIVE REFORM, COMMUNITIES LEFT BEHIND: HOW LOCAL ORDINANCES CAN OBSTRUCT ENERGY DEMOCRACY AND A JUST TRANSITION 9 (Spencer Green & Brian Gumm eds., 2024).

elevated rates of socioeconomic risk, including higher unemployment and lower per capita income, than comparable regions."[43] And "[thirty-seven] percent of counties with renewable energy restrictions are characterized by high 'energy burden,' which means households there spend disproportionately large amounts of their income on meeting energy costs."[44]

Where this opposition is occurring is important because utility-scale wind and solar must be compatible with other land uses. The good news is that they generally are. Wind and solar farms do not require that much land when only measured by the footprint of the facilities, especially wind turbines.[45] The wrinkle is that this assumes that wind is combined with agricultural uses, including crop and rangeland, in the West and Midwest.

These wind-rich states easily met their early clean energy goals, but some (like Iowa, South Dakota, and Kansas) let their standards or goals expire. And now local opposition to utility-scale renewables is growing in these states. In 1983, Iowa became the first state in the nation to adopt a renewable portfolio standard (RPS). For example, "at the beginning of 2024, Iowa had about 13,300 megawatts of in-state [renewable] generating capacity"—far exceeding the 105 MW RPS it adopted in 1983.[46] In recent years, however, opposition to both wind and solar has grown in some Iowa communities. Counties have passed restrictive ordinances with dramatic effects; a 2022 study found that restrictive ordinances could render forty-nine to seventy-seven percent of the "candidate project areas" unavailable for wind projects in Iowa.[47]

Some attribute this to "wind fatigue," a frustration felt by rural Iowans who have seen their landscapes and views of the horizon change dramatically over time. Even drivers passing through western Iowa can appreciate this change, as night falls and the turbines' flashing red lights dot the sky. Tellingly, the 2022 study on Iowa opposition to wind concluded that the "perception of turbines" in terms of their aesthetics more strongly predicts support or opposition to turbines than how close they are to a person's home.[48]

Opposition to solar facilities is also growing. The Sabin Center's 2024 report also documents an increase in local ordinances prohibiting solar energy facilities on farmland, including seven Michigan townships and four Virginia counties.[49] For example, under a 2021 Ohio state law that allows counties

43. *Id.* at 1.

44. *Id.*

45. DENHOLM ET AL., *supra* note 3, at 51–52 (showing a map indicating the relatively small footprint of wind turbines when sited with other uses—turbines occupy only two percent of the land on a wind farm, leaving the rest for other uses such as ranching or farming).

46. U.S. ENERGY INFO. ADMIN., *supra* note 29.

47. CLEARPATH & LUCIDCATALYST, HAWKEYE STATE HEADWINDS: A CASE STUDY OF LOCAL OPPOSITION AND SITING CHALLENGES FOR LARGE SCALE WIND DEVELOPMENT IN IOWA 45 (2022), https://clearpath.org/wp-content/uploads/sites/44/2022/07/hawkeye-headwinds-report-large.pdf [https://perma.cc/Y2GR-TMQE].

48. *Id.* at 55.

49. EISENSON ET AL., *supra* note 36, at 6.

to create restricted areas for wind and solar, twenty-two counties had enacted restrictions by the end of 2023.[50]

B. *Drivers of Opposition*

Recent studies suggest that local opposition often draws upon multiple themes. One study of fifty-three utility-scale renewable energy projects that were blocked or delayed due to opposition between 2008 and 2021 found evidence of "seven key drivers of opposition," with multiple drivers present in nearly eighty percent of the cases.[51] Of the seven drivers, however, concerns about land value and the environmental impacts of large-scale renewables figured prominently.[52] In addition, as this and other studies show, concerns about public participation and community benefits (procedural and distributive fairness) also drive opposition,[53] as do concerns about the health and safety risks of large-scale projects—although recent reporting suggests that as least some of these concerns are caused by misinformation campaigns.[54]

Concerns about property values vary significantly and range from concerns about depressed economic values from, for example, the altered viewshed or shutter effect caused by wind turbines, to cultural values associated with land and the communities tied to the land. In addition, rural farming communities may have concerns about whether land can be returned to agricultural uses such as commodity crop farming after solar panels are decommissioned.[55]

C. *Is the Solution Preemption?*

Many states have commitments to one-hundred percent carbon-free electricity that track the Biden Administration's 2035 deadline. For example, Michigan, Connecticut, New York, Oregon, and Minnesota have committed to one-hundred percent carbon-free electricity by 2040 (either as a goal or

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50. *Id.*

51. Lawrence Susskind et al., *Sources of Opposition to Renewable Energy Projects in the United States*, ENERGY POL'Y, June 2022, at 2.

52. *Id.* at 6.

53. *See* Christiana Ochoa, Kacey Cook & Hanna Weil, *Deals in the Heartland: Renewable Energy Projects, Local Resistance, and How Law Can Help*, 107 MINN. L. REV. 1055, 1094–96 (2023); CLEARPATH & LUCIDCATALYST, *supra* note 47, at 55–59.

54. *See* Miranda Green, Michael Copley & Ryan Kellman, *An Activist Group Is Spreading Misinformation to Stop Solar Projects in Rural America*, NPR (Feb. 18, 2023, 8:41 PM), https://www.npr.org/2023/02/18/1154867064/solar-power-misinformation-activists-rural-america [https://perma.cc/538C-YWWS]; Kathiann M. Kowalski, *How Misinformation Propped Up Ohio Lawmakers' Latest Attack on Renewables*, CANARY MEDIA (July 7, 2021), https://energynews.us/2021/07/07/how-misinformation-propped-up-ohio-lawmakers-latest-attack-on-renewables [https://perma.cc/L34G-HBBG].

55. Local governments can enact ordinances that address these concerns by encouraging or requiring land conservation practices. *See, e.g.*, *Resolution 2023*, LINN CNTY. (2023), https://www.cleanenergydistricts.org/wp-content/uploads/2024/03/Utility-Scale-Solar-Scorecard-Resolution.pdf [https://perma.cc/67MQ-R8F7].

standard).[56] Several other states have similar goals by 2045 and 2050.[57] Of course, state-level commitments to carbon-free supply do not always translate into commitments to in-state, utility-scale renewable generation. For example, Connecticut prohibits solar projects of 2 MW or greater on "core forest" or "prime farmland" statewide unless developers are granted an exception.[58]

Some local opposition is classic NIMBY. In these cases, the objectors are those most likely to have an outsized voice in siting decisions generally, namely white, affluent communities who object based on perceived impacts to property values and aesthetics.[59] The consequence of widespread opposition in these communities is longer-term reliance on a fossil-fuel energy system that disproportionately burdens people of color and lower-income individuals.[60] This raises serious questions of equity and makes state preemption of local authority a compelling response.

But preemption has costs, and not all states have carbon-free commitments or a political culture likely to support preemption. As scholars and policy analysts have suggested, when preemption is not possible, other interventions can improve landowners' perceptions of procedural and distributive unfairness. For example, process improvements that increase information sharing, transparency, and community participation may address some concerns. To address distributive fairness objections, developers can pursue community benefit agreements and other mechanisms to guarantee the entire community (not just leaseholders) benefits from wind development.[61] That said, if political and economic investments are made to overcome opposition to large-scale renewable generation, the transmission infrastructure must follow. In short, the argument for eminent domain is stronger for transmission infrastructure if we can build out a lot of renewable generation quickly.

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56. *See* Joey Cappelletti & John Hanna, *States with Big Climate Goals Strip Local Power to Block Green Projects*, ASSOCIATED PRESS (Jan. 13, 2024, 11:12 PM), https://apnews.com/article/wind-solar-energy-projects-local-opposition-eb300574867f53f8abba85127574adc3 [https://perma.cc/PRR8-G7GK].

57. *Renewable & Clean Energy Standards*, DATABASE OF STATE INCENTIVES FOR RENEWABLES & EFFICIENCY (Dec. 2023), https://ncsolarcen-prod.s3.amazonaws.com/wp-content/uploads/2023/12/RPS-CES-Dec2023-1.pdf [https://perma.cc/4KZK-92GM].

58. CONN. GEN. STAT. § 16-50k (2024); *id.* § 16a-3k.

59. *See* Leah C. Stokes, Emma Franzblau, Jessica R. Lovering & Chris Miljanich, *Prevalence and Predictors of Wind Energy Opposition in North America*, PNAS, Sept. 25, 2023, at 2–6 (finding that "[w]ind projects in areas with a higher percentage of White people and a lower percentage of Hispanic people were more likely to face resistance, and that opposition was more intense, with a larger number of tactics").

60. *Id.* at 2.

61. *See, e.g.*, Paul Hammel, *Pipeline Company, Environmental Group Strike Unique 'Community Benefits' Agreement*, NEB. EXAM'R (Apr. 9, 2024, 6:00 AM), https://nebraskaexaminer.com/2024/04/09/pipeline-company-environmental-group-strike-unique-community-benefits-agreement [https://perma.cc/8JDC-U9XT].

III. OPPOSITION TO ENERGY TRANSPORT INFRASTRUCTURE AND THE USE OF EMINENT DOMAIN

A. THE HOLDOUT PROBLEM—JUSTIFYING EMINENT DOMAIN ECONOMICALLY AND CONSTITUTIONALLY

Power lines and pipelines illustrate the classic economic case for the exercise of eminent domain because they present the assembly problem.[62] If a company wishes to build a pipeline to transport oil or natural gas, for example, it will seek to negotiate the sale of easements from private property owners located in the path of the pipeline. It will likely succeed in negotiating voluntary sales from some landowners. But if only a few landowners refuse, the pipeline project cannot move forward, assuming alternative routes are unavailable. These holdouts can permanently stall a project or render it too costly by demanding above-market prices for their easements. The same holdout problem applies to power lines like high-voltage power lines that cross multiple parcels of private property.

Economic analyses explain the holdout problem using the language of monopoly and transaction costs. Each individual owner along the pipeline or power line route holds a monopoly over a piece of land essential to the project and can therefore sell at a price that far exceeds the opportunity cost of the property (that is, the value of property easement absent the pipeline project).[63] The suboptimal result is that less infrastructure is built.

Another way to explain the same outcome is to consider the transaction costs of negotiating easements for infrastructure projects.[64] Individual landowners may hold out for higher prices, while the project company may strategically seek to buy easements at below-market prices. In strategically seeking a greater share of the overall profit, both sides are increasing the transaction costs of negotiated sales, and as these costs threaten to negate profits, the risks of a failed project increase.[65] Indeed, in a recent survey, developers of clean energy projects reported that project delays that increase costs often cause project cancelations.[66]

Although the assembly problem presents a strong economic case for eminent domain, economic theory does not govern how courts resolve challenges to takings based on public use. To be sure, there are some easy cases.[67] But even when state or federal law is clear about the grant of eminent

62. *See* Thomas W. Merrill, *The Economics of Public Use*, 72 CORNELL L. REV. 61, 75–76 (1986).

63. *See id.*

64. *See id.*

65. *See id.*

66. *Large-Scale Wind and Solar Developers Concerned About Social Factors Affecting Deployment*, BERKELEY LAB (Jan. 24, 2024), https://emp.lbl.gov/news/larg-e-scale-wind-and-solar [https://perma.cc/GTW3-JBE4].

67. *See* Merrill, *supra* note 62, at 61–63.

domain authority, state and federal constitutional provisions regarding "public use" remain avenues for challenge.

For example, in *Puntanney v. Iowa Utilities Board*, the plaintiffs challenged the Iowa Utilities Board's grant of a permit (and attendant power to exercise eminent domain) for the Dakota Access Pipeline's segment across Iowa.[68] In addition to challenging the pipeline's categorization as a common carrier, the plaintiffs argued that the pipeline was not a "public use" under the takings provisions of the federal and state constitutions.[69] The pipeline would not carry oil extracted in Iowa, nor would it deliver oil to an end use in Iowa.[70] Iowa was simply part of its interstate path.[71] The plaintiffs wondered how the simple transport of oil could satisfy the state's approach to eminent domain, which requires a project have a public purpose and provide an economic benefit beyond generalized benefits in the form of some tax revenue and limited job creation.[72] The real "benefit," according to the plaintiffs, was to the private oil company.[73]

Like many states, Iowa changed its approach to "public use" for economic development projects in response to the Supreme Court's 2005 decision in *Kelo v. City of New London*.[74] In that case, the Court decided that a city could constitutionally empower a private entity to condemn private property for purposes of economic development as long as it was consistent with the city's long-term master plan.[75] Many states responded by enacting legislation or passing constitutional amendments that adopted stricter approaches to public use for economic development projects, requiring public benefits beyond the potential positive externalities of the project such as tax revenues or jobs.[76]

The *Kelo* revolution sometimes overshadows the nuances of how states historically approached eminent domain. States often made these designations with economic interests in mind. For example, early in their statehoods, some western states explicitly gave extractive industries like mining companies the power to use eminent domain to capitalize on the state's natural resources

68. Puntenney v. Iowa Utils. Bd., 928 N.W.2d 829, 841 (Iowa 2019).

69. *Id.* at 844–45.

70. *Id.* at 844.

71. *Id.*

72. *Id.* at 848.

73. *Id.* at 841.

74. *See generally* Kelo v. City of New London, 545 U.S. 469 (2005) (holding that a seizure for private development which was expected to result in economic benefits for the community was a sufficient "public use" under the Fifth Amendment's Takings Clause). For an example of how Iowa changed its legislation in response to *Kelo v. City of New London*, see H. File 2351, 81st Gen. Assemb., Reg. Sess. (Iowa 2006) ("'[P]ublic use' or 'public purpose' or 'public improvement' does not mean economic development activities resulting in increased tax revenues . . . .").

75. *Kelo*, 545 U.S. at 484–89.

76. *See* Ilya Somin, *The Limits of Backlash: Assessing the Political Response to* Kelo, 93 MINN. L. REV. 2100, 2102 (2009) (arguing that "a strong case can be made that *Kelo* has drawn a more extensive legislative reaction than any other single court decision in American history").

and create economic growth,[77] a political decision that states with productive agricultural lands would not have made. Private ownership of lands fertile for crops provided incentives for markets in agricultural commodities whereas private ownership sometimes served as an impediment to mineral extraction and processing.

Indeed, in the nineteenth century, private entities and especially railroads exercised the power of eminent domain more often than state governments, which lacked the resources and revenue required.[78] This coincided with a "dynamic" view that private property should be protected "chiefly for what it could do."[79] This productive view of private property was served by an approach to public use that furthered delegation of eminent domain authority for resource extraction, commerce, and transportation. As government began to regulate social and economic issues in the twentieth century, its use of its condemnation powers expanded and the notion of property in service of economic growth was adapted to serve the needs of urban development.[80]

This history may explain, in part, why courts have been highly deferential to state designations of public use, whether in legislation or constitutions. It may also be one reason that courts eventually came to conflate public use with the state's police power.[81] In doing so, judicial analysis of a "public use" began to resemble a substantive due process analysis of what constitutes a legitimate governmental purpose or end, an analysis that largely assumes the legitimacy of most social and economic policies.[82]

Today, the doctrine is likely less settled than the caselaw suggests—mostly because *Kelo* is a five-four decision, and commentators think the current Court would likely reach a different conclusion.[83] The doctrinal path toward a more restrictive version of public use is, however, less clear. Many state revisions post *Kelo* adopted limitations on economic development takings, reflecting Justice O'Connor's dissenting view, which interpreted the Court's precedent

77. *See* Alexandra B. Klass, *The Frontier of Eminent Domain*, 79 U. COLO. L. REV. 651, 657–66 (2008).

78. *See* James W. Ely, Jr., *The Controversy over Energy Takings: A Tale of Pipelines and Eminent Domain*, 9 BRIGHAM-KANNER PROP. RTS. J. 173, 179 (2020). The Supreme Court did not even recognize that the federal government had eminent domain authority until 1876. *Id.* at 179 n.31.

79. *See id.* at 180 (quoting JAMES WILLARD HURST, LAW AND THE CONDITIONS OF FREEDOM IN THE NINETEENTH-CENTURY UNITED STATES 24 (1956)).

80. *See id.* at 179.

81. *See, e.g.*, Berman v. Parker, 348 U.S. 26, 32 (1954) (analyzing the exercise of eminent domain in terms of the state's policy power to regulate "[p]ublic safety, public health, morality, peace and quiet, law and order").

82. *See id.* at 34.

83. *See, e.g.*, Ilya Somin, *Three Supreme Court Justices Signal Willingness to Reconsider* Kelo v. City of New London, REASON (July 3, 2021, 12:30 AM), https://reason.com/volokh/2021/07/03/three-supreme-court-justices-signal-willingness-to-reconsider-kelo-v-city-of-new-london [https://perma.cc/BZ5K-RHFM].

in this area as limiting "public purpose" takings to remediation of property uses that "inflicted affirmative harm on society."[84]

Justice Thomas also authored a dissent with an even narrower view based on the meaning of the words "public use" and some historical applications of the phrase. In his view, "public use" could not mean "public purpose" as the Court had long interpreted it; instead, it means ownership or use by the public as would be the case with public goods such as a public road or park.[85] Although he did not discuss common carriers or the holdout problem, he did join Justice O'Connor's dissent, which recognized, as a valid "public use," the delegation of condemnation authority to "common carriers" like railroads and public utilities "who make the property available for the public's use."[86]

Perhaps the most important component of Justice Thomas's dissent in *Kelo* is his rejection of the judiciary's historical deference to legislative designations of "public use." Because these words appear in the Constitution, "[t]here is no justification . . . for affording almost insurmountable deference to legislative conclusions that a use serves a 'public use.'"[87] As scholars have documented, the road to considerable deference may have much to do with early Supreme Court cases that reviewed state takings laws under due process theories that were deferential to state legislative judgments.[88] The academic literature has recognized this confusion, arising in the regulatory takings context, as well as the eventual conflation (evident in *Kelo*) of rational basis review with review of public use under the Takings Clause.[89]

Whether the current Court is willing to take on this complex history is uncertain, but what is clear is that at least three justices would like to reconsider the holding of *Kelo*. In 2021, the Court denied a petition for certiorari from an individual challenging the city of Chicago's decision to transfer his property to a chocolate factory.[90] The city's theory of public use was that the property might become a blighted area.[91] Although blight is one of the "harmful" uses that Justice O'Connor noted falls within the public purpose strand of takings doctrine, *future* blight is not. The case presented an opportunity to reconsider *Kelo*. Although the Court denied certiorari, it did so over the objection of three justices, including Justice Thomas, who penned

84. Kelo v. City of New London, 545 U.S. 469, 500 (2005) (O'Connor, J., dissenting).

85. *Id.* at 506–09 (Thomas, J., dissenting).

86. *Id.* at 497–98 (O'Connor, J., dissenting).

87. *Id.* at 517 (Thomas, J., dissenting).

88. *See* Bradley C. Karkkainen, *The Police Power Revisited: Phantom Incorporation and the Roots of the Takings "Muddle,"* 90 MINN. L. REV. 826, 899–900 (2006).

89. The legitimate exercise of a state's police powers should not implicate the Takings Clause because property rights are necessarily limited by these powers. In theory, a takings challenge arises when state governments act outside those powers and seek to appropriate private property for public use.

90. *See* Eychaner v. Chicago, 141 S. Ct. 2422, 2422 (2021) (mem.) *denying cert. to* 171 N.E.3d 31 (2020).

91. *Id.* at 2423.

a dissent reiterating his view that *Kelo* was wrongly decided.[92] Given the Court's interest in property rights cases, it seems likely to reconsider *Kelo* soon.

Challenges to public use for energy infrastructure are growing. Scholars have tracked growing objections to both federal and state eminent domain for oil and natural gas pipelines and related infrastructure.[93] For example, in addition to raising concerns about the property and environmental impacts of interstate natural gas pipelines such as the Mountain Valley Pipeline and the Atlantic Coast Pipeline, opponents and dissenting FERC commissioners have questioned FERC's routine acceptance of transport agreements with affiliate companies as evidence of the market demand,[94] noting the "self-dealing" nature of such contracts.[95] Such arguments cut against a finding of "public use" as well. Indeed, advocates are increasingly challenging the public use determination for pipelines that transport natural gas for export out of the United States.[96] State courts and legislatures have also pushed back on grants of eminent domain authority to private companies seeking to build in-state oil and natural gas infrastructure on the grounds that it will not directly serve in-state citizens and incidental economic benefits are insufficient.[97]

B. "NO EMINENT DOMAIN FOR PRIVATE GAIN"—OPPOSITION TO INFRASTRUCTURE

The drivers of local opposition to high-voltage transmission projects and carbon pipeline infrastructure are similar to those driving opposition to large-scale renewable generation with one important difference: The landowners are objecting to infrastructure on land they own, rather than objecting to their neighbors' decision to lease land for renewable projects. They are also objecting to the use of eminent domain to take their property without their consent. This foregrounds arguments based on property values and on whether the taking serves a greater good.[98]

These are not fights unique to clean energy infrastructure. With the boom in the oil and gas industries enabled by horizontal drilling and hydraulic fracturing ("fracking") came a need for more oil and natural gas pipelines.[99] This infrastructure has encountered opposition, especially to the use of eminent

92. *Id.* at 2422 (Thomas, J. dissenting).

93. *See* Coleman & Klass, *supra* note 7, at 680–92.

94. *See id.* at 684–85.

95. *See id.* at 683 n.129 (raising questions concerning potential self-dealing in pipeline contracts).

96. *See* Alexandra B. Klass, *The Public Use Clause in an Age of U.S. Natural Gas Exports*, 72 STAN. L. REV. ONLINE 103, 106–09 (2020).

97. *See* Coleman & Klass, *supra* note 7, at 688.

98. *See, e.g.*, Tom Barton, *Lawmakers, Iowa Landowners Continue Push to Restrict Pipeline Use of Eminent Domain*, GAZETTE (Mar. 20, 2024, 8:31 AM), https://www.thegazette.com/state-government/lawmakers-iowa-landowners-continue-push-to-restrict-pipeline-use-of-eminent-domain [https://perma.cc/K6DY-FS54].

99. Coleman & Klass, *supra* note 7, at 662.

domain to force easement sales from unwilling landowners. The nonprofit organizations and coalitions inspired by this opposition are now fighting the carbon transport pipelines as well. Their experience fighting pipelines like the Keystone XL and Dakota Access makes them formidable adversaries particularly in light of their broad-based coalitions of environmentalists, rural landowners, farmers, and property rights advocates.[100]

Opposition to high-voltage, long-distance transmission lines is more localized and less likely to tap into established networks of opposition, although agricultural groups and the Farm Bureau may side with landowners. But given the holdout problem, even a subset of landowners can slow or stall new lines. For example, a wind transmission "superhighway" across Oklahoma designed to carry energy to Tennessee gained the support of communities in Oklahoma but drew opposition from communities in Arkansas.[101] Similarly, in 2018, landowner opposition in Iowa stalled the Rock Island Clean Line, a 500-mile high-voltage line that would have crossed sixteen Iowa counties to deliver 3,500 MW of renewable energy from northwest Iowa and other midwestern states to Illinois and other eastern states.[102] The group that formed in opposition—the Preservation of Rural Iowa Alliance—successfully lobbied for the passage of legislation that effectively killed the project.[103]

The costs of this opposition are significant. A 2023 report by Americans for a Clean Energy Grid identified thirty-six "shovel ready" high-voltage projects that could grow wind and solar power by eighty-seven percent, but construction had begun on only ten projects.[104] Permitting delays are part of the problem, of course. A transmission line can require numerous permits from local, state, and federal authorities. Opposition from incumbent utilities who seek to hold onto their monopolies is also a problem. But landowner opposition can add further delays at various stages of the process.

One more example illustrates how landowners along the path of a high-voltage transmission line have varied interests and how a subset of landowners can delay or halt a project. "[C]onnect[ing] wind farms in southwestern

100. *See, e.g.*, *Team*, PIPELINE FIGHTERS HUB, https://pipelinefighters.org/team [https://perma.cc/5MQR-MVGS]; BOLD ALLIANCE, https://boldalliance.org [https://perma.cc/U488-89TE].

101. *See* RUSSELL GOLD, SUPERPOWER: ONE MAN'S QUEST TO TRANSFORM AMERICAN ENERGY 152–68, 180–82 (2019).

102. *See* Brianne Pfannenstiel, *Rock Island Clean Line Withdraws Petition for Iowa Wind Project*, DES MOINES REG. (Dec. 22, 2016, 5:46 PM), https://www.desmoinesregister.com/story/news/politics/2016/12/22/rock-island-clean-line-withdraws-petition-iowa-wind-project/95756496 (on file with the *Iowa Law Review*).

103. IOWA CODE § 478.6A (2025) (providing that if the Iowa Utilities Board does not approve a petition for a merchant line within three years, it must reject the petition, and the petitioner may not refile the petition for sixty months).

104. ZACHARY ZIMMERMAN, MICHAEL GOGGIN & ROB GRAMLICH, AMS. FOR A CLEAN ENERGY GRID, READY-TO-GO TRANSMISSION PROJECTS 2023: PROGRESS AND STATUS SINCE 2021, at 3, 5 (2023), https://cleanenergygrid.org/wp-content/uploads/2023/09/ACEG_Transmission-Projects-Ready-To-Go_September-2023.pdf [https://perma.cc/DF9D-WCMR].

Kansas to" population centers farther east, the Grain Belt Express would deliver 5,000 MW of electricity, an amount that could serve 3.2 million homes.[105] Motivated by concerns about property values and the lack of local benefits, rural landowners in Missouri convinced the Missouri Public Service Commission to deny a permit three times, approving it only after the state supreme court intervened.[106] Undeterred, the landowners sought a political solution from the state legislature, which passed a law requiring that transmission developers deliver some of the power in state and pay landowners one hundred fifty percent of fair-market value for property interests acquired through eminent domain.[107]

Although infrastructure projects may present assembly problems and have the potential to generate eminent domain objections, opponents of transmission lines and carbon pipelines express overlapping though not identical concerns. Unlike transmission lines, carbon pipelines will support new and developing carbon capture and storage ("CCS") technologies. Opponents of these pipelines therefore cite a broader range of concerns, including the role of CCS in prolonging the burning of fossil fuels, whether by supporting ethanol (which depends on a gas-powered-vehicle market) or by discouraging more renewable electricity generation with the dubious promise of capturing carbon from fossil-fuel power plants.[108] Carbon pipeline opponents also have concerns about the health and safety risks of these pipelines, which may differ in meaningful ways from the carbon pipelines currently used to service enhanced oil recovery in less populated areas.[109] Carbon dioxide is an asphyxiant. A ruptured pipeline in Satartia, Mississippi, in 2020 led to the

105. *See* Michael Holtz, *The Holdouts in the Quest for a Better Power Grid*, NEW YORKER (Jan. 26, 2024), https://www.newyorker.com/news/dept-of-energy/the-holdouts-in-the-quest-for-a-better-power-grid (on file with the *Iowa Law Review*).

106. *Id.*

107. *See id.*

108. BRUCE ROBERTSON & MILAD MOUSAVIAN, INST. FOR ENERGY ECON. AND FIN. ANALYSIS, THE CARBON CAPTURE CRUX: LESSONS LEARNED 73–74 (2022), https://ieefa.org/sites/default/files/2022-09/The%20Carbon%20Capture%20Crux.pdf [https://perma.cc/AH98-HU6W] (detailing the failure of CCS technologies outside the oil and gas sectors and recommending that government subsidies support clean renewable energy along with batteries and storage); Charles Harvey & Kurt House, Opinion, *Every Dollar Spent on This Climate Technology Is a Waste*, N.Y. TIMES (Aug. 16, 2022), https://www.nytimes.com/2022/08/16/opinion/climate-inflation-reduction-act.html (on file with the *Iowa Law Review*) ("Of the 12 commercial C.C.S. projects in operation in 2021, more than 90 percent were engaged in enhanced oil recovery, using carbon dioxide emitted from natural gas processing facilities or from fertilizer, hydrogen or ethanol plants, according to an industry report."); SCI. AND ENV'T HEALTH NETWORK & BOLD ALL., THE FALSE PROMISE AND POTENTIAL HEALTH HARMS OF CARBON DIOXIDE ENHANCED OIL RECOVERY (CO_2 EOR) AS A TOOL OF CLIMATE MITIGATION 28 (2024).

109. Opponents who raise safety concerns emphasize the lack of effective safety regulations for carbon pipelines at this scale and volume. *See, e.g.*, PIPELINE SAFETY TR., CO_2 PIPELINES – DANGEROUS AND UNDER-REGULATED 1 (2022), https://pstrust.org/wp-content/uploads/2022/03/CO2-Pipeline-Backgrounder-Final.pdf [https://perma.cc/875C-UXRW].

evacuation of two hundred people and at least forty-five people sought medical treatment.[110]

Federal law preempts state and local regulation of the safety of these pipelines, but current regulations are inadequate given the large buildout of pipelines expected (30,000 and 96,000 miles according to the DOE) and the volume of liquid carbon dioxide.[111] The agency with regulatory authority, the Pipeline and Hazardous Materials Safety Administration ("PHMSA") within the Department of Transportation, sent a notice of proposed rulemaking to the White House Office of Management and Budget ("OMB") for pre-publication review in February 2024.[112] The OMB's website catalogs meetings with stakeholders, including many with landowners affected by Summit's pipeline.[113] In January 2025, PHMSA announced a Notice of Proposed Rulemaking to strengthen standards for pipeline transport of carbon dioxide in a supercritical liquid state and new standards for pipeline transport of carbon in a gaseous state.[114]

The administrative rulemaking process will take time. In the meantime, pipeline companies have told communities that they will work with PHMSA and that their pipelines are safe. This regulatory void is, however, a legitimate concern.[115] Indeed, Illinois recently passed legislation placing a moratorium on consideration of carbon pipelines and geologic storage until federal safety regulations are in place.[116]

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110. PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMIN., U.S. DEP'T TRANSP., FAILURE INVESTIGATION REPORT - DENBURY GULF COAST PIPELINES, LLC – PIPELINE RUPTURE/NATURAL FORCE DAMAGE 2 (2022), https://www.phmsa.dot.gov/sites/phmsa.dot.gov/files/2022-05/Failure%20Investigation%20Report%20-%20Denbury%20Gulf%20Coast%20Pipeline.pdf [https://perma.cc/NRY3-VW6T]; Julia Simon, *The U.S. Is Expanding CO2 Pipelines. One Poisoned Town Wants You to Know Its Story*, NPR (Sept. 25, 2023, 9:05 AM), https://www.npr.org/2023/05/21/1172679786/carbon-capture-carbon-dioxide-pipeline [https://perma.cc/Y5EG-5SC5].

111. *Carbon Management Projects*, U.S. DEP'T ENERGY, https://www.energy.gov/lpo/carbon-management-projects [https://perma.cc/9BZC-73E5].

112. *See Pipeline Safety: Safety of Carbon Dioxide and Hazardous Liquid Pipelines*, OFF. INFO. REGUL. AFFS., OFF. MGMT. BUDGET (2023), https://www.reginfo.gov/public/do/eAgendaViewRule?pubId=202310&RIN=2137-AF60 [https://perma.cc/QD7H-8RZV].

113. *See id.*

114. *See USDOT Proposes New Rule to Strengthen Safety Requirements for Carbon Dioxide Pipelines*, U.S. DEP'T TRANSP. (Jan. 15, 2025), https://www.transportation.gov/briefing-room/usdot-proposes-new-rule-strengthen-safety-requirements-carbon-dioxide-pipelines [https://perma.cc/Y7SD-BVQC]. After the change in presidential administrations, the draft rule was no longer available on PHMSA's website.

115. *See* NAT'L ASS'N REGUL. UTIL. COMM'RS, ONSHORE U.S. CARBON PIPELINE DEPLOYMENT: SITING, SAFETY, AND REGULATION 34 (2023), https://pubs.naruc.org/pub/F1EECB6B-CD8A-6AD4-B05B-E7DA0F12672E [https://perma.cc/23B2-FVN6] (discussing significant regulatory uncertainty and variation in permitting pipelines at the scale and timeline required).

116. *See* Jeffrey Tomich, *Illinois' Pritzker Signs Law to Regulate CO2 Storage, Pipelines*, E&E NEWS (July 19, 2024, 6:49 AM), https://www.eenews.net/articles/illinois-pritzker-signs-law-to-regulate-co2-storage-pipelines (on file with the *Iowa Law Review*) (describing the SAFE CCS Act, which puts a moratorium on state permitting of carbon pipelines while PHMSA updates federal safety regulations).

In short, the opposition to carbon management infrastructure reflects the complexity and uncertainty inherent in deploying new technologies. What opponents share with landowners opposed to high-capacity power lines is their perception that these projects involve state-sanctioned transfers of private property to private companies without any real benefit to local or state communities. When nothing is extracted, processed, or delivered in state, the transport infrastructure appears to burden *in-state* landowners without any *in-state* public benefit—hence the slogan "No eminent domain for private gain."

In response to these concerns regarding the Grain Belt Express, the Missouri Legislature required an offramp for some electricity within the state.[117] The transmission company responded by adding an extension to the line that will deliver 2,500 MW of electricity within the state.[118] Of course, this will not likely satisfy landowners that are skeptical of the need for new lines. The lines' association with the clean energy transition also renders them vulnerable to political messaging. One Republican state senator in Missouri, for example, cast doubt on the need for clean energy, accusing supporters of "trying to scare the American people" and declaring that the fossil fuels "under our feet" can meet our energy demand.[119]

IV. INSIGHTS FROM THE CARBON PIPELINE PROPOSALS IN MIDWESTERN STATES

A. BACKGROUND: PIPELINE PROPOSALS AND OPPOSITION IN FIVE STATES

The enhanced 45Q tax credits made investment in pipelines to capture carbon from ethanol plants in the Midwest a profitable venture. After the passage of the IRA, three companies pursued pipeline projects in the Midwest. Local opposition caused two of these companies to cancel or suspend projects. Only Summit Carbon Solutions remains committed to securing the necessary permits.

If successful, Summit's eight-billion-dollar pipeline project will stretch across 2,500 miles in Iowa, Nebraska, North Dakota, South Dakota, and Minnesota.[120] Summit's equipment will capture carbon dioxide from the fermentation process that creates ethanol, the most common biofuel, at fifty-seven plants.[121] To transport the carbon dioxide gas, it must be compressed into a supercritical liquid. Summit has said that it plans to transport it for

117. Holtz, *supra* note 105.

118. *Id.*

119. *Id.*

120. *Frequently Asked Questions*, SUMMIT CARBON SOLS., https://summitcarbonsolutions.com/frequently-asked-questions [https://perma.cc/HU7N-F44Y]; *Building Pathways for South Dakota's Future: Summit Carbon Solutions Advances with Statewide Permit Application*, SUMMIT CARBON SOLS. (Nov. 19, 2024), https://summitcarbonsolutions.com/building-pathways-for-south-dakotas-future-summit-carbon-solutions-advances-with-statewide-permit-application [https://perma.cc/KE5M-53ZF].

121. *Project Footprint*, SUMMIT CARBON SOLS., https://summitcarbonsolutions.com/project-footprint [https://perma.cc/3YXJ-CARN].

permanent geologic storage in North Dakota,[122] though opponents cite evidence that Summit may be open to its use for enhanced oil recovery, which North Dakota regulators appear to be contemplating.[123]

Summit secured its first state-permitting victory in Iowa in June of 2024 when the Iowa Utilities Commission ("IUC") approved Summit's application for a hazardous liquid pipeline permit to construct the pipeline.[124] It also granted Summit eminent domain authority to condemn easements along the approved route in Iowa, the state where the pipeline will have the largest footprint, covering about 688 miles across twenty-nine counties.[125] The three-month, highly contested public hearing generated a voluminous record: "During the hearing the Board [now the Commission] admitted tens of thousands of pages of testimony and exhibits, heard testimony from more than 200 witnesses, and admitted approximately 4,180 comments, objections and letters of support filed in the docket."[126] In addition, the IUC reviewed 859 parcels and made some modifications to the proposed easements.[127] It also conditioned the permit on the approval of routes by the South Dakota and North Dakota public utility commissions as well as North Dakota's approval of a storage site.[128] Summit may not begin construction until these

122. *Get the Facts About Summit Carbon Solutions*, SUMMIT CARBON SOLS., https://summitcarbonsolutions.com/get-the-facts [https://perma.cc/5ADD-QKS7] (follow "Enhanced Oil Recovery" pathway).

123. *See* Leah Douglas, *Despite Past Statements, Summit Officials Now Say Its Midwest CO2 Pipeline Could Serve Oil Industry*, MINN. STAR TRIB. (Mar. 11, 2024, 2:06 PM), https://www.startribune.com/summit-midwest-co2-carbon-dioxide-pipeline-minnesota-ethanol-potential-oil-customers/600350179 [https://perma.cc/ZMR8-BCWZ]; Taylor Noakes, *Sell Our CO2 to Pump More Oil? It's Likely, Says Iowa-Based Carbon Capture Project*, DESMOG (Apr. 8, 2024, 11:46 AM), https://www.desmog.com/2024/04/08/summit-carbon-solutions-midwest-express-co2-pipeline-eor-oil-north-dakota [https://perma.cc/UT3T-4GTE].

124. Order Addressing Motions to Declare Certain Land Interests Noncompliant at 1, *In re* SCS Carbon Transport, LLC, No. HLP-2024-0001 (Oct. 7, 2024) [hereinafter IUC Order].

125. *Id.* This does not include Summit's proposed expansion. Summit has entered into agreement with ethanol plants on the proposed carbon pipeline abandoned by Navigator. This expansion would add about 370 miles to the pipeline's route. *See* Jared Strong, *Summit Pipeline Permit Set for Court Fight*, GAZETTE (Aug. 15, 2024, 4:30 PM), https://www.thegazette.com/environment-nature/summit-pipeline-permit-set-for-court-fight [https://perma.cc/J2QX-DMKZ]. Summit has been buying up easements that landowners have been negotiating with Navigator. *See* Jared Strong, *Summit Buys Land Easements from Defunct Navigator Project*, GAZETTE (Aug. 15, 2024, 4:30 PM), https://www.thegazette.com/environment-nature/summit-buys-land-easements-from-defunct-navigator-project [https://perma.cc/8RR7-WG8V].

126. IUC Order, *supra* note 124, at 1.

127. *Id.*

128. *Id.* at 65.

conditions are met.[129] The IUC has declined to reconsider its decision, and opponents have filed a petition for judicial review.[130]

In North Dakota, the Public Service Commission ("PSC") initially denied Summit's permit application but approved it last November after Summit made changes to its route.[131] Summit claims it has negotiated voluntary easements for eighty percent of the 353 miles proposed in North Dakota.[132] In December, the North Dakota Industrial Commission approved Summit's proposed underground storage sites in North Dakota, meeting yet another condition of the IUC's permit.[133]

Summit's permit application in South Dakota remains uncertain, however. Local opposition led the Public Utilities Commission to deny Summit's first permit application in 2023. In addition, as discussed below, opponents successfully challenged its status as a common carrier (necessary for eminent domain) in court and voters rejected legislation passed earlier in 2024 that imposed various requirements on carbon pipeline companies and projects, including county surcharges and landowner rights in negotiating easements.[134] In addition to concerns about the law's effect on eminent domain, some opponents of the referred state law feared it would preempt local zoning restrictions,[135] a battle that Iowa counties are currently fighting in federal

129. *Id.* For two trunk lines and one lateral line, the IUC also required approval in other states (Minnesota or Nebraska depending on the line). *Id.* at 65–66.

130. For the Sierra Club's petition for judicial review, see generally Petition for Judicial Review, *Sierra Club Iowa Chapter v. Iowa Utils. Comm'n*, No. 05771 CVCV067871 (Iowa Dist. Polk Cnty. Ct. Sept. 9, 2024).

131. Jeff Beach, *North Dakota Approves Summit Carbon Pipeline Route*, N.D. MONITOR (Nov. 15, 2024, 10:52 AM), https://northdakotamonitor.com/2024/11/15/north-dakota-approves-summit-carbon-pipeline-route [https://perma.cc/ZTV8-QSKZ].

132. Jeff Beach, *Summit Pipeline Hearings Wrap Up with More Landowner Complaints*, N.D. MONITOR (June 4, 2024, 7:08 PM), https://northdakotamonitor.com/2024/06/04/summit-pipeline-hearings-wrap-up-with-more-landowner-complaints [https://perma.cc/BE5H-Y2BB]. Objecting landowners at the latest PSC hearing questioned how voluntary these agreements are given the legal fees that come with them. *Id.*

133. A group of landowners is appealing the decision. *See* Jeff Beach, *North Dakota Landowners Appeal Summit Carbon Storage Decision*, IOWA CAP. DISPATCH (Jan. 9, 2025, 5:12 PM), https://iowacapitaldispatch.com/2025/01/09/landowners-appeal-summit-carbon-storage-decision [https://perma.cc/74AW-BRQ7].

134. *See* S.B. 201, 99th Leg., Reg. Sess. (S.D. 2024); *South Dakota Referred Law 21 Election Results: Regulation for Pipeline Companies*, N.Y. TIMES (Dec. 2, 2024), https://www.nytimes.com/interactive/2024/11/05/us/elections/results-south-dakota-referred-law-21-regulation-for-pipeline-companies.html (on file with the *Iowa Law Review*); Stu Whitney, *Referred Pipeline Law Puts Company's Permit Quest in Limbo*, S.D. NEWS WATCH (July 25, 2024), https://www.sdnewswatch.org/summit-carbon-solutions-carbon-dioxide-pipeline [https://perma.cc/E4QR-QDT6].

135. *See* Whitney, *supra* note 134.

court.[136] As this Article was in the final stages of editing, South Dakota passed legislation banning the use of eminent domain for carbon pipelines.[137]

The pipeline will cross fewer counties in Nebraska and Minnesota, but Summit faces local opposition in both these states as well. Nebraska does not have a state-level permitting process for this kind of pipeline, so Summit must seek conditional use permits from the counties it will cross. Earlier this year, one county denied Summit's permit application.[138] The Minnesota Public Utilities Commission recently granted Summit a permit for a twenty-eight-mile pipeline in Minnesota but imposed various requirements and conditions, including the requirement that Summit secure *voluntary* easements from all landowners on the route before construction begins.[139]

B. Public Benefit? Lessons from the Iowa Utilities Commission's Balancing of the Costs and Benefits

In addition to illustrating the holdout problem (Summit claims to have voluntarily secured seventy to ninety percent of the easements it needs), analyses of the costs and benefits of Summit's pipeline (before state public utility commissions ("PUCs") and courts) are likely to expose the weaknesses in economic and legal justifications for the use of state eminent domain authority—even when the ultimate decision is in Summit's favor. In its order approving Summit's permit application, the IUC engaged in a lengthy analysis of the costs and benefits of the project, as argued by all the interested parties, to reach its conclusion that the pipeline would serve the public convenience and necessity. The IUC's cost-benefit analysis leans heavily on federal policies, especially subsidies for CCS, to tip the scales in favor of Summit.

The IUC uses a balancing test that weighs the costs and benefits of a project in deciding whether it "will promote the public convenience and necessity," a state law requirement for approval of a hazardous liquid pipeline

136. *See* Couser v. Story Cnty., 704 F. Supp. 3d 917, 940 (S.D. Iowa 2023), (holding that local ordinances are preempted by IUB's permitting scheme under state law), *appeal docketed*, No. 23-3760 (8th Cir. Dec. 28, 2023).

137. *See* Joshua Haiar, *South Dakota Governor Signs Eminent Domain Ban on Carbon Pipelines*, S.D. SEARCHLIGHT (Mar. 6, 2025, 11:13 AM), https://southdakotasearchlight.com/2025/03/06/south-dakota-governor-signs-eminent-domain-ban-on-carbon-pipelines [https://perma.cc/D32G-S9XY].

138. *See* Paul Hammel, *Northeast Nebraska County Denies Permit for Summit's Carbon Capture Pipeline*, DES MOINES REG. (Feb. 23, 2024, 2:22 PM), https://www.desmoinesregister.com/story/money/business/2024/02/23/nebraska-county-wont-award-permit-for-summit-carbon-capture-pipeline-ames-company-ethanol/72701760007 [https://perma.cc/XE9J-J6QF].

139. Peter Cox, *Minnesota Public Utilities Commission Approves State's First Carbon Capture Pipeline*, MPR NEWS (Dec. 12, 2024, 6:10 PM), https://www.mprnews.org/story/2024/12/12/minnesota-public-utilities-commission-approves-states-first-carbon-capture-pipeline [https://perma.cc/M3RW-DWSX].

permit.[140] Responding to issues raised by the parties, the IUC considered numerous factors, including federal subsidies for CCS technologies, low carbon fuel markets, climate change policies, Iowa's ethanol industry, jobs and revenue, impacts to landowners, safety issues, and alternative means of transport. Two factors, property impacts and safety, weighed against approval of the pipeline, but the IUC concluded that permit conditions would alleviate or mitigate these risks.

Given that property and safety risks motivate landowner opposition, it is important to acknowledge how extensive and varied these risks are. Parties before the IUC testified about concerns regarding damage to drainage tiles under farmland, reduced crop yields, loss of federal farm program subsidies (including conservation reserve program payments), soil impacts, liability exposure, limitations on use of property in the easements, and lost overall property values.[141] Counties voiced concerns about how the pipeline's route would inhibit land use planning and development.[142] Landowners and local communities also raised concerns about the risks of pipeline ruptures, noting the pipeline's proximity to homes, schools, and other gathering places.[143] In addition, in many of these communities, first responders are volunteers who use their own vehicles and lack the appropriate equipment to monitor and respond to a rupture.[144]

The IUC concluded that property and safety risks were costs of the project.[145] Regarding impacts to land, the Commission concluded that these costs would be mitigated by Summit's agricultural impact mitigation plan (required by state law) and other permit conditions, including that Summit have sufficient funds to cover landowner damages and losses.[146] Similarly, the IUC concluded that safety risks were mitigated by permit conditions that include the provision of training and equipment to first responders.[147] Because PHMSA has jurisdiction over safety regulations, the IUC was careful to limit its safety analysis, necessarily giving this factor less weight.

A close reading of the IUC's analysis of the public benefits that supposedly outweigh these property and safety risks leaves the reader wondering how the

140. IOWA CODE § 479B.9 (2025). The Iowa Supreme Court has upheld this approach. Puntenney v. Iowa Utils. Bd., 928 N.W.2d 829, 841 (Iowa 2019) ("[T]he IUB's balancing approach to public convenience and necessity should be upheld because it is not 'irrational, illogical, or wholly unjustifiable.'").

141. IUC Order, *supra* note 124, at 156–73.

142. *Id.* at 173.

143. *Id.* at 59.

144. *Id.* at 210–16.

145. *Id.* at 242.

146. *Id.* at 74 ("[T]he Board will require Summit Carbon to obtain and maintain a general liability policy in an amount of no less than $100 million and provide proof of such insurance to the Board prior to commencing construction of its proposed project in Iowa."); *id.* at 94 (discussing Summit's land restoration plan).

147. *Id.* at 223.

scales tipped in favor of Summit. There are some economic benefits in terms of (mostly short-term) jobs and tax revenues, but if this were a public use analysis for eminent domain purposes, they would be insufficient support for a public purpose.[148] In addition, as the IUC acknowledged, Summit did not assert that the pipeline would provide "a net climate benefit," but emphasized that the 18 million metric tons of carbon it could transport for storage each year is equal to removing 3.9 million vehicles annually.[149] The IUC concluded that a contribution like this to emissions reductions furthers state and federal climate policies, weighing in favor of the permit.[150] Of course, climate benefits are especially difficult to weigh in this case because the pipelines will serve the ethanol industry, which depends on gas-powered vehicles, which contribute to greenhouse gas emissions.

For this reason, a finding that the benefits outweigh the costs requires more. One would think that the direct benefits to ethanol refineries in Iowa, as well as indirect benefits to corn producers who sell to the ethanol industry, would satisfy this burden. After all, the IUC noted testimony that fifty-three percent of Iowa corn is sold to ethanol producers each year.[151] According to Summit, the ethanol industry supports the corn grown on twenty-six million acres of farmland in the state.[152] The company argued that ethanol plants are eager to capture and store carbon as a means of lowering their carbon intensity score, which will ensure continued and further participation in low carbon fuel markets in California and other jurisdictions.[153]

Interestingly, however, the IUC found that the availability of low carbon fuel markets for ethanol only weighed "slightly" in favor of Summit's petition because evidence showed that Iowa ethanol already participates in low carbon fuel markets.[154] The IUC brushed aside arguments that these same markets, namely California, would become more restrictive because of zero-carbon emissions standards for new vehicles that signal the phase out of gas-powered vehicles.[155] Later in its order, it pulled back on its conclusion that reduced carbon intensity scores are not necessary for Iowa ethanol to participate competitively in low carbon fuel markets of the future. Recognizing potential "bias" in the evidence on which it relied, the IUC reluctantly acknowledged

148. *Id.* at 154–56 (accepting Summit's model of economic benefits, including additional jobs, in-state spending, and tax revenues).

149. *Id.* at 116, 124

150. *Id.* at 125.

151. *Id.* at 128.

152. *Id.*

153. *Id.* at 112, 131.

154. *Id.* at 116. Although Summit argued that Iowa would lose ethanol producers to other states without the pipeline, the IUC heard testimony skeptical of this claim: "'The corn availability and livestock to use byproducts will make it unrealistic for the ethanol industry to leave Iowa. The billions of dollars in infrastructure would cost [ten] times as much to rebuild today elsewhere.'" *Id.* at 135 (quoting the testimony of Matthew L. Valen).

155. *Id.* at 115.

the risk to ethanol and Iowa's agricultural sector if Iowa ethanol is made less competitive because it cannot reduce its carbon intensity score.[156] Bolstering this reluctant conclusion is the IUC's observation that "governments, corporations, and citizens are pushing for lower carbon intensity fuels."[157]

With this tepid endorsement of public benefits tied to ethanol, the public-benefits side of the ledger needs something more. The only factor that the IUC concluded weighed "heavily" in favor of Summit's petition is the federal tax credits: "While some parties assert this factor is extraneous to the Board's decision, the Board finds otherwise. The fact the federal government is incentivizing this technology, similar to the governmental incentivization of wind, solar, and ethanol, does weigh into the Board's balancing . . . ."[158] In other words, a *federal* policy to subsidize carbon capture technologies weighs *heavily* in support of a *state* finding of "public convenience and necessity."[159]

Federal policies to encourage particular markets may be sufficient support for permits, but the question is whether they are enough to support state delegations of eminent domain to private entities. The IUC did not grapple with the public use or purpose of the pipeline because it concluded that the pipeline satisfies the common law definition of a common carrier.[160] This finding will be litigated. Indeed, as discussed below, it is the subject of a challenge before the South Dakota Supreme Court in which landowners contend that Summit's pipeline cannot qualify as a common carrier because carbon is not a "commodity" as required by state law.[161] Unlike goods transported by rail or electricity delivered by power lines, carbon is arguably a waste when transported for geologic storage rather than a commodity with resale value.

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156. *Id.* at 140. The Iowa Renewable Fuels Association produced a report that calculates the profitability of 45Q and 45Z tax credits for ethanol plants. *See generally* DECISION INNOVATION SOLS., COMPARATIVE ECONOMICS OF CARBON SEQUESTRATION FOR IOWA ETHANOL PLANTS (2023), https://iowarfa.org/wp-content/uploads/2023/02/230210-FINAL-IRFA-Comparative-Economics-of-Carbon-Sequestration-for-Iowa-Ethanol-Plants_Phase-1.pdf [https://perma.cc/KK5N-YK5C] (discussing the 45Z and 45Q tax credits). It predicts that if Iowa ethanol plants cannot lower their carbon intensity scores via CCS, plants in other states will expand and new plants with access to CCS will open, making Iowa plants less competitive and causing them to close. *Id.* at 8. The report concludes that "[l]oss of [seventy-five percent] of the Iowa ethanol industry would result in an eventual decline in revenues from ethanol plants . . . of more than $10.3 billion per year" and cause the price of corn to decline. *Id.* at 3.

157. IUC Order, *supra* note 124, at 141.

158. *Id.* at 109 (citations omitted).

159. *Id.* at 239.

160. *Id.* at 295–96.

161. *See* John Hult, *Summit Carbon Capture Pipeline Case Reaches South Dakota Supreme Court*, DES MOINES REG. (Mar. 21, 2024, 8:03 AM), https://www.desmoinesregister.com/story/money/business/2024/03/21/summit-carbon-solutions-pipeline-case-argued-at-south-dakota-supreme-court/73047607007 [https://perma.cc/C73H-AF3T]. In addition to challenging the pipeline's status as a common carrier of a commodity (necessary for eminent domain), landowners are challenging state laws that give Summit a pre-permit right of limited access to survey private property as an unconstitutional taking. *Id.*

But what about the economic and constitutional "public use" justifications for the pipeline? The IUC's cost-benefit analysis highlights the potential challenges in justifying delegation of state eminent domain authority to private entities for carbon management infrastructure.

In exploring economic justifications for eminent domain long before *Kelo*, Thomas Merrill surveyed state and federal court cases and found that courts most often found a valid public use in cases involving a "thin market," which occurs "when a seller of resources is in position to extract economic rents from a buyer."[162] The assembly problem is an example of a "thin market," in which holdout landowners can drive up prices well beyond market value. Merrill argued that from an economic perspective, eminent domain can help efficiently solve problems of voluntary exchange in these "thin markets."[163]

That said, economic objections exist to eminent domain in thin markets in certain situations where the compensation formula does not result in an accurate valuation. The first is when fair market value, understood to be the opportunity cost of the property, does not cover the seller's "subjective losses" such as sentimental attachments to land passed down among family members and special modifications made to land to serve a particular use.[164] Another objection to the compensation formula involves its allocation of the "surplus," that is, the added value of the property after it is condemned.[165] The opportunity-cost valuation awards the entire surplus to the condemnors, which could encourage secondary rent seeking by profit-seeking entities. Merrill identifies the cases that are the most vulnerable to secondary rent seeking as cases "where one or a small number of persons will capture a taking's surplus," namely the cases where government delegates eminent domain authority to "one or a few private parties."[166]

The exercise of eminent domain to secure easements for Summit's pipeline presents both these situations. Landowner testimony and comments in the IUC permit proceeding detail subjective values of land such as long-time family ownership and landowner modifications such as drainage tiles made to further agricultural uses and conservation measures. The economic concern here is that eminent domain does not allow the landowner to recover the full value of the easement, and the loss may be greater than the surplus gained by eminent domain. This concern is compounded by the presence of the strong potential for secondary rent seeking in the case of carbon pipelines where only a few private companies (and perhaps only Summit) will "capture"

162. Merrill, *supra* note 62, at 65.
163. *Id.*
164. *Id.* at 82–83.
165. *Id.* at 85.
166. *Id.* at 87.

the takings' profits in the form of federal tax credits—a reality reflected in the protest "no eminent domain for private gain."

One approach to these problems is to adjust the compensation formula to incorporate subjective property values and fair distribution of profits. But subjective losses would be difficult for courts to monetize and attempts to allocate profits might deter beneficial uses of eminent domain. Merrill's solution is for courts to more closely scrutinize a public use determination in these cases, departing from the conventional deference to public use determinations in cases involving the assembly problem.[167] This heightened scrutiny might lead a court to ask whether subjective losses appear "excessive relative to the project's probable surplus," and whether, in cases with increased potential for secondary rent seeking, the project's surplus will be internalized by those with eminent domain power or whether it will generate positive externalities that are more widely shared.

Based on the IUC's cost-benefit analysis, this approach to public use would require closer scrutiny of the pipeline's "surplus" relative to the landowners' subjective losses. The factor that weighed "heavily" in Summit's favor was the federal policy to subsidize carbon capture from ethanol plants. If the federal tax credits make up most of the surplus, this looks like secondary rent seeking. In the IUC's decision, economic benefits to ethanol plants, corn producers, and Iowa citizens were less certain, as were the climate benefits.

These economic justifications for public use are likely to play a larger role in the future of takings doctrine in cases where eminent domain authority is conferred on private entities. As discussed above, the current Supreme Court is likely to reject *Kelo*'s substantial deference to legislative decisions regarding public use. Perhaps this focus on the surplus of a taking can provide some middle ground in private-delegation cases. The *Kelo* holding is not likely to survive this scrutiny, but many common carrier cases would.

C. *ISN'T A PIPELINE A COMMON CARRIER? STATE LAW TENSIONS*

Whether a carbon pipeline is a common carrier that may exercise eminent domain authority is a state law question. And state law on the issue is not uniform.[168] As is the case in South Dakota, the question will be litigated in midwestern states where the carbon pipelines are challenged. Because carbon pipelines support new technologies and markets (that differ significantly from fossil-fuel infrastructure), they do not fit neatly under historical state common-carrier provisions. Merchant transmission lines also differ in critical ways from the transmission infrastructure supported by traditionally regulated utilities. Consequently, they may not fit neatly within state laws delegating

167. *Id.* at 85, 87.

168. *See* NAT'L ASS'N REGUL. UTIL. COMM'RS, *supra* note 115, at app. A (surveying state common carrier and eminent domain laws for carbon pipelines).

eminent domain authority to the public utilities that have historically built transmission lines.

The South Dakota Supreme Court recently confronted this tension, holding that Summit had not established that it meets the state definition of common carrier.[169] To be classified as a common carrier entitled to eminent domain authority in South Dakota, a pipeline company must hold itself "out to the general public as engaged in the business of transporting commodities for hire."[170] The court identified two deficiencies in Summit's characterization of its pipeline as a common (rather than private) carrier: (1) the undisputed facts did not establish that customers would retain ownership of the carbon or sell it to parties other than Summit (indeed, evidence suggested that Summit would take title to the captured carbon); and (2) Summit had not established that the captured carbon qualifies as a "commodity" defined as "'an article of trade or commerce' or '[a]n economic good.'"[171] In short, because the carbon is destined for geologic storage, it looks more like a waste than a commodity.

Unlike the South Dakota Supreme Court, the IUC concluded that Summit's pipeline qualified as a common carrier and was therefore entitled to use eminent domain authority.[172] Interestingly, the IUC found that "[t]here is no question Summit Carbon will hold legal title to the liquefied carbon dioxide that will be transported through its proposed hazardous liquid pipeline from the participating ethanol plants."[173] Although this factual finding would be disqualifying in South Dakota, Iowa lacks a statutory definition of common carrier. Relying on case law, the IUC emphasized that Summit would not be creating the carbon it ships and sells (a "closed-looped" system that would render it a private carrier) but would instead be providing a transportation service to carbon emitters.[174]

This question is far from settled in Iowa; whether the pipeline is a common carrier will be decided by the courts in the litigation of the IUC's permit decision. Should the courts look to common law definitions of common carriers (as the IUC did), they may conclude that, though the carbon pipelines of today look like the pipelines we have historically treated as common carriers, this resemblance is superficial. The environmental, technological, and economic context for today's energy infrastructure is dramatically different, as are social and legal ideas about property.

Indeed, the distinction between common and private carriers has its origins in the pre-New-Deal legal landscape that constrained legislatures'

169. Betty Jean Strom Tr. v. SCS Carbon Transp., LLC, 11 N.W.3d 71, 95–96 (S.D. 2024).

170. S.D. CODIFIED LAWS § 49-7-11 (2004).

171. *Betty Jean Strom Tr.*, 11 N.W.3d at 83–84 (quoting *Commodity*, BLACK'S LAW DICTIONARY (11th ed. 2019)).

172. IUC Order, *supra* note 124, at 297.

173. *Id.* at 291.

174. *Id.*

power to regulate private entities. A common carrier designation allowed for some state intervention to ensure that the carrier, be it a railroad, public utility, or pipeline, did not abuse its market power by charging discriminatory prices and refusing to serve some customers.[175] Transporting goods and people efficiently also meant dealing with the holdout problem by delegating to common carriers the authority to condemn easements over private lands.

In exchange, these carriers were subject to economic regulation designed to protect the public interest—namely by ensuring that common carriers provide nondiscriminatory access to a customer base (other than itself) and charge just and reasonable rates. Unlike pipelines carrying oil and gas, carbon pipelines lack federal oversight in economic matters such as rates. Both FERC and the Interstate Commerce Commission have affirmatively disclaimed jurisdiction over carbon dioxide pipelines.[176] That leaves the Surface Transportation Board (which primarily regulates freight rail), and it has yet to embrace economic jurisdiction even though it acknowledges that it has jurisdiction over "non-energy pipelines."[177]

V. FEDERAL SUBSIDIES ARE NOT ENOUGH: OLD LAWS CLASH WITH EMERGING PROPERTY NORMS AND NEW TECHNOLOGIES

Like the carbon pipelines, high-capacity transmission lines' resemblance to their historical counterparts (transmission lines built by public utilities to serve their defined service territories) belies differences critical to the question of public use under state law. The developers of these interregional high-voltage, direct-current lines are not rate-regulated public utilities, but "merchant" developers.[178] Their unregulated status helps them avoid the thorny cost-allocation questions that public utilities face when seeking to recoup costs from their ratepayers. On the other hand, their inability to charge consumers means they must rely on individual power generators who pay them to carry their power to load centers. To facilitate funding necessary to begin a project, a merchant-line project typically requires a large "anchor"

175. A contemporaneous explanation of this historical development begins by acknowledging the "well settled rule that a state commission can exercise no control over a private carrier. And if a carrier is in fact a private contract carrier a state commission cannot label him a common carrier and thus exercise control over him." Earl N. Cannon, *What Constitutes a Common Carrier?*, 15 MARQ. L. REV. 67, 67 (1931).

176. *See* Cortex Pipeline Co., Notice of Decision, 46 Fed. Reg. 18805, 18805 (1981) (concluding that the Interstate Commerce Commission lacks jurisdiction over carbon dioxide pipelines); Cortez Pipeline Co., Order No. CP79-130, 7 FERC ¶ 61,024 (1979) (concluding that FERC does not have jurisdiction under the Natural Gas Act for carbon dioxide pipelines).

177. *About STB*, SURFACE TRANSP. BD., https://www.stb.gov/about-stb [https://perma.cc/6FPS-VQK8].

178. *See* Zack Hale, *Merchant Developers Fill 'Void' in US Interregional Grid Build-Out*, S&P GLOBAL (Oct. 6, 2023), https://www.spglobal.com/market-intelligence/en/news-insights/articles/2023/10/merchant-developers-fill-void-in-us-interregional-grid-build-out-76447354 [https://perma.cc/F7AS-7XX8].

generator (e.g., large-scale wind or solar) that commits to using a significant portion of the line's capacity.

Merchant lines like the Grain Belt Express are essential to integrating large-scale renewables into the clean energy grid of the future. But by their nature, they are unlike the transmission lines designed to serve incumbent utilities' local territories. They are more likely to cross multiple state lines and involve more than one regional grid operator, which leads to time delays and planning problems—all of which are beyond the scope of this discussion. What is central to a discussion of eminent domain is the assumption that state eminent domain laws support merchant lines just as they support transmission lines built by regulated public utilities to serve their in-state ratepayers. State laws vary considerably. Some explicitly authorize eminent domain authority for merchant lines, some do not, and some are unclear.[179] Unlike carbon pipelines however, merchant lines are subject to FERC's jurisdiction.

In addition to these state-law difficulties, high-capacity transmission lines may present the same concerns regarding the economic use of eminent domain as carbon pipelines do, particularly if eminent domain is conferred at the state, rather than federal, level. Many landowners opposed to transmission projects suffer subjective losses, and eminent domain authority is delegated to a small number of private entities. That said, transmission lines should survive heightened scrutiny because of the considerable and widely shared benefits of increased grid capacity for all kinds of energy, including low-cost renewables. In addition, the opening of the market to competition from transmission developers who are not incumbent utilities also broadens the potential pool of private companies seeking to build and lessens the potential of secondary rent seeking.

Even so, condemnation of private property for a high-capacity line that transports electricity from out-of-state generators to out-of-state load centers may face objections that the benefits are not widely shared by in the pass-through state.[180] This counsels in favor of federal eminent domain authority for these kinds of lines. In the IIJA, Congress amended section 216 of the Energy Policy Act to clarify FERC's backstop authority to issue permits for

179. *See* Alexandra B. Klass, *Takings and Transmission*, 91 N.C. L. REV. 1079, 1124–26, 1124–26 nn.266–75, app. A at 1155–60 (2013) (summarizing and categorizing state eminent domain laws).

180. The argument that benefits such as increased grid reliability will be shared in the passthrough state may not convince opponents if the high-voltage line is destined to serve growing demand from out-of-state corporate interests like data centers. *See, e.g.*, Josh Kurtz, *People Power vs. Electric Power in Feud over Proposed Transmission Project*, MD. MATTERS (Aug. 13, 2024, 11:01 PM), https://marylandmatters.org/2024/08/13/people-power-vs-electric-power-in-feud-over-proposed-transmission-project [https://perma.cc/2DTE-T727] (describing opposition in Maryland to a proposed merchant line that would carry power from a nuclear plant in Pennsylvania to data centers in Northern Virginia).

lines in DOE-designated corridors when a state denies a permit.[181] In May 2024, the DOE's Grid Deployment Office released a list of potential corridors, which are called "National Interest Electric Transmission Corridors" ("NIETCs").[182] These are areas determined to lack adequate transmission and where new transmission would increase reliability and reduce consumer costs.[183] This "preliminary" list is subject to public comment and further public engagement before designations are finalized.[184]

These are critical first steps that will strengthen federal authority over siting and eminent domain but only in NIETCs and only after states first consider projects and reject them. Legislation introduced in Congress seeks to further centralize and streamline permitting,[185] an important reform but one unlikely to happen soon. Expanded jurisdiction is critical, however, because arguments in support of public use gain ground if eminent domain authority is exercised at the appropriate scale of governance—where the legislative judgment regarding public use has been made. This is true for interstate carbon pipelines as well.[186]

Another way to bolster the value of the takings surplus relative to losses, including subjective ones, is to increase market demand apart from federal subsidies. In other words, demand-side policies in the form of a carbon tax or emissions limitations would create even more demand for clean energy and clean energy infrastructure than the supply-side (cost-reducing) incentives of subsidies. Indeed, wind and solar energy generation grew in the United States largely because of state-level mandates that required utilities to purchase a percentage of their generation from renewable facilities.[187] The initial costs of this growth in renewables were passed along to ratepayers, although the costs were somewhat reduced by supply-side tax credits. Without the state policies forcing the purchase of renewable energy, however, the wind and solar industries would have experienced less growth.

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181. Infrastructure Investment and Jobs Act, Pub. L. No. 117-58, §§ 40105–40106, 135 Stat. 429, 933–40 (2021) (codified as amended at 16 U.S.C. § 824p(b)(1)(C)).

182. *See National Interest Electric Transmission Corridor Designation Process*, GRID DEPLOYMENT OFF., U.S. DEP'T ENERGY (Dec. 16, 2024), https://www.energy.gov/gdo/national-interest-electric-transmission-corridor-designation-process [https://perma.cc/X2CH-ZMWH].

183. *Id.*

184. *Id.*

185. Energy Permitting Reform Act, S. 4753, 118th Cong. (2024).

186. Another reason for federal permitting authority generally would be to end the ineffective approach to regulation of carbon pipelines with states permitting their location and PHMSA exercising jurisdiction over safety issues. As Sara Gosman has argued, the same regulatory authority overseeing safety risks should also oversee its route. Sara Gosman, *Planning for Failure: Pipelines, Risk, and the Energy Revolution*, 81 OHIO ST. L.J. 349, 402–03 (2020).

187. *See* GALEN BARBOSE, BERKELEY LAB, U.S. STATE RENEWABLES PORTFOLIO & CLEAN ELECTRICITY STANDARDS: 2023 STATUS UPDATE 14 (2023), https://eta-publications.lbl.gov/sites/default/files/lbnl_rps_ces_status_report_2023_edition.pdf [https://perma.cc/N7HC-CR55] (finding that state RPS requirements are responsible for approximately half of all growth in renewable electricity generation since 2000).

Today, as noted above, states in the wind-rich Midwest have declined to set more aggressive targets for renewables. Opposition is driving up costs and delaying both wind and solar projects. Some state energy policies will continue to drive demand, but a federal carbon tax or industry-specific restrictions on greenhouse gas emissions would force states, utilities, and regional grid operators to plan for and integrate more wind and solar into the grid.

The failed deployment of carbon capture technologies in all but a couple of sectors, like natural gas processing, demonstrates this demand-side problem. A recent white paper attributes this failure to the lack of a carbon tax or emissions restrictions: "[I]n the absence of a carbon tax or emissions control compliance regime, nothing at the federal level forces a U.S. steel mill or coal power plant to scrub CO2 from coal combustion-derived flue gases."[188] In the absence of a carbon tax or emissions restrictions, industrial emitters of carbon did not pursue CCS as a pollution-control technology. (Only one coal power plant has deployed CCS, and it closed in 2020 when lower oil prices made it too costly.)[189] Consequently, the relevant industries lack the experience to bring down costs and attract private capital. As the report warns, "[w]ithout private capital to leverage public investment, CCS will not scale up" and the delay will "drive up the overall cost of decarbonization."[190]

So, why is CCS taking off as a decarbonization strategy for the ethanol industry? The answer is that the 45Q tax credits are lucrative enough to more than cover costs.[191] Except for natural gas processing (already an established use because of its link to enhanced oil recovery), ethanol is the only industry for which this is true, largely because the capture of carbon from ethanol refineries is simpler than it is for other industrial facilities.[192] This means that the tax credits will not cover the costs of CCS for coal- and natural gas-fired power plants and other industrial emitters—especially in first-of-a-kind applications of the technology.

Strong demand created by emissions limitations strengthens the public use argument because it reduces the likelihood of secondary rent seeking and ensures that the surplus is more widely shared. Earlier this year, the EPA issued rules restricting carbon emissions from existing coal-fired power plants

188. JEFFREY D. BROWN ET AL., ENERGY FUTURES INITIATIVE, TURNING CCS PROJECTS IN HEAVY INDUSTRY & POWER INTO BLUE CHIP FINANCIAL INVESTMENTS 8 (2023), https://energyfuturesinitiative.org/wp-content/uploads/sites/2/2023/02/20230212-CCS-Final_Full-copy.pdf [https://perma.cc/2G3V-7AMH].

189. *Id.* at 9.

190. *Id.* at 10.

191. *See id.* at 10, 15–16.

192. Of course, if the tax credits are not extended beyond 2027 (for 45Z) and 2030 (for 45Q), continued capture and storage at ethanol facilities might decline without a demand-side policy requiring a lower carbon intensity score for participation in low carbon fuel markets.

and new gas-fired power plants.[193] The performance standards are based on CCS. Demand-side policies like this will either encourage investments in CCS or—if costs are high—they may discourage continued use of some fossil-fuel generation, thereby incentivizing more renewable generation and transmission infrastructure.[194] Of course, the new rules are being challenged in court, and even if they survive, more needs to be done to spur demand.[195] The opposite is likely to be true in the short term, as the new Trump Administration has announced its plans to roll back climate regulations and deregulate fossil-fuel industries.

The United States is already the world's largest oil and natural gas producer. Given the changing political landscape, investment in fossil fuels is likely to continue and even grow. Fossil-fuel companies have already invested substantially in CCS and do not favor the rollback of CCS subsidies. Because emissions restrictions from power plants could increase demand for CCS, perhaps industry will eventually support them. That support would make the case for public use stronger because—like the common carriers that served the old energy economy (e.g., railroads and public utilities)—clean energy infrastructure would serve the new market in clean energy. The surplus of takings made to further clean energy infrastructure would therefore include the benefits of this clean energy transition writ large—such as climate change mitigation, cleaner air, and more abundant energy. Lasting demand for clean energy would render the idea that we can rely on the energy "under our feet" hollow.

CONCLUSION

As this Article entered the editing process, the electorate voted to send Donald Trump back to the White House and to give both the House and the Senate slim Republican majorities. The new Trump Administration signaled on day one that it intended to roll back the clean energy incentives of the Biden Administration and declare an "energy emergency" in order to further even more fossil-fuel extraction and production.[196] Although agencies worked

193. New Source Performance Standards for Greenhouse Gas Emissions from New, Modified, and Reconstructed Fossil Fuel-Fired Electric Generating Units, 89 Fed. Reg. 39,798 (proposed May 9, 2024) (to be codified at 40 C.F.R. pt. 60).

194. *See* Brad Harris, *Reducing Power Plant Pollution: An Overview of Recent Federal Emissions Rules*, RESOURCES (May 22, 2024), https://www.resources.org/common-resources/reducing-power-plant-pollution-an-overview-of-recent-federal-emissions-rules [https://perma.cc/2Z8P-L7ZX]. In addition to the carbon emissions restrictions, the EPA also strengthened emissions standards for hazardous air pollutants like mercury, restrictions on wastewater discharges of pollutants, and new coal ash standards. All the rules target pollution from coal plants, collectively encouraging their retirement by 2032. *Id.*

195. For example, the EPA chose not to include existing natural gas-fired power plants in this rulemaking.

196. Exec. Order No. 14154, 90 Fed. Reg. 8353 (Jan. 20, 2025); Exec. Order No. 14156, 90 Fed. Reg. 8433 (Jan. 20, 2025). Summaries with links to other energy-related executive orders

to get as much IRA funding out the door before the presidential transition, the tax credits and some other subsidies could be vulnerable if congressional Republicans seek to pass a reconciliation package that rolls them back.[197] Sufficient support for the rollbacks may prove challenging because tax credits from the IIJA and the IRA have already led to increased investment and job growth in Republican districts, as eighteen Republican House members emphasized in a letter last August.[198]

Even if most of the tax credits survive, the clean energy transition will likely slow in the next few years. With less pressure on fossil fuel companies to curb emissions, the demand for clean energy infrastructure will feel less urgent. Given these political commitments, change will likely happen incrementally. Perhaps communities will begin to see positive economic impacts from the IRA subsidies soon, and perhaps the California wildfires and other natural disasters will convince more people that the transition is an urgent priority. We need a political consensus that supports federal, rather than state, authority over the buildout of clean energy infrastructure. Otherwise, we are giving a small number of landowners an outsized voice in decisions about our shared energy future.

signed by the President are available grouped together here: *Trump Executive Order Tracker*, AKIN (2025), https://www.akingump.com/en/insights/blogs/trump-executive-order-tracker?bc=1043142 [https://perma.cc/2SP9-VZ2Q].

197. *See* Timothy Cama, Kelsey Tamborrino, Jessie Blaeser, Chris Marquette & James Bikales, *Trump Kicks Off Potentially Messy Fight Over Biden's Infrastructure Money*, POLITICO (Jan. 21, 2025, 7:00 PM), https://www.politico.com/news/2025/01/21/trump-fight-biden-infrastructure-money-00199796 [https://perma.cc/KL2E-JP3H].

198. *See* James Bikales, *More Republicans Back IRA Tax Credits in Reconciliation Fight*, E&E NEWS (Jan. 24, 2025, 6:10 AM), https://www.eenews.net/articles/more-republicans-back-ira-tax-credits-in-reconciliation-fight (on file with the *Iowa Law Review*).