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Permitting the Future

Jonathan Adler

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PERMITTING THE FUTURE

Jonathan H. Adler
Johan Verheij Memorial Professor of Law
Director, Coleman P. Burke Center for Environmental Law
Case Western Reserve University School of Law

Senior Fellow
Property & Environment Research Center

Forthcoming in CASE WESTERN RESERVE LAW REVIEW

Abstract

Today’s environmental laws impose a range of permitting and review requirements on federal projects and private developments that require federal approval. While well-intentioned, these requirements have imposed substantial costs and delays on economic development, including the development of “green infrastructure.” Alternative energy projects and the infrastructure upon which they depend are constrained by lengthy permit reviews and assessments. While designed to protect the environment, these regimes may constrain the development and deployment of the environmental technologies of tomorrow, including (but not limited to) those necessary to address climate change. This essay is the introduction to a symposium on “Permitting the Future” that explores the legal and economic aspects of permitting and review requirements for new technologies, infrastructure, and development, how such requirements may impede environmental progress, and whether there are alternative approaches to managing environmental risks that are more consistent with the maintenance of a free, dynamic, and sustainable economy.

PERMITTING THE FUTURE

Jonathan H. Adler*

Icebreaker Wind was to be the first freshwater wind energy project in North America.¹ Offshore wind power is a promising source of renewable energy, and Lake Erie seemed like a prime location for a freshwater wind project. Offshore wind farms can be sited closer to coastal population centers than many other comparable wind projects and can take advantage of “stronger and more consistent winds.”² While siting wind in freshwater presents distinct engineering challenges, wind turbines in Lake Erie have the potential to generate substantially more energy than their onshore equivalents.³

* Johan Verheij Memorial Professor of Law and Director, Coleman P. Burke Center for Environmental Law, Case Western Reserve University School of Law. The author thanks Victor Flatt and Beth Nagusky for their comments and Christopher Doyle for his research assistance. This essay was prepared as an introduction to paper presented at the research colloquium, “Permitting the Future,” co-sponsored by the Coleman P. Burke Center for Environmental Law and the Property and Environment Research Center, September 7-9, 2023.

¹ See Peter Krouse, *Icebreaker Wind Project Halted, No Plans to Resurrect Effort to Put Wind Turbines in Lake Erie*, CLEVELAND.COM, Dec. 9, 2023 (“Icebreaker was to be the first freshwater wind farm in North America and a test to see if turbines could withstand the rigors of a frozen lake.”). Indeed, when first proposed, Icebreaker Wind could have been the first offshore wind development of any sort in the United States. See Nicole Pollack, *An Offshore Wind Farm on Lake Erie Moves Closer to Reality, but Will It Ever Be Built*, INSIDE CLIMATE NEWS, Oct. 26, 2020, <https://insideclimatenews.org/news/26102020/icebreaker-project-lake-erie-cleveland-wind-energy/>.

² Bureau of Ocean Energy Management, *Renewable Energy Fact Sheet*, (Jan. 2021), <https://www.boem.gov/sites/default/files/documents/newsroom/fact-sheets/BOEM-FactSheet-Renewable.pdf>. See also Uma Outka, *Renewable Energy Siting for the Critical Decade*, 69 U. KAN. L. REV. 857, 878-879 (2021) (discussing advantages of offshore wind); Angelica D. Blair, Note, *The Renewable Frontier: Improving Offshore Wind Development The Renewable Frontier: Improving Offshore Wind Development Within the Great Lakes Through Statutory Initiatives Within the Great Lakes Through Statutory Initiatives*, 74 CASE W. RES. L. REV. 195, 198 (2023) (same).

³ See Jiale Li & Xiong (Bill) Yu, *Onshore and Offshore Wind Energy Potential Assessment Near Lake Erie Shoreline: A Spatial and Temporal Analysis*, 147 ENERGY 1092 (2018) (projecting turbines in Lake Erie could generate 1.7 times as much power as comparable onshore wind turbines); see also Daniel McGraw, *Can Offshore Wind Turbines Succeed in the Great Lakes?*, SCI. AM. (Aug. 14, 2018), <https://www.scientificamerican.com/article/can-offshore-wind-turbines-succeed-in-the-great-lakes/> (discussing pros and cons of offshore wind power in the Great Lakes); Adesoji Adelaja, Charles McKeown, Benjamin Calnin, &

A local task force recommended a wind power project on Lake Erie in 2007.⁴ Two years later, proponents of the project launched the Lake Erie Energy Development Corporation (LEEDCo) to develop a demonstration wind power demonstration project in the Great Lakes.⁵ The first turbines, generating just over 20 megawatts, were to be built by 2012, with additional turbines generating up to 1,000 megawatts by 2020.⁶ The project was hailed as a “game-changing” development that could “pave the way for a new energy landscape” in the region, if not the country.⁷ Yet as with the best laid plans of mice and men, it went awry.⁸

In December 2023, LEEDCo put Icebreaker Wind on ice.⁹ After fourteen years of planning, permitting, and legal wrangling, LEEDCo was no longer able to meet the performance milestones necessary to keep the Department of Energy grant money sustaining the project.¹⁰

Although the Obama Administration had announced efforts to streamline permitting for offshore

Yohannes Hailu *Assessing Offshore Wind Potential*, 42 ENERGY POL’Y 191 (2012) (discussing offshore wind potential with particular focus on the Great Lakes).

⁴ See BUILDING A NEW ENERGY FUTURE: CUYAHOGA REGIONAL ENERGY DEVELOPMENT TASK FORCE REPORT TO THE BOARD OF COMMISSIONERS OF CUYAHOGA COUNTY, OHIO, Feb. 8, 2007, available at <https://www.nrc.gov/docs/ML1036/ML103610417.pdf>; see also IdeaStream Public Media, *One Step Closer to Fresh Water Wind Farm*, Feb. 9, 2007, <https://www.ideastream.org/2007-02-09/one-step-closer-to-fresh-water-wind-farm>.

⁵ See Nicole Pollack, *What Happened to the Great Lakes Offshore Wind Boom?*, INSIDE CLIMATE NEWS, Nov. 24, 2023 (noting LEEDCo was “a public-private nonprofit launched by several lakefront counties and a local foundation in 2009”). LEEDCo’s website is no longer operational, but additional details can be found on archived versions of the site. See, e.g., “The Project: Icebreaker Wind,” <http://leedco.org/index.php/about-icebreaker>, archived at: <https://web.archive.org/web/20220314225735/http://leedco.org/index.php/about-icebreaker>.

⁶ See John Funk, *Wind Turbines to Be Built in Lake Erie by 2012, Group Says*, CLEVELAND PLAIN DEALER, Mar. 29, 2010, https://www.cleveland.com/business/2010/03/wind_turbines_to_be_built_in_lake_erie_by_2012_group_says.html.

⁷ Stephen Starr, *Great Lakes Gets Its First Wind Farm—But Some Fear Environmental Fallout*, THE GUARDIAN, Aug. 16, 2023, <https://www.theguardian.com/environment/2023/aug/16/lake-erie-icebreaker-great-lakes-wind-farm>.

⁸ Cf. Robert Burns, *To a Mouse*, <https://www.poetryfoundation.org/poems/43816/to-a-mouse-56d222ab36e33>.
 But, Mousie, thou art no thy-lane,
 In proving foresight may be vain;
 The best-laid schemes o’ mice an’ men
 Gang aft agley,
 An’ lea’e us nought but grief an’ pain,
 For promis’d joy!

⁹ Krouse, *supra* note __; Nicole Pollack, *Only Permitted Great Lakes Offshore Wind Farm Put on Hold*, INSIDE CLIMATE NEWS, Dec. 8, 2023.

¹⁰ Pollack, *Only Permitted*, *supra* note __.

wind projects in the Great Lakes,¹¹ it was not enough.¹² Permitting delays and targeted opposition were too much for the small project.¹³

Icebreaker Wind’s experience illustrates how the permitting process for renewable energy projects can hamper their development.¹⁴ After first obtaining a submerged lands lease from the Ohio Department of Natural Resources,¹⁵ the project still needed permit approvals from other state and federal authorities, including a Certificate of Environmental Compatibility from the Ohio Power Siting Board,¹⁶ a Section 401 water quality certification from the Ohio Environmental Protection Agency,¹⁷ a Section 404 permit from the U.S. Army Corps of Engineers,¹⁸ and other reviews from the Department of Energy,¹⁹ the Federal Aviation Administration,²⁰ the U.S. Coast Guard,²¹ State Department,²² and International Joint

¹¹ See Council on Environmental Quality, Spurring Development of Offshore Wind Projects, Mar. 30 2012, <https://obamawhitehouse.archives.gov/administration/eop/ceq/initiatives/great-lakes-wind>.

¹² See Pollack, *What Happened*, *supra* note ____.

¹³ Although initially supported by local leaders, the project was ultimately opposed by American Bird Conservancy and Black Swamp Bird Observatory and the Lake Erie Foundation. *see also* Krouse, *Icebreaker Wind Project Halted*, *supra* note ____ (noting support and opposition from environmental organizations); Starr, *supra* note ____ (noting opposition of Lake Erie Foundation). Opposition to the project was also funded by Murray Energy, a locally owned coal company with “a long history of opposing renewable energy projects.” See Pollack, *An Offshore Wind Farm*, *supra* note ____.

¹⁴ See generally Angelica D. Blair, Note, *The Renewable Frontier: Improving Offshore Wind Development The Renewable Frontier: Improving Offshore Wind Development Within the Great Lakes Through Statutory Initiatives Within the Great Lakes Through Statutory Initiatives*, 74 CASE W. RES. L. REV. 195, 219-22 (2023) (summarizing Icebreaker Wind permitting process)

¹⁵ Application to the Ohio Power Siting Board For a Certificate of Environmental Compatibility & Public Need for the Icebreaker Wind Farm (Part 3 of 13) at 1, Icebreaker Windpower, Inc., Ohio Power Siting Bd. No. 16-1871-EL-BGN, (Feb. 1, 2017).

¹⁶ Application of Icebreaker Windpower Inc. for a Certificate of Environmental Compatibility and Public Need for an Electric Generating Facility in Cuyahoga County, Ohio, Ohio Power Siting Bd., No. 16-1871-EL-BGN (May 21, 2020) (Opinion, Order, and Certificate).

¹⁷ Ohio Env’t Protection Agency, ID No. 175530, Grant of a Section 401 Water Quality Certification (2018).

¹⁸ U.S. DEPT. OF ENERGY, DOE.EA-2045, FINAL ENVIRONMENTAL ASSESSMENT LEEDCo PROJECT ICEBREAKER LAKE ERIE, CITY OF CLEVELAND, CUYAHOGA COUNTY, OHIO 2-32 (2018).

¹⁹ U.S. DEPT. OF ENERGY, DOE/EA-2045, FINDING OF NO SIGNIFICANT IMPACT, LEEDCo PROJECT ICEBREAKER LAKE ERIE, CITY OF CLEVELAND, CUYAHOGA COUNTY, OHIO (2018).

²⁰ U.S. DEPT. OF ENERGY, DOE.EA-2045, FINAL ENVIRONMENTAL ASSESSMENT LEEDCo PROJECT ICEBREAKER LAKE ERIE, CITY OF CLEVELAND, CUYAHOGA COUNTY, OHIO app. R, app. D at 14 (2018).

²¹ *Id.* at 1-2.

²² *Id.* at 3-26 n.11.

Commission.²³ While some of these processes could proceed concurrently, they were all sources of added expense and potential delay.²⁴

As with all projects of this sort receiving federal support or approval, Icebreaker Wind was subject to review under the National Environmental Policy Act.²⁵ Under NEPA, federal agencies are required to detail and consider the “reasonably foreseeable environmental effects” of “major” actions they undertake. Sometimes this requires a full-fledged environmental impact statement (EIS).²⁶ Other times, as when the agency does not anticipate its action will have a significant environmental effect, they only require an environmental assessment.²⁷ Failing to consider the potential environmental impacts of even the most environmentally important projects is not an option.

In the case of Icebreaker Wind, NEPA review was required because the Department of Energy sought to fund the project.²⁸ Although the reviewing agencies ultimately concluded the project would have no significant environmental impact, obviating the need for a full-blown EIS,

²³ *Id.*

²⁴ Some of the required federal approvals proceeded while the Department of Energy was conducting the required environmental review under NEPA. Others, however, were postponed until after the NEPA process concluded. *See, e.g., Lake Erie Energy Dev. Corp., Final Report DE-EE006714 at 9 (Apr. 9, 2018) (noting deferral of permit application to U.S. Coast Guard).*

²⁵ National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. §§ 4321-4370 (1994)

²⁶ *See* 42 U.S.C. § 4332(2)(C)(i) (“all agencies of the Federal Government shall...include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on...the environmental impact of the proposed action...”). Under regulations promulgated by the Council on Environmental Quality, the definition of “federal actions” subject to this requirement is quite broad. *See* 40 C.F.R. § 1508.1(w).

²⁷ *See* 40 C.F.R. §1501.3 (standards for determining appropriate level of review); §1501.5 (requirements for environmental assessments).

²⁸ U.S. DEPT. OF ENERGY, DOE.EA-2045, FINAL ENVIRONMENTAL ASSESSMENT LEEDCO PROJECT ICEBREAKER LAKE ERIE, CITY OF CLEVELAND, CUYAHOGA COUNTY, OHIO 1-1 (2018). The U.S. Army Corps of Engineers and U.S. Coast Guard were cooperating agencies on the EA because of their regulatory authorities. *Id.* at 1-2 and 1-3.

it still took over two years to produce a 180-page Environmental Assessment.²⁹ Completing the EA required consulting with both federal and state authorities and even included consideration of how the installation of wind turbines offshore would impact scenic views from historic properties on Lake Erie.³⁰ The Ohio State Historic Preservation Office initially contested the Department of Energy’s conclusion that a handful of wind turbines eight miles offshore would not significantly impact lake views from historic properties, requiring consultation with the Advisory Council on Historic Preservation.³¹

State-level permits were also required, and this process was longer (if not more arduous) than that required by federal law. Ohio Revised Code Section 4906.20 provides that operation of “an economically significant wind farm” requires approval from the Ohio Power Siting Board (OPSB).³² Among other things, this approval process is required to consider a wide range of factors, including “location, erection, construction, reconstruction, change, alteration, maintenance, removal, use, or enlargement and including erosion control, aesthetics, recreational land use, wildlife protection, interconnection with power lines and with regional transmission organizations, independent transmission system operators, or similar organizations, ice throw,

²⁹ *See id.* The public scoping process for the environmental assessment began in September 2016, and the final EA was published in September 2018. *See id.* at 1-5. Some amount of preparation was requirement before initiating the public scoping process.

³⁰ U.S. DEPT. OF ENERGY, DOE.EA-2045, FINAL ENVIRONMENTAL ASSESSMENT LEEDCo PROJECT ICEBREAKER LAKE ERIE, CITY OF CLEVELAND, CUYAHOGA COUNTY, OHIO 3-83 (2018).

³¹ *Id.* at 3-88.

³² OH. REV. CODE §4906.20(A) (“No person shall commence to construct an economically significant wind farm in this state without first having obtained a certificate from the power siting board. An economically significant wind farm with respect to which such a certificate is required shall be constructed, operated, and maintained in conformity with that certificate and any terms, conditions, and modifications it contains. A certificate shall be issued only pursuant to this section.”).

sound and noise levels, blade shear, shadow flicker, decommissioning, and necessary cooperation for site visits and enforcement investigation.”³³

LEEDCo initiated the OPSB permitting process in 2013, and submitted its application the following year.³⁴ In response to concerns raised by the Board, LEEDCo withdrew its initial permit application and resubmitted it in 2016 with more extensive environmental analyses of the project, including its potential impacts on local populations of fish, birds, and bats.³⁵

OPSB staff greenlighted the project in July 2018, over four years after the LEEDCo submitted the first Icebreaker Wind permit application.³⁶ It would take another two years for the OPSB permit to issue, however, and the approval contained a poison pill.³⁷ Under one provision of the permit, the wind turbines could not operate at night for eight months of the year (March 1 through November 1) in order to protect birds and bats.³⁸ And were this not sufficient to reduce bird and bat mortalities, another provision called for reconsideration of the limitations and additional environmental review.³⁹

³³ OH. REV. CODE §4906.20(B)(2). For purposes of this provision, an “economically significant wind farm” is a wind power project connected to the grid and with a capacity between five and fifty megawatts. OH. REV. CODE §4906.13(A).

³⁴ See Application to the Ohio Power Siting Board For a Certificate of Environmental Compatibility & Public Need for the Icebreaker Wind Farm (Part 1 of 13), *Icebreaker Windpower, Inc.*, Ohio Power Siting Bd. No. 16-1871-EL-BGN, (Feb. 1, 2017).

³⁵ Notice of Withdrawal of Application for a Certificate to Construct Project Icebreaker, *Lake Erie Development Corporation (LEEDCO) Project Icebreaker*, Ohio Power Siting Bd. No. 13-2033-EL-BGN, (Sept. 13, 2016); see also Application to the Ohio Power Siting Board For a Certificate of Environmental Compatibility & Public Need for the Icebreaker Wind Farm (Part 1 of 13), *Icebreaker Windpower, Inc.*, Ohio Power Siting Bd. No. 16-1871-EL-BGN, (Feb. 1, 2017).

³⁶ Krouse, *Icebreaker Wind Project Halted*, *supra* note ____.

³⁷ Application of *Icebreaker Windpower Inc. for a Certificate of Environmental Compatibility and Public Need for an Electric Generating Facility in Cuyahoga County, Ohio*, Ohio Power Siting Bd., No. 16-1871-EL-BGN at ____ (May 21, 2020) (Opinion, Order, and Certificate).

³⁸ *Id* at ¶ 152; see also Krouse, *Icebreaker Wind Project Halted*, *supra* note ____.

³⁹ Application of *Icebreaker Windpower Inc. for a Certificate of Environmental Compatibility and Public Need for an Electric Generating Facility in Cuyahoga County, Ohio*, Ohio Power Siting Bd., No. 16-1871-EL-BGN ¶ 77 (May 21, 2020) (Opinion, Order, and Certificate).

LEEDCo challenged the eight-month nighttime limitation, and it was ultimately reversed.⁴⁰ Then the lawsuits started. Two local residents, with backing from a locally owned coal company, filed suit to stop Icebreaker’s construction.⁴¹ These challenges were ultimately unsuccessful, but they further delayed and drained resources from the project.⁴²

Icebreaker Wind faced challenges in federal court as well. After federal permits issued, two bird conservation organizations filed suit challenging the adequacy of the environmental reviews under NEPA and the CWA.⁴³ This suit was unsuccessful, but it too cost LEEDCo time and money.⁴⁴

Icebreaker Wind would have been the first freshwater wind project in North America. Such projects have been able to proceed elsewhere, however. While it took Icebreaker fourteen years to fail, the world’s largest freshwater wind farm was built in the Netherlands in two.⁴⁵ Construction began on Windpark Fryslân in 2020 and by 2022 it was generating over 1.2 terawatt hours of power.⁴⁶

Icebreaker Wind was hardly the first offshore wind project to founder on the shoals of regulatory and litigation obstacles. In November 2001, Cape Wind Associates announced plans to construct an offshore wind farm in Nantucket Sound consisting of 130 turbines that would

⁴⁰ *Application of Icebreaker Windpower Inc. for a Certificate of Environmental Compatibility and Public Need for an Electric Generating Facility in Cuyahoga County, Ohio*, Ohio Power Siting Bd., No. 16-1871-EL-BGN ¶ 2 (May 21, 2020) (Order on Rehearing).

⁴¹ *See In re Application of Icebreaker Windpower, Inc.*, 207 N.E. 3d 651, 654 (Ohio 2022) (noting two local residents of Bratenahl appeals OPSB’s approval of Icebreaker Wind project); *see also* Krouse, *Icebreaker Wind Project Halted*, *supra* note ____.

⁴² *See In re Application of Icebreaker*, 207 N.E. 3d at 655 (affirming the OPSB’s decision to approve the project).

⁴³ *See* *Am. Bird Conservancy v. Granholm*, No. 19-3694, 2023 U.S. Dist. LEXIS 170978 (D.D.C. Sep. 26, 2023).

⁴⁴ After some of the plaintiffs’ claims were dismissed, the case was ultimately dismissed as moot. *See* *Am. Bird Conservancy v. Granholm*, No. 19-3694, 2024 U.S. Dist. LEXIS 15540 (D.D.C. Jan. 16, 2024).

⁴⁵ *See* Marcy Curran, *The Largest Freshwater Wind Farm in the World*, EARTHSKY, Aug. 9, 2023, <https://earthsky.org/earth/largest-freshwater-wind-farm-in-the-world/>.

⁴⁶ *Id.*

generate an average of 174 MW hours.⁴⁷ Government officials initially predicted the project would be approved in eighteen months to three years' time.⁴⁸ It took far longer than that to produce an Environmental Impact Statement (EIS). The U.S. Army Corps of Engineers issued its draft EIS in November 2004.⁴⁹ The final EIS was not published until January 2009,⁵⁰ and a record of decision on Cape Wind's supplemental EIS would not issue until September 2017.⁵¹ In addition to the EIS, the EPA needed to issue a general conformity declaration under the Clean Air Act.⁵² Federal regulators needed to consider the development's impact on bird and bat populations,⁵³ as well as Nantucket Sound's status as a historic property under the National Historic Preservation Act.⁵⁴

As with Icebreaker Wind, each of these reviews was a cause of delay, and an opportunity for project opponents to throw sand in the gears. After sixteen years of legal wrangling, including multiple trips to the federal courts of appeals,⁵⁵ Cape Wind Associates gave up.⁵⁶

⁴⁷ See "Cape Wind," U.S. Department of the Interior, Bureau of Ocean Energy Management, <https://www.boem.gov/renewable-energy/studies/cape-wind>.

⁴⁸ See Jonathan H. Adler, *Foul Winds for Renewable Energy*, NATL. REV. ONLINE, Sept. 28, 2007, <https://www.nationalreview.com/2007/09/foul-winds-renewable-energy-jonathan-h-adler/>.

⁴⁹ See Notice of Availability of the Draft Environmental Impact Statement for the Cape Wind Energy Project, Nantucket Sound and Yarmouth, MA, Application for Corp Section 10 Individual Permit, Fed. Reg. 64919-64910 (Nov. 9, 2004).

⁵⁰ BOEM, Cape Wind Final Environmental Impact Statement, <https://www.boem.gov/renewable-energy/studies/cape-wind-final-environmental-impact-statement-feis>

⁵¹ Record of Decision for the Cape Wind Energy Project, 82 Fed. Reg. 45607 (Sept. 29, 2017).

⁵² U.S. DEPT OF THE INTERIOR, FINAL GENERAL CONFORMITY DETERMINATION FOR THE CAPE WIND ENERGY PROJECT (2014). https://www.boem.gov/sites/default/files/uploadedFiles/BOEM/Renewable_Energy_Program/Studies/Cape%20Wind%20Energy%20Project%20FEIS.pdf.

⁵³ U.S. DEPT OF THE INTERIOR, CAPE WIND ENERGY PROJECT FINAL ENVIRONMENTAL IMPACT ASSESSMENT, OCS PUBLICATION NO. 2008-040 at 4-43, 4-48 (2009).

⁵⁴ *Id.* at 1-10.

⁵⁵ See *Town of Barnstable v. FAA*, 740 F.3d 681 (D.C. Cir. 2014); *Town of Barnstable v. O'Connor*, 786 F.3d 130 (1st Cir. 2015); *Public Employees for Environmental Responsibility v. Hopper*, 827 F.3d 1077 (D.C. Cir. 2016). The Cape Wind project also faced legal challenges in state court. See, e.g., *Melone v. Dept. of Public Utilities*, 967 N.E. 2d 596 (Mass. 2012).

⁵⁶ See Katharine Q. Seelye, *After 16 Years, Hopes for Cape Cod Wind Farm Float Away*, N.Y. TIMES, Dec. 19, 2017, <https://www.nytimes.com/2017/12/19/us/offshore-cape-wind-farm.html>.

These travails are emblematic of efforts to site offshore wind in the United States. While the world's first offshore wind farm began operation in 1991 in Denmark, it would be over twenty years for the U.S. to connect a wind turbine to the electric grid,⁵⁷ and twenty-five for the United States' first commercial offshore wind farm to commence operation off of Block Island, Rhode Island.⁵⁸

Wind power has expanded dramatically in the United States over the past decade, but deployment has been hampered by regulatory and legal obstacles. One analyst has compiled a list of hundreds of wind projects that were blocked or restricted due to local opposition.⁵⁹ A particularly notable example of a wind power project is SunZia in New Mexico, which is anticipated to “generate more power than the Hoover Dam” and become “the Western Hemisphere’s biggest renewable energy project.”⁶⁰ First proposed in 2006, SunZia is now slated to open in 2026.⁶¹

Wind power may be particularly vulnerable to regulatory delay and local opposition,⁶² but is hardly the only renewable energy source that faces regulatory burdens and permitting

⁵⁷ See “The History of Wind Energy,” <https://www.nationalgrid.com/stories/energy-explained/history-wind-energy>.

⁵⁸ See Justin Gillis, *America’s First Offshore Wind Farm May Power Up a New Industry*, N.Y. TIMES, Aug. 22, 2016, <https://www.nytimes.com/2016/08/23/science/americas-first-offshore-wind-farm-may-power-up-a-new-industry.html>.

⁵⁹ See Robert Bryce, *Here’s The List Of 317 Wind Energy Rejections The Sierra Club Doesn’t Want You To See*, FORBES, Sept. 26, 2021, <https://www.forbes.com/sites/robertbryce/2021/09/26/heres-the-list-of-317-wind-energy-rejections-the-sierra-club-doesnt-want-you-to-see/>.

⁶⁰ See Robinson Meyer, *It Takes Too Many Studies for the Government to Do the Right Thing*, N.Y. TIMES, July 8, 2024.

⁶¹ *Id.* One factor that makes the Sun Zia project particularly vulnerable is the over 500 miles of transmission lines it requires.

⁶² See Adam M. Dinnell & Adam J. Russ, *Legal Hurdles to Developing Wind Power as an Alternative Energy Source in the United States: Creative and Comparative Solutions*, 27 NW. J. INT’L L. & BUS. 535, 582 (2007) (noting the “catch-22 of wind power” is that wind power offers substantial environmental benefits over fossil fuel alternatives, but is hindered by “the seemingly inescapable negative aesthetic effects of wind turbines.”).

hurdles that can be magnified by NIMBYism.⁶³ In Ohio, for instance, wind turbines require greater setbacks than do oil and gas wells, and both wind and solar are subject to greater local regulation than are fossil fuel energy projects.⁶⁴ Other forms of renewable energy, including solar energy projects, have often been hampered by permitting and regulatory delays, compounded by litigation or local opposition. Permitting for solar projects may be less difficult than for wind projects, but it can still be significant.⁶⁵

Electric transmission lines and other forms of linear infrastructure can be particularly vulnerable to permitting delays and organized opposition, particularly when they cross jurisdictional lines.⁶⁶ Whereas a power generation project at a specific location will only require permits and approvals from the jurisdictions in which it is located, linear infrastructure may span across multiple jurisdictions, increasing the number of entities and authorities that may have a say in whether the project may go forward.⁶⁷ Obtaining the necessary permits and approvals for interstate transmission lines can take over 10 years.⁶⁸ In the case, of the 700-mile Transwest

⁶³ See Alexandra B. Klass & Rebecca Wilton, *Local Power*, 75 VAN. L. REV. 93, 156 (2022) (noting “the practice of local governments restricting or banning rooftop solar, wind farms, and other critical energy projects needed to address climate change and support a clean energy transition”); Adler, *Foul Winds*, *supra* note __ (“Wind power is also not the only alternative energy source to face regulatory obstacles and NIMBY opposition.”).

⁶⁴ See Jeffrey Tomich, ‘Volatile Place.’ *New Laws Thwart Ohio Renewables*, ENERGYWIRE Aug. 5, 2021.

⁶⁵ See, e.g., Mario Loyola, *Cut the Red Tape*, ENVTL. F. (Nov/Dec 2022) at 34 (“permitting time for solar projects . . . can be between three and five years”).

⁶⁶ See Alexandra B. Klass, *Expanding the U.S. Electric Transmission and Distribution Grid to Meet Deep Decarbonization Goals*, 47 ENVTL. L. REP. NEWS & ANALYSIS 10749, 10756 (2017); Brian Potter, *How to Save America’s Transmission System*, Institute for Progress (Feb. 2024), at 10.

⁶⁷ See James W. Coleman, *Permitting the Energy Transition*, __ CASE W. RES. L. REV. __, __ (2024) (observing that linear infrastructure is more vulnerable to hold up or obstruction by a single local jurisdiction). In this regard, the permitting problem replicates the potential holdout problem when infrastructure must cross property owned by multiple different landowners, particularly where eminent domain is unavailable. See James W. Coleman & Alexandra B. Klass, *Energy & Eminent Domain*, 104 MINN. L. REV. 659, 716-717 (2019).

⁶⁸ See Potter, *supra* note __, at 9 (“Transmission lines, for instance, take on average 10 years to build in the US, and in some cases can take up to 20 years.”); Michael B. Gerrard, *A Time for Triage*, ENVTL. F. (Nov/Dec 2022) at 40 (“the average approval time for new transmission lines (without which many wind and solar farms are useless) now exceeds 10 years”).

Express Transmission line, “designed to transmit wind power from Wyoming to Nevada and California,” obtaining the necessary permits for construction to begin took fifteen years.⁶⁹

Large renewable energy projects, and the associated transmission and infrastructure such projects require, are “an environmental impact assessment and project permitting nightmare.”⁷⁰ Such developments are constrained by lengthy permit reviews and assessments requirements—and subsequent litigation—such that only large, well-financed companies would even consider navigating the regulatory gauntlet.⁷¹ These regulatory regimes were created with the best of intentions to control the environmental impacts of industrial development, but they are now constraining environmentally desirable projects, including the clean energy transition.⁷² The delays caused by NEPA and other reviews are bad enough. What is even worse is the uncertainty.⁷³ Even without opposition to specific projects, there is an upper limit to the ability of existing regulatory agencies to process the needed permits and approvals.⁷⁴ A regulatory regime designed to regulate dinosaurs can only be navigated by dinosaurs, leaving the small mammals of tomorrow to be crushed underfoot.

⁶⁹ Mario Loyola, *Cut the Red Tape*, ENVTL. F. (Nov/Dec 2022), at 34.

⁷⁰ J.B. Ruhl & James Salzman, *What Happens When the Green New Deal Meets Old Green Laws?* 44 VT. L. REV. 693, 694 (2020).

⁷¹ Anna A. Mance, *How Private Enforcement Exacerbates Climate Change*, 44 CARDOZO L. REV. 1493, 1496 (2023) (“the environmental rules and regulations that govern these projects are often “weaponized” by private citizen enforcers to advance narrowly motivated interests that interfere with climate action”).

⁷² Mance, *supra* note __, at 1496 (“The same laws that so successfully tackled the pollution and public health woes of the 1970s are frustrating attempts to address today’s environmental and social ills”).

⁷³ Mario Loyola, *Cut the Red Tape*, ENVTL. F. (Nov/Dec 2022), at 36 (noting “uncertainty” is the greatest “source of risk to capital formation” in support of renewable energy projects).

⁷⁴ See Noah C. Shaw, *New York Shows There Is a Path Forward*, ENVTL. F. (Nov/Dec 2022) at 41 (“most of the permitting regimes at both the federal and state levels were neither designed nor sufficiently resourced to accommodate the volume of applications or the particulars of proposed projects”); Loyola, *supra* note __, at 31 (discussing the limits to the number of NEPA reviews federal agencies are capable of processing in a year). Note that this agency throughput constraint is also an issue for regulatory measures. See Jonathan H. Adler, *The Legal and Administrative Risks of Climate Regulation*, 51 ENVTL. L. REP. 10485 (2021)

The effect of governmental permitting on the ability to deploy energy technologies and infrastructure is particularly salient given the concern for global climate change.⁷⁵ The United States has embraced ambitious greenhouse gas emission reduction targets.⁷⁶ Meeting these targets requires the rapid deployment of low-carbon technologies, and the infrastructure necessary for low-carbon energy sources to supply electricity to the grid.⁷⁷ Transmission capacity, in particular, is a potentially limiting factor on the ability to meet greenhouse gas emission reduction targets because achieving such targets requires both further electrifying the American economy as well as reducing the carbon emissions associated with electricity generation.⁷⁸ At the same time, electricity demand is increasing rapidly, driven by the proliferation of data centers.⁷⁹ The nation's ability to decarbonize and meet growing electricity demand will be dependent, in large part, on the ability to permit and deploy necessary technologies and infrastructure.⁸⁰ And the more that such investments and deployment are

⁷⁵ See J.B. Ruhl & James Salzman, *The Greens' Dilemma: Building Tomorrow's Climate Infrastructure Today*, 73 EMORY L.J. 1 (2023).

⁷⁶ The Biden Administration, for instance, set a target of fifty percent reductions in greenhouse gas emissions by 2030 and net-zero emissions by 2050. See, e.g., *Fact Sheet: President Biden Sets 2030 Greenhouse Gas Pollution Reduction Target Aimed at Creating Good-Paying Union Jobs and Securing U.S. Leadership on Clean Energy Technologies*, WHITE HOUSE (Apr. 22, 2021), <https://www.whitehouse.gov/briefing-room/statements-releases/2021/04/22/fact-sheet-president-biden-sets-2030-greenhouse-gas-pollution-reduction-target-aimed-at-creating-good-paying-union-jobs-and-securing-u-s-leadership-on-clean-energy-technologies/>.

⁷⁷ See Michael Cembalist, *Eye on the Market: Electravisión*, 14th Annual Energy Paper (J.P. Morgan Asset & Wealth Management Mar. 2024) <https://assets.jpmprivatebank.com/content/dam/jpm-pb-aem/global/en/documents/eotm/electravisión.pdf>, at 2 (noting that “if something can be electrified, it can eventually be decarbonized via wind, solar and energy storage).

⁷⁸ See Klass, *Expanding*, *supra* note __, at 10751 (noting that deep decarbonization likely requires a doubling of transmission capacity).

⁷⁹ See Laila Kearney, Seher Dareen & Deep Kaushik Vakil, *US Electric Utilities Brace for Surge in Power Demand from Data Centers*, REUTERS, Apr. 10, 2024, <https://www.reuters.com/business/energy/us-electric-utilities-brace-surge-power-demand-data-centers-2024-04-10/>.

⁸⁰ Even smaller projects can be stalled by administrative delay. See, e.g., Shannon Osaka, *Biden's \$7.5 Billion Investment in EV Charging Has Only Produced 7 Stations in Two Years*, WASH. POST, Mar. 28, 2024, <https://www.washingtonpost.com/climate-solutions/2024/03/28/ev-charging-stations-slow-rollout/> (noting slow deployment of federally funded electric vehicle charging stations).

delayed, the greater the task becomes.⁸¹ Yet there are reasons to doubt the necessary levels of permitting and deployment can be achieved under current law.⁸²

Permitting delays are not only an issue for renewable energy and electrification efforts. Other policies designed to mitigate environmental threats and ensure greater societal sustainability are also inhibited by twentieth century permitting regimes. Climate adaptation efforts, such as those conducted by federal land management agencies, can be constrained and delayed by the same sorts of permitting burdens as renewable energy projects.⁸³ And just as state and local regulatory burdens and administrative vetogates can facilitate NIMBY opposition to energy projects, they can also make it more difficult to encourage infill, increase urban density, or otherwise facilitate affordable housing while combatting urban sprawl. Well-intentioned regulatory structures constrain the development of a more sustainable future on multiple dimensions.

The papers in this volume explore the ways in which the extensive permitting and review requirements adopted at the federal and state level are constraining needed development and infrastructure and suggest possible avenues of reform. The authors represent multiple disciplines and a range of perspectives, but share a concern that some of the environmental regulations and permitting regimes adopted to enhance environmental protection are constraining the development and deployment of technologies and infrastructure that are necessary to have a cleaner and more sustainable tomorrow.

⁸¹ Ruhl & Salzman, *supra* note __, at 700 (“Each year we delay bending greenhouse gas emissions downward requires that we bend them downward more sharply the next year, and each year we postpone adaptive infrastructure puts vulnerable communities in graver danger.”).

⁸² See MARIO LOYOLA, GLOBAL INFRASTRUCTURE PERMITTING: A SURVEY OF BEST PRACTICES 2 (June 2023)(“under current law, the United States simply cannot authorize renewable energy infrastructure at the scale and speed necessary to meet its stated emission goals”).

⁸³ See Mance, *supra* note __, at 1534-39 (discussing fire control projects on federal lands).

There is no question that meeting the nation’s ambitious greenhouse gas emission targets will require an energy transition, and as economist Timothy Fitzgerald highlights, this transition will require substantial investments in infrastructure.⁸⁴ The needed investments will be more dramatic than that which occurred when natural gas began to displace coal as a source of electricity, and may require even more substantial changes in the nation’s energy infrastructure, particularly if energy production and consumption continue to increase. Such a transition requires substantial investments, both in renewable energy sources and electricity transition, as well as in “legacy” energy systems that will be needed to smooth the transition. Failure to maintain investments in “legacy” systems risks exacerbating existing bottlenecks in energy distribution and increasing disruptions in energy supply. The challenge of encouraging efficient levels of infrastructure investment is magnified by the fact that different sorts of infrastructure face different types of regulatory and permitting hurdles and face different rates of utilization over time. Insofar as existing regulatory and permitting regimes increase uncertainty about the ability to invest in and deploy needed infrastructure, it magnifies the policy challenge.

The policy challenge is made even greater because much of the cleaner, less-carbon-intensive infrastructure that is demanded is more vulnerable to permitting and regulatory delays. This is because, as James Coleman explains, renewable energy sources are more dependent upon far-flung, linear infrastructure than are traditional energy sources.⁸⁵ This is true for the electricity transmission necessary to deploy wind and solar power on the electricity grid, as well as for the pipeline infrastructure necessary to back up intermittent renewable energy sources with natural gas as well as to bring some forms of carbon capture on line. Failing to streamline the permitting

⁸⁴ Timothy Fitzgerald, *Infrastructure for the Energy Transition*, __ CASE W. RES. L. REV. __ (2024).

⁸⁵ James W. Coleman, *Permitting the Energy Transition*, __ CASE W. RES. L. REV. __ (2024).

process for such projects risks repeating the mistakes that hobble prior investments in costly, linear infrastructure, such as high-speed-rail, where billions were invested for relatively little return.

In addition to renewable energy sources, such as solar and wind, newer forms of more traditional energy sources can also contribute to the decarbonization of the American economy. Nuclear power, in particular, has the potential to produce substantial amounts of electricity while contributing relatively few greenhouse gas emissions, and unlike some renewable energy sources, nuclear power faces no intermittency problem and can provide baseload power for the electric grid. Yet as Jeremy Kidd explains, excessive safety and environmental regulation of nuclear power has prevented any meaningful expansion in nuclear power for decades.⁸⁶ According to Professor Kidd, nuclear power could fulfill a substantial portion of needed, carbon-free electricity if allowed to do so. Technological innovations have addressed many of the safety and other concerns that plagued early nuclear power development, but the regulatory processes have not kept pace. Revisions to the way nuclear power is regulated and permitted, however, could enable this technology to play a greater role in the desired decarbonization of the electricity grid.

Of all federal environmental statutes, NEPA is blamed for regulatory and permitting delays more than any other. Much of the attention to NEPA focuses on the effect it has on private projects, including various energy projects. Yet NEPA also has a significant impact on the management of federal lands, including on land management decisions designed to ameliorate or adapt to climate-induced environmental changes. As Sara Sutherland explains,

⁸⁶ Jeremy Kidd, *Will We Let Nuclear Innovation Contribute to Global Climate Change Solutions?*, __ CASE W. RES. L. REV. __ (2024).

NEPA-induced delays can make it difficult for federal land management agencies to respond in a timely fashion to emerging or urgent threats to natural resources.⁸⁷ Yet these effects are not uniform. As Sutherland explains, the impact of NEPA-induced delays, whether due to the required environmental review process, anticipatory actions, or external litigation, vary across federal land management agencies. This suggests that changes in agency processes could offset at least some of the delays caused by NEPA compliance in land management.

Concerns about NEPA-induced permitting delays have prompted reform efforts both administratively and legislatively.⁸⁸ Perhaps most significantly, Congress made substantial revisions to NEPA in the 2023 Fiscal Responsibility Act, the first significant legislative reforms to the law since its enactment over fifty years ago.⁸⁹ These reforms were intended to facilitate streamlining of the NEPA process by clarifying some of NEPA's requirements. Yet according to Victor Flatt, it is not clear that the recent NEPA reforms will deliver on this promise.⁹⁰ These legislative changes, juxtaposed with changes in the methods of statutory interpretation employed by courts, may frustrate the potential of the 2023 reforms.

While much of the focus on regulatory obstacles and permitting delays focuses at the federal level, state and local governments are also responsible for barriers to the deployment of renewable energy and energy infrastructure. State and local permitting regimes can exacerbate the permitting burden and create additional opportunities to block projects. As Matthew Eisenson details, multiple states have adopted laws constraining the ability of landowners to use farmland

⁸⁷ Sara Sutherland, *The National Environmental Policy Act and Climate Change Adaptation within Federal Natural Resource Management Agencies*, __ CASE W. RES. L. REV. __ (2024).

⁸⁸ See Proclamation No. 13807, Fed. Reg. 40463-40469 (Aug. 24, 2017); *see also* National Environmental Policy Act Implementing Regulations Revisions Phase 2, Fed. Reg. 35442-35577 (May 01, 2024).

⁸⁹ Fiscal Responsibility Act of 2023, Pub. L. No. 118-5, 137 Stat. 10 (2023).

⁹⁰ Victor B. Flatt, *The New NEPA? – A Case Study in Congressional Frustration*, __ CASE W. RES. L. REV. __ (2024).

for solar energy.⁹¹ These restrictions are often justified on environmental or aesthetic grounds, or out of purported concern for the loss of farmland. Eisenson believes such concerns are overstated, and can often be addressed through careful planning or mitigation measures. Either way, the proliferation of restrictions on solar energy by state and local governments could significantly constrain the ability to increase solar power deployment.

State and local permitting regimes are not only important for renewable energy and infrastructure. Such regimes affect land-use more broadly, and housing in particular. Extensive land-use regulation has constrained housing growth, leading to housing shortages in many parts of the country, and inhibiting more sustainable urban development. Efforts to reform local zoning and land-use regulations to facilitate more and greener housing development have had limited success. Christopher S. Elmendorf and Clayton Nall examine the extent to which adopting simplified reforms may have a better chance at success.⁹² Such “plain bagel” zoning reforms aim to reduce barriers to housing production without imposing new, off-setting regulatory costs. Whether such reforms can be adopted may influence the extent to which communities are able to provide more housing without encouraging urban sprawl.

Many of the permitting and review requirements in federal and state environmental laws embody a permission-based, precautionary view of environmental protection and technological change. While designed to protect the environment, these regimes may constrain the development and deployment of the environmental technologies of tomorrow. Andrew Morriss and Roger Meiners propose an alternative approach to permitting that focuses less on the

⁹¹ Matthew Eisenson, *Why Solar Farms Must Be Allocated on Farmland and How to Overcome Local Restrictions*, __ CASE W. RES. L. REV. __ (2024).

⁹² Christopher Elmendorf & Clayton Nall, *Plain Bagel Streamlining? Notes from California’s Housing Wars*, __ CASE W. RES. L. REV. __ (2024).

activities to be permitted, and more on the entities seeking permission.⁹³ Drawing on experience with financial and insurance regulatory regimes in other jurisdictions, Morriss and Miners suggest there are other ways of protecting against downside risks that do not necessarily impose the same burdens and delays as the contemporary permit-based model. More broadly they suggest the consideration of alternative regulatory frameworks that make it possible for qualified and experienced parties to operate and innovate with greater latitude so as to help foster greater environmental progress.

The layers of regulatory, permitting, and review projects constraining environmentally desirable development and management practices could prove to be the central environmental issue of the mid-twenty-first century. Legal requirements adopted at all levels of government for the purpose of ensuring environmental review, facilitating public participation, and limiting environmental harm have become obstacles to continued environmental progress. The challenge going forward is identifying ways to relieve these burdens and facilitate needed environmental change without sacrificing environmental gains. Thus far this challenge has not been met.

⁹³ Andrew P. Morriss & Roger E. Meiners, *Regulating Entities, Not Activities: Rethinking Environmental Regulation*, __ CASE W. RES. L. REV. __ (2024).