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Dust in the Wind:¹ Regulation as an Essential Component of a Sustainable and Robust Wind Program

Wargia M. Bowman*

“We have got a big appetite for wind”

Warren Buffett, May 2017

“They want to destroy our countrysides, put windmills all over them. Watch your house go down in value. You ever see what happens? They build a windmill within distance of your house. You can forget about your house.”

President Donald J. Trump, February 2020²

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1. KANSAS, *Dust in the Wind*, on POINT OF KNOW RETURN (Epic 1977).
2. Evelyn Cheng, *Warren Buffett Says He's Got a 'Big Appetite' for a Solar or Wind Project*, CNBC (May 6, 2017, 4:30 PM), <https://www.cnbc.com/2017/05/06/warren-buffett-says-hes-got-a-big-appetite-for-a-solar-or-wind-project.html> [<https://perma.cc/L2EX-YG6D>].
3. Chris Cillizza, *The 35 Most Eye-Popping Lines from Donald Trump's New Hampshire Rally*, CNN POL. (Feb. 11, 2020, 12:33 PM), <https://www.cnn.com/2020/02/11/politics/trump-new-hampshire-rally/index.html> [<https://perma.cc/N32J-3X8B>]. *But see* John Knuzel, *Fact-Checking Donald Trump's Take on Wind Energy*, POLITIFACT (Apr. 3, 2019), <https://www.politifact.com/factchecks/2019/apr/03/donald-trump/fact-checking-donald-trumps-take-wind-energy/> [<https://perma.cc/ALP6-76MN>] (noting that President Trump's statement regarding wind energy is mostly false).

I. INTRODUCTION

The promise of alternative energy has not yet reached its full potential, in part due to a lack of political will as well as a failure to dedicate regulatory resources. Individual and community efforts to maximize alternative fuel sources have resulted in equal parts under-realized promise and unreasonable critiques. As the impending threat of climate change looms, activists and politicians alike realize the increasing urgency to reduce America's use of fossil fuels. Yet, any energy solution aiming to find an alternative in wind, solar, biomass, and hydropower will be handicapped by the lack of the very infrastructure and regulation that supports traditional energy.

A prime example of this is the wind energy industry. Over the past twenty years, utility-scale wind energy emerged in a regulatory vacuum. Wind farms emerged on the Kansas, Texas, and Oklahoma plains, and in the California hills. Despite the beauty of the spinning turbines on the High Plains, known as the *Llano Estacado*⁴, these turbines nonetheless create ecological impacts.⁵ Operating in a regulatory vacuum, renewable energy visionaries, businesspeople, and developers forged ahead to refine the technology, leaving wildlife, tribes, and nearby residents alone to absorb the unintended consequences alone.⁶ As a result, “green on green” lawsuits have begun, as environmental activists and industry opponents begin to question the value of this alternative energy source.⁷

This Article takes the position that wind energy is desirable and an important part of a diversified energy portfolio. An increased level of regulation is necessary to prevent the drawbacks of wind energy from undermining the growth in the sector. Indeed, regulation is *necessary* to have a sustainable wind program, and to support growth in the renewable energy sector.

Wind energy represents a crucial social and technological experiment. Yet, wind energy runs the risk of alienating environmental groups and

4. *White Deer: Llano Estacado Wind Ranch*, TEX. PLAINS TRAIL, <https://texasplainsrail.com/plan-your-adventure/historic-sites-and-cities/sites/llano-estacado-wind-ranch> [https://perma.cc/4767-7JM2] (last visited Oct. 5, 2020).

5. Cf. Sarah J. Wulff, Matthew J. Butler, & Warren B. Ballard, *Assessment of Diurnal Wind Turbine Collision Risk for Grassland Birds on the Southern Great Plains*, 7 J. FISH & WILDLIFE MGMT. 129, 130 (2016) (analyzing the potential ecological impact of wind turbines on bird populations).

6. See Duggan Flanakin, *Supreme Court Upholds Osage Nation in Wind Farm Dispute*, THE HEARTLAND INST. (Jan. 29, 2019), <https://www.heartland.org/news-opinion/news/supreme-court-upholds-osage-nation-in-wind-farm-dispute> [https://perma.cc/9NGP-7HVE].

7. See, e.g., *Animal Welfare Inst. v. Beech Ridge Energy, LLC*, 675 F. Supp. 2d 540, 581–83 (D. Md. 2009).

other segments of the American public at the very time when that public most needs it to succeed. Developing a more thoughtful regulatory scheme for wind would reduce these negative outcomes while creating a larger community to generate solutions. Every new technology has its growing pains as advancements outstrip the slower pace of legislative deliberation. Indeed, Edison's light-bulb and electrical lines threatened ruin in the public imagination until state and federal governments stepped in to regulate these new technologies.⁸ If wind energy is to optimize its social and economic value, advocates must craft regulation to embrace the needs and concerns of neighboring residents. At the same time, regulations should protect alternative energy's chief virtues of sustainability and increased flexibility for both domestic and foreign policy.

As the new millennium enters its second decade, a more nuanced view of extracting, harnessing, and regulating wind energy is required. Until we develop this more nuanced view, the potential and realized social and economic value of alternative energy solutions may be subject to a degraded public perception. Given the current political preference at the national level for de-regulation, this Article recommends state governments as the appropriate locus of regulation. This Article addresses how under-developed and isolated regulatory schemes have shaped the current state of the wind industry and also tackles the state of anti-wind litigation west of the 100th meridian. Finally, this Article makes recommendations regarding how a robust regulatory approach would benefit wind energy as this industry takes its position as an energy leader.

The Importance of a Nuanced Regulatory Scheme

Wind energy has promise, as well as pitfalls. In an effort to tackle climate change, activists and politicians alike are pushing to reduce the use of fossil fuels by Americans.⁹ Yet, in order to reach these lofty goals, the American economy will need to be increasingly fueled by renewable

8. See *History of Electricity*, INST. FOR ENERGY RSCH., <https://www.instituteforenergyresearch.org/history-electricity/#Dawn> [https://perma.cc/WH29-RY6H] (last visited Oct. 17, 2020).

9. The Green New Deal is "a congressional resolution that lays out a grand plan for tackling climate change" in part by calling on the federal government to reduce greenhouse gas emissions. See Lisa Friedman, *What is the Green New Deal? A Climate Proposal, Explained*, N.Y. TIMES (Feb. 21, 2019), <https://www.nytimes.com/2019/02/21/climate/green-new-deal-questions-answers.html> [https://perma.cc/6Y9C-GDAE]; see also Recognizing the Duty of the Federal Government to Create a Green New Deal, H.R. RES. 109, 116th Cong. (2019), <https://www.congress.gov/bills/116th-congress/house-resolution/109/text> [https://perma.cc/EY6T-DUZJ].

energies such as wind, solar, biomass, and hydropower.¹⁰ In the absence of regulation, utility scale wind energy has been built out in an environment that has not addressed legitimate environmental and residential concerns. Lack of dialogue between renewable energy developers and residents has allowed opponents to challenge the value of this important energy source.

Developing a more thoughtful regulatory scheme for wind would help to reduce these discrepancies. To avoid any further degradation of wind energy's public social value, proposed regulations should consider the needs of neighboring residents, Native American tribes, the environment, and wildlife—promulgating laws or regulations that consider the interaction of neighbors and renewable energy facilities while upholding its chief virtues of sustainability and increased flexibility for both domestic and foreign policy. As the millennium enters its second decade, a more nuanced view of extracting, harnessing, configuring, and distributing wind energy is required.

Local and state-wide regulation of wind energy has not been adequately discussed in the legal literature, although local and state approval is necessary for nearly all wind energy projects.¹¹ Local and state regulation are an important legal area for investigation, because the permitting processes for wind energy are often complex. These processes may require special use permits, county building permits, county septic system permits, state-wide storm-water permits and state-wide dust control permits.¹²

Under-regulation makes it difficult for localities to address some of the more obvious negative effects of wind energy. In addition, one

10. A recent United Nations Committee concluded that renewable energy sources play a key role in boosting electricity access while reducing carbon dioxide emissions. See *Renewable Energy Sources Cut Carbon Emissions, Efficiently Increase Electricity Output Worldwide, Delegates Say in Second Committee*, UNITED NATIONS (Oct. 16, 2018), <https://www.un.org/press/en/2018/gae3501.doc.htm> [<https://perma.cc/9MYN-4AY4>] [hereinafter *Renewable Energy Sources Cut Carbon Emissions*]. Further, the European Environment Agency indicates that the use of renewable energy has reduced European reliance on fossil fuels, particularly coal. See *Renewables Successfully Driving Down Carbon Emissions in Europe*, EUROPEAN ENV'T AGENCY (Jan. 13, 2017), <https://www.eea.europa.eu/highlights/renewables-successfully-driving-down-carbon> [<https://perma.cc/39UK-JTST>] [hereinafter *Renewables Successfully Driving Down Carbon Emissions in Europe*].

11. See Alexandra B. Klass, *Property Rights on the New Frontier: Climate Change, Natural Resource Development, and Renewable Energy*, 38 *ECOLOGICAL Q.* 63, 111–14 (2011). The system of resource development based on permit issuance, usually at the state level, has been labeled the “pollution control model,” by Klass. *Id.* at 114. She argues that such an approach helps to balance local, state, and federal regulations. *Id.*

12. See *Permitting of Wind Energy Facilities: A Handbook*, NAT'L WIND COORDINATING COMM. 2–4, 11 (Aug. 2002), <https://www.nationalwind.org/wp-content/uploads/assets/publications/permitting2002.pdf> [<https://perma.cc/P4U7-JAV5>].

undesirable side effect of the lack of regulation is that states with no state-wide siting and permitting process may exhibit a high level of variation county by county with regard to minimum lot size, setbacks, turbine height, and minimum distance between turbines.¹³ This high variation level makes it challenging for businesses to develop utility scale wind farms due to the high level of regulatory uncertainty, and may limit investment in renewable energy projects.

Over-regulation, or overly strict land use regulations, can hinder reasonable wind projects.¹⁴ Indeed, some county regulations have such strict setback requirements and noise pollution limits that localities can preclude all wind energy systems in the county. For example, state regulations in Wyoming suppress that state's enormous wind potential.¹⁵ Although the Great Plains states have a particularly intense wind resource, other states, such as Nevada, Idaho, Arizona, and Utah, have good wind power potential.¹⁶ Well planned regulatory schemes can be important drivers for the deployment of renewable energy.¹⁷

Contribution to the Literature

This Article fills a gap in the literature by examining litigation in states with high levels of wind production and also provides a review of recent scholarship addressing challenges to wind energy.¹⁸ Adjusting the locus of regulation to the state on issues such as siting, setbacks, aesthetics, and

13. *Wind Vision: A New Era for Wind Power in the United States*, U.S. DEP'T OF ENERGY 107 (Apr. 2015), https://www.energy.gov/sites/prod/files/WindVision_Report_final.pdf [<https://perma.cc/A75E-QBJM>]; see also Suzanne Rynne, Larry Flowers, Eric Lantz, Erica Heller, *Planning for Wind Energy*, AM. PLANNING ASS'N 9, 17 (Nov. 2011); Colleen Williamson, *Wind Farm Opponents: Zoning is Best Protection*, PARSONS SUN (Nov. 14, 2018), https://www.parsonssun.com/news/article_9ca617fa-e882-11e8-b723-4721fa2528c9.html [<https://perma.cc/T92F-USKK>].

14. See Beverly J. Shane, *Solving California's Energy Crisis: The Answer May be Blowing in the Wind*, 33 MCGEORGE L. REV. 403, 404 (2002).

15. See Ashleigh Cotting & Justin Horwath, *How Wyoming Went From Leader to Laggard in Wind Energy*, S&P GLOBAL, <https://www.spglobal.com/marketintelligence/en/news-insights/trending/WDrAH2joSLEQyVTq5BaA2> [<https://perma.cc/3PRG-LRSQ>] (explaining how Wyoming's tax structure stifles its ability to be a leading wind energy producer).

16. See U.S. *Installed and Potential Wind Power Capacity and Generation*, WINDEXCHANGE, <https://windexchange.energy.gov/maps-data/321> [<https://perma.cc/76TC-4B4D>] (last visited Oct. 17, 2020).

17. See Umair Irfan & Javier Zarracina, *4 Maps that Show Who's Being Left Behind in America's Wind-Power Boom*, VOX (June 14, 2019), 2:46 PM, <https://www.vox.com/energy-and-environment/2018/5/2/17290880/trump-wind-power-renewable-energy-maps> [<https://perma.cc/NZRP-HNRP>].

18. This Article reviews work by Du Vivier, Witt, Lorde, Martin, and Engelman. Their work focuses primarily on New York, Massachusetts, Minnesota, Wisconsin, and Pennsylvania. By contrast, this Article focuses on states west of the 100th Meridian.

decommissioning will help to alleviate some of the negative effects of wind energy while providing decision-making with regional consistency.

This Article echoes Alexa Burt Engelman’s insight that basic siting standards should “come from the state level to reduce local conflict” and strike the correct balance of trade offs caused by wind power installations.¹⁹ In line with Alexandra Klass’s recommendation that we pay close attention to the permitting aspects of developing wind resources,²⁰ this Article closely considers the management of wind energy in key energy states, including Texas, California, and Oklahoma. Texas represents an example of a weak regulatory approach—indeed, the state only minimally regulates wind energy production²¹—but as the top wind-generating state, Texas rewards careful examination. Oklahoma represents an intermediate approach²² and, which this Article argues should be strengthened. California represents an example of a strong and comprehensive regulatory approach.²³

II. BACKGROUND

A. *The Growth of Wind Energy in the 2000s*

Despite the excitement around the “Green New Deal,” such initiatives are not completely novel. Both Republicans and Democrats have supported the growth of renewable energy. The Federal Energy Policy Act of 1992 promoted renewable energy, which included wind power through a production tax credit.²⁴ President George W. Bush continued the push for wind power.²⁵ Under the auspices of the American Recovery

19. Alexa Burt Engelman, *Against the Wind: Conflict over Wind Energy Siting*, 41 ENV’T L. REP. NEWS & ANALYSIS 10549, 10549 (2011). Engelman made this argument in 2011, but states have largely not moved forward to regulate these areas. See *infra* Part IV.

20. Klass, *supra* note 11, at 67.

21. See *infra* part IV.

22. See *infra* part IV.

23. See *infra* part IV.

24. See *Energy Policy Act 1992 – Incentives for Renewable Energy*, INT’L ENERGY AGENCY (Feb. 2017) <https://www.iea.org/policies/3841-energy-policy-act-1992-incentives-for-renewable-energy> [<https://perma.cc/CB9G-FHNX>]. However, according to industry analysts, the uncertain future of the renewable energy production tax credit, which tended to be renewed in one or two year increments, resulted in “boom-bust cycles of development” in the wind industry. *Wind Energy Industry Tax Priorities*, AM. WIND ENERGY ASS’N, https://www.awea.org/Awea/media/Resources/Fact%20Sheets/AWEA_Tax-Policy.pdf [<https://perma.cc/ZT8A-K8RT>] (last visited Oct 17, 2020).

25. See *Bush Administration Pushes Renewable Energy Development on Public Lands*, U.S. DEP’T OF INTERIOR (Feb. 4, 2005), https://www.doi.gov/sites/doi.gov/files/archive/news/archive/05_News_Releases/050204b.htm [<https://perma.cc/7E5V-XY3Z>].

and Reinvestment Act,²⁶ the U.S. federal government invested in clean electricity, renewable fuels, and other energy initiatives.²⁷ These investments helped formerly expensive technologies decline in price.²⁸ State-level decisions to adopt renewable energy portfolio standards, which “require a certain percentage of electricity to be produced from renewable sources,” have also driven wind-power development.²⁹

In 2009, President Barack Obama signed the American Reinvestment and Recovery Act of 2009 into law.³⁰ This statute, meant to mitigate the worst impacts of the Great Recession of 2008, also focused attention on the emerging “New Energy Economy.”³¹ The Act extended the federal Production Tax Credit (PTC) and the related Investment Tax Credit, which was extended again in 2016, setting the expiration date as December 21, 2019.³² U.S. wind-power capacity has “more than tripled since 2008.”³³ The Obama Administration’s support for renewable energy may have been a factor in the dramatic increase of wind-energy production from 8,883 Megawatts (“MW”) in 2005 to 82,193 MW in 2017.³⁴ According to the American Wind Energy Association, the United States had more than 96,433 MW of installed wind generation capacity by the end of 2018.³⁵ Notably, by 2018, the United States was the second largest wind-power

26. See American Recovery and Reinvestment Act of 2009, Pub. L. 111-5, 123 Stat. 115 (2009).

27. See Michael Gruinwald, *The Trouble With the ‘Green New Deal’*, POLITICO (Jan. 15, 2019), <https://www.politico.com/magazine/story/2019/01/15/the-trouble-with-the-green-new-deal-223977> [<https://perma.cc/GA93-ZXES>].

28. K.K. DuVivier & Thomas Witt, *NIMBY to NOPE - Or YESS?*, 38 CARDOZO L. REV. 1453, 1455–56 (2017) (noting that the renewal of the Production Tax Credit for wind in 2015 helped fuel wind’s growth).

29. Engelman, *supra* note 19, at 10550 (noting that “RPS policies require investor-owned utilities and other power producers to purchase renewable power in the marketplace”).

30. Roger L. Freeman & Ben Kass, *Siting Wind Energy Facilities on Private Land in Colorado: Common Legal Issues*, 39 COLO. LAW. 43, 43 (2010).

31. *Id.*

32. ERNEST E. SMITH, RODRICK E. WETSEL, BECKY H. DIFFEN, & MELISSA POWERS, WIND LAW § 1.01 (LexisNexis Matthew Bender, 2020). According to the American Wind Energy Association, the PTC is due to sunset at the end of 2019. See *Wind Energy Industry Tax Priorities*, *supra* note 24; see also Consolidated Appropriations Act, 2016, Pub. L. 114-113, 129 Stat. 2242 (2015), <https://www.gpo.gov/fdsys/pkg/BILLS-114hr2029enr/pdf/BILLS-114hr2029enr.pdf> [<https://perma.cc/KYX7-6B95>].

33. *American Wind Power Reaches Major Power Generation Milestones in 2013*, AM. WIND ENERGY ASS’N. (Mar. 5, 2014), <https://www.awea.org/resources/news/2014/american-wind-power-reaches-major-power-generation> [<https://perma.cc/LB96-2KXE>].

34. Rick Kelley, *Retiring Worm-Out Wind Turbines Could Cost Billions That Nobody Has*, VALLEY MORNING STAR (Feb. 18, 2017), <https://www.valleymorningstar.com/2017/02/18/retiring-worm-out-wind-turbines-could-cost-billions-that-nobody-has/> [<https://perma.cc/9PPY-CCE5>].

35. *Executive Summary, U.S. Wind Industry, Annual Market Report 2018*, AM. WIND ENERGY ASS’N. (Aug. 2018), https://www.awea.org/Awea/media/Resources/Publications/%20and/%20Reports/Market/%20Reports/AWEA_AMR2018_ExecutiveSummary.pdf [<https://perma.cc/ZBV2-W91A>].

market in the world, behind China, and slightly ahead of Germany, India, and Spain, hosting 16% of the world's wind capacity.³⁶

B. *Overview of States with Significant Investment in Wind Energy*

In 2013, Texas was the top wind-power state, followed by Iowa, then California, Oklahoma, Illinois, Kansas, Minnesota, Oregon, Colorado, Washington, North Dakota, and Wyoming.³⁷ In 2013, nine states produced more than 10% of their electricity from wind.³⁸ Those states included Kansas, Oklahoma, North Dakota, Minnesota, Colorado, Idaho, and Oregon.³⁹ In 2013, twelve states produced 80% of wind-generated electricity.⁴⁰ In 2013, wind represented about 4.1% of US total electricity generation.⁴¹

By 2016, 18 states had more than 1000 MW of installed wind capacity, with Texas ranking first, Iowa second, Oklahoma third, and California fourth.⁴² By 2016, wind generation provided 5.5% of all electricity across the US.⁴³ By 2017, Texas generated more than 20,000 MW of electricity per year, or about one-fourth of the nation's wind-energy production.⁴⁴

By 2018, half of the nation's wind energy came from four states: Texas, Oklahoma, Iowa, and Kansas.⁴⁵ Texas remains the home to a majority of the wind capacity installed in the US over the last decade and holds the title as the national leader in wind-energy production.⁴⁶ In addition, another 20% of total wind generation in the country came from

36. *Id.*

37. Allen McFarland, *Twelve States Produced 80% of U.S. Wind Power in 2013*, U.S. ENERGY INFO. ADMIN. (Apr. 15, 2014), <https://www.eia.gov/todayinenergy/detail.php?id=15851> [<https://perma.cc/UXH8-6A24>] [hereinafter McFarland *Twelve States*].

38. *American Wind Power Reaches Major Power Generation Milestones in 2013*, *supra* note 33.

39. *Id.*

40. McFarland *Twelve States*, *supra* note 37.

41. *American Wind Power Reaches Major Power Generation Milestones in 2013*, *supra* note 33.

42. *See US Wind Generation Reached 5.5% of the Grid in 2016*, AM. WIND ENERGY ASS'N (Mar. 6, 2017), [https://www.awea.org/resources/news/2017/us-wind-generation-reached-5-5-of-the-grid-in-2016#:~:text=WASHINGTON%2C%20D.C.,%20%20%20%20Iowa%2C%20South,Energy%20Information%20Administration%20\(EIA\)](https://www.awea.org/resources/news/2017/us-wind-generation-reached-5-5-of-the-grid-in-2016#:~:text=WASHINGTON%2C%20D.C.,%20%20%20%20Iowa%2C%20South,Energy%20Information%20Administration%20(EIA)) [<https://perma.cc/W7PP-8WZK>].

43. *Id.*

44. Allen McFarland, *Four States Account for More Than Half of U.S. Wind Electricity Generation*, U.S. ENERGY INFO. ADMIN. (June 7, 2019), <https://www.eia.gov/todayinenergy/detail.php?id=39772>. [hereinafter McFarland *Four States*]. By 2018, wind energy delivered over 20% of the electricity produced in Kansas, Iowa, Oklahoma, North Dakota, South Dakota, and Maine. *Executive Summary*, *supra* note 35.

45. McFarland *Four States*, *supra* note 44.

46. *See id.*

California, Illinois, Minnesota, North Dakota, and Colorado.⁴⁷ According to the Energy Information Administration, in 2019, about 4.12 trillion KiloWatt Hours (“KWh”) “of electricity were generated at utility-scale electricity generation facilities in the United States.”⁴⁸ Of all the energy produced in 2019, 7.3% came from wind.⁴⁹

1. Four Strong Winds⁵⁰: Wind Power Meets Stiff Political Resistance

Since 2016, however, the federal government shifted attention away from clean energy and climate change, and towards fossil fuels such as coal, oil, and natural gas after the election of President Donald Trump in 2016. Indeed, wind energy has powerful political enemies, including the current President of the United States,⁵¹ Secretary of Energy Rick Perry, Senator Lamar Alexander of Tennessee, and the nuclear and coal industry.⁵² Secretary of Energy Perry unsuccessfully raised the “possibility of federal intervention in energy markets to protect coal and nuclear [power] against lower-priced wind and natural gas supplies.”⁵³ Senator Alexander has spoken with some passion against wind energy projects, calling them “unreliable” and “expensive.”⁵⁴ He prefers nuclear power and has worked to strip the wind energy industry of the production

47. *Id.*

48. *What is U.S. Electricity Generation by Energy Source?*, U.S. ENERGY INFO. ADMIN., <https://www.eia.gov/tools/faqs/faq.php?id=427&t=3> [https://perma.cc/VA63-FY85] (last updated Feb. 27, 2020).

49. *Id.*

50. BOBBY BARE, *Four Strong Winds, on FOUR STRONG WINDS* (RCA 1964).

51. President Donald J. Trump hates wind power. See, e.g., Chris Cillizza, *Donald Trump’s War on Windmills*, YOUTUBE (Aug. 29, 2019), <https://www.youtube.com/watch?v=UHH6WPxsF08> [https://perma.cc/ZP2F-ABD8].

52. See, e.g., Roger Conrad, *Alexander’s Energy Plan: The Dollars are in the Details*, FORBES (Apr. 26, 2019, 7:52 AM), <https://www.forbes.com/sites/greatspeculations/2019/04/26/alexanders-energy-plan-the-dollars-are-in-the-details/#125ccda16f08> [https://perma.cc/2U3R-VGE7].

53. Diane Cardwell, *Even As Wind Power Rises, It Falls Under a Political Cloud*, N.Y. TIMES (May 30, 2017), <https://www.nytimes.com/2017/05/30/business/energy-environment/wind-power-base-load.html> [https://perma.cc/57YU-X6KS]. The Federal Energy Regulatory Commission eventually rejected a proposed rule that would have subsidized nuclear and coal plants, which pitted those resources against a coalition of natural gas, renewable energy providers, free marketers, and environmentalists. Camila Domonoske, *Federal Regulator Rejects Energy Department’s Bid to Prop up Coal*, NUCLEAR, NPR (Jan. 9, 2018, 12:00 PM), <https://www.npr.org/sections/thetwo-way/2018/01/09/576742270/federal-regulator-rejects-energy-departments-bid-to-prop-up-coal-nuclear> [https://perma.cc/8Q9N-N75Y].

54. Paul C. Barton, *Wind Blowing Against Alexander’s Energy Arguments*, USA TODAY (Mar. 26, 2013, 9:11 PM), <https://www.usatoday.com/story/news/politics/2013/03/26/wind-energy-nuclear-power-lamar-alexander/2022493/> [https://perma.cc/7CHS-6HS2]; Stephen Smith, *Clearing the Air: Lamar Alexander, You’re Wrong About Wind Power*, S. ALL. FOR CLEAN ENERGY (Mar. 24, 2017), [https://perma.cc/F5HC-WUS6](https://cleanenergy.org/blog/ivdcwindtva/) [https://cleanenergy.org/blog/ivdcwindtva/].

tax credit.⁵⁵

In addition to political enemies, residents near wind energy projects are not always enamored with utility scale wind energy projects. As wind energy projects inch ever closer to residential areas, conflicts between wind farms and residents increase. The result has been frequent litigation under nuisance statutes (addressed below) as well as federal claims under the Endangered Species Act (“ESA”), the Coastal Zone Management Act (“CZMA”), and land use permitting requirements. Despite an increasing need for alternative energy solutions, the fact that wind technology exists in a largely unregulated market has generated mistrust, suspicion, and drag on its potential. A thoughtful discussion of the desirability of state and municipal regulation of wind projects requires a thorough understanding of both the positive and negative externalities of such projects.⁵⁶ The next two sections address the upside and the downside of wind energy projects, respectively.

III. THE UPSIDES AND DOWNSIDES OF WIND ENERGY

A. *Summer Breeze*.⁵⁷ *The Upsides of Wind Energy*

New technology is often developed on the outskirts of regulation. Emerging from this regulatory vacuum, wind energy exhibits impressive upsides. First, and perhaps most importantly, wind energy represents a key technology to meet renewable energy goals.⁵⁸ Wind energy represents a non-carbon based energy source that does not produce ozone, CO₂, or other greenhouse gas emissions.⁵⁹ Wind energy helps create electricity without using climate-polluting coal or non-renewable fossil fuels.⁶⁰ Accordingly, wind energy adds an important component to a comprehensive solution to climate change.

Second, wind energy has proven to be a source of clean, affordable

55. See Barton, *supra* note 54.

56. *Environmental Land Use Regulation*, 91 HARV. L. REV. 1578, 1587 (1978) (observing that understanding externalities is a crucial element of considering land use planning).

57. JIM SEALS & DASH CROFT, *Summer Breeze*, on SUMMER BREEZE (Warner Bros. Records, 1972).

58. See Klass, *supra* note 11, at 68 (arguing that solar and wind are akin to historical natural resources, and that enhanced development of natural resources is necessary to create additional sources of renewable energy).

59. *Wind's Environmental Record*, AM. WIND ENERGY ASS'N, <https://www.awea.org/wind-101/benefits-of-wind/environmental-benefits> [<https://perma.cc/SKD9-7WHV>] (last visited Oct. 17, 2020).

60. See *id.*

power,⁶¹ and has been growing at an astonishing rate,⁶² achieving annual growth rates close to thirty percent in the decade between 2002 and 2018.⁶³ In fact, wind is the lowest-cost and most widely available renewable resource aside from hydro-electric power.⁶⁴ New technologies have reduced the cost of producing wind power, which increases the economic viability of this kind of power.⁶⁵ The cost of wind-generated electricity has declined sharply in the past decade, due to rapidly improving technology.⁶⁶

Third, wind energy is abundant and uses no water.⁶⁷ Because wind energy does not release particulate matter, it can help prevent further damage to air quality, human health, and ecosystems.⁶⁸ Wind energy reduces reliance on oil imports.⁶⁹ As a corollary, it supports American energy independence, and helps diversify energy portfolios at a comparatively low cost.

Fourth, wind energy represents an opportunity for many communities to transition from an economy based on traditional fossil-fuel extraction to renewable energy generation. In addition, this is a very important economic benefit for certain Native American nations as well as residents in states like Wyoming who have historically been highly dependent on fossil-fuel extraction.⁷⁰ Nationwide, in 2016, wind energy supported 102,500 full time-equivalent jobs in the areas of project development, siting, construction, turbine manufacturing, supply chain, and other

61. Christine Real de Azua, *The Future of Wind Energy*, 14 TUL. ENVTL. L. J. 485, 486 (2001).

62. *Id.*

63. Britt Freund & Josh Hannold, Presentation at the Energy and Mineral Law Foundation Annual Conference, Up in the Air: An Overview of Issues that Arise with Acquiring Rights for Wind Development, (June 17–19, 2018); Britt Freund & Josh Hannold, *Up in the Air: An Overview of Issues that Arise with Acquiring Rights for Wind Development*, 39 ENERGY & MIN. L. INST. 3, 72 (2018).

64. Len Calderone, *What is the Cheapest Form of Energy?*, ALT ENERGY MAG (Apr. 28, 2020, 5:40 AM), [https://perma.cc/WQ9F-4PFL](https://www.altenergymag.com/article/2020/04/what-is-the-cheapest-form-of-energy/33009); JAY APT & PAULINA JARAMILLO, VARIABLE RENEWABLE ENERGY AND THE ELECTRICITY GRID 10 (2014).

65. Shane, *supra* note 14, at 405.

66. *See id.* at 406 (explaining that wind turbines may pay for themselves in five to ten years).

67. LESTER R. BROWN ET AL., THE GREAT TRANSITION: SHIFTING FROM FOSSIL FUELS TO SOLAR AND WIND ENERGY 84 (2015).

68. Real de Azua, *supra* note 61, at 492.

69. Engelman, *supra* note 19, at 10549.

70. *See* Michael Maruca, *From Exploitation to Equity: Building Native-Owned Renewable Energy Generation in Indian Country*, 43 WM. & MARY ENVTL. L. & POL'Y REV. 391, 396 (2019) (advocating for wind and solar development in Indian country due to economic, health, and environmental benefits); Grant Nulle & Robert McManmon, *Major Fossil Fuel-Producing States Rely Heavily on Severance Taxes*, U.S. ENERGY INFO. ADMIN. (Aug. 21, 2015), <https://www.eia.gov/todayinenergy/detail.php?id=22612> [https://perma.cc/66GN-NJUC].

sectors.⁷¹ According to the American Wind Energy Association, by 2018, the US wind industry employed 114,000 men and women in all fifty states.⁷² The Department of Energy states that the wind energy industry employs more Americans than the nuclear, coal, natural gas, or hydro-electric power generation industries.⁷³ Importantly, the wind industry invests heavily in rural communities in the US, and participation in wind energy generation can help farmers supplement their income.⁷⁴ The wind industry also invests in low-income counties and rural areas, producing taxes, land-lease payments, jobs,⁷⁵ and investment.⁷⁶ Further, the economic benefits of wind energy are spread broadly throughout the country. Even though the Southeast lacks wind farms, it is “a wind manufacturing hub, with more than 100 wind-related factories.”⁷⁷ In addition, wind energy provides “a buffer for both consumers and utilities against volatile natural gas and oil prices.”⁷⁸

Moreover, cultural and sociological shifts have given rise to a steadily increasing demand for wind energy over the past two decades.⁷⁹ The US became a world leader in wind-generated electricity in 2009, surpassing Germany.⁸⁰ In 2001, wind energy generated less than 1% of US electricity.⁸¹ By 2010, wind supplied 2.4% of the US electric energy.⁸² By 2014, wind produced almost 4.4% of total US electricity generation,⁸³ and by 2018 wind energy supplied about 6% of US electricity.⁸⁴ Importantly, stores of fossil fuels are limited. Certainly, improved extraction methods

71. Steve Clemmer, *Wind Keeps Creating Jobs, Even as We Pull Out of Paris*, UNION OF CONCERNED SCIENTISTS (June 9, 2017, 12:54 PM), <https://blog.ucsusa.org/steve-clemmer/wind-jobs-paris-agreement> [https://perma.cc/R269-4QPS].

72. *Executive Summary*, *supra* note 35.

73. *Fact Sheet—Jobs in Renewable Energy, Energy Efficiency, and Resilience (2019)*, ENVTL. & ENERGY STUDY INST. (July 23, 2019), <https://www.eesi.org/papers/view/fact-sheet-jobs-in-renewable-energy-efficiency-and-resilience-2019> [https://perma.cc/8VCH-C6RU].

74. Real de Azua, *supra* note 61, at 487.

75. DuVivier & Witt, *supra* note 28, at 1459 (observing that wind development can create indirect benefits such as increased benefits for local restaurants and support services).

76. Clemmer, *supra* note 71.

77. Celeste Wannet, *What’s the State of American Wind Power Manufacturing?*, AM. WIND ENERGY ASS’N (Nov. 30, 2016), <https://www.aweablog.org/whats-state-american-wind-power-manufacturing/> [https://perma.cc/B257-R8BH].

78. Real de Azua, *supra* note 61, at 487.

79. Michael J. Stephan, *Wind Severance*, 40 TEX. ENVTL. L.J. 73, 78 (2009–2010) (noting the “desire for more energy derived from wind”).

80. SMITH ET AL., *supra* note 32, at § 1.01[2].

81. Real de Azua, *supra* note 61, at 486.

82. Klass, *supra* note 11, at 104.

83. K.K. DuVivier, *Wind Power Growing Pains 1* (U. Denver Sturm Coll. L., Legal Rsch. Paper Series, Working Paper No. 16-02, 2015).

84. Freund & Hannold, *supra* note 63, at § 3.01.

can extend access to fossil fuels, yet, these extraction methods have their own environmental costs.⁸⁵ For the US to continue to generate the same amount of energy with fewer fossil fuels, either the use of fossil fuels must become more efficient or the US must begin to expand its use of non-carbon based fuel sources.

Despite fierce policy debates about climate change, electric companies are gaining confidence in the future of renewable energy sources. Indeed, “at least twenty-nine states . . . have enacted [standards] mandating that utilities purchase certain percentages of renewable energy to complement their use of coal, natural gas, and non-renewable energy sources.”⁸⁶ Proponents of wind energy note that wind turbines are very reliable.⁸⁷ In addition, wind energy has not been fully exploited. The proportion of electricity generation supplied by wind power can likely be increased by ten times over its current level, and renewable portfolio standards are a key element in increasing the electricity generated by wind power.⁸⁸

Renewable energy can help supply America’s electricity needs while simultaneously reducing greenhouse gas emissions.⁸⁹ The US will not be able to reduce carbon emissions to the levels required to prevent climate change without dramatically expanding renewable resources, including wind energy capacity.⁹⁰ Greenhouse gases from electric power generation in the United States rose by more than 60% between 1970 and 2012.⁹¹

85. Jude Clemente, *How Much Oil Does the World Have Left?*, FORBES (June 25, 2015, 9:05 AM), <https://www.forbes.com/sites/judeclemente/2015/06/25/how-much-oil-does-the-world-have-left/#5898ab245b1f> [<https://perma.cc/R79M-LW5A>] (arguing that improved technology will greatly extend the supply of oil); Christina Nunez, *How has Fracking Changed Our Future?*, NAT’L GEOGRAPHIC, <https://www.nationalgeographic.com/environment/energy/great-energy-challenge/big-energy-question/how-has-fracking-changed-our-future/#close> [<https://perma.cc/97FE-NUJM>] (last visited Oct. 17, 2020) (observing that fracking has dramatically increased the amount of natural gas available for extraction, yet it also carries serious environmental risks, including increased emissions, contamination of surface water and groundwater, and unintentional release of pollutants).

86. Freeman & Kass, *supra* note 30, at 44.

87. Real de Azua, *supra* note 61, at 489.

88. *New Report Envisages 10-Fold Increase in Global Wind Power by 2050*, U.N. ENV’T PROGRAMME, (Dec. 13, 2019), <https://www.unenvironment.org/news-and-stories/story/new-report-envisages-10-fold-increase-global-wind-power-2050> [<https://perma.cc/GM5X-NB8B>]; APT & JARAMILLO, *supra* note 64, at 4.

89. A recent United Nations Committee concluded that renewable energy sources play a key role in boosting electricity access while reducing carbon dioxide emissions. *Renewable Energy Sources Cut Carbon Emissions*, *supra* note 10. Further, the European Environment Agency indicates that the use of renewable energy has reduced European reliance on fossil fuels, particularly coal. *Renewables Successfully Driving Down Carbon Emissions in Europe*, *supra* note 10.

90. A report by the World Meteorological Organization in March 2019 observed that the physical and financial impacts of global warming are accelerating, and 2018 has been recorded the fourth warmest year on record, resulting in multiple extreme weather events. Mark McGrath, *Climate Change: Global Impacts ‘Accelerating’ -WMO*, BBC NEWS (Mar. 28, 2019), <https://www.bbc.com/news/science-environment-47725577> [<https://perma.cc/64RA-FGVQ>].

91. APT & JARAMILLO, *supra* note 64, at xxi.

Mark Alan Hughes of the Kleinman Center for Energy Policy argues that as climate change accelerates, survival on earth requires that humans stop adding more greenhouse gases into the atmosphere.⁹²

B. Riders on the Storm:⁹³ Considering the Social and Environmental Costs of Under-Regulation of Wind

Despite these impressive benefits, however, wind energy projects also impose social and environmental costs.⁹⁴ When utility scale wind projects are configured, many turbines may be dispersed over wide areas⁹⁵ sometimes spanning multiple counties.⁹⁶ Siting wind projects often encounter serious challenges from “competing and historic uses of the land.”⁹⁷ These costs include destructive impacts on the environment, visual impairment of natural landscapes, interference with historical and archeological sites, interference with fisheries and aquatic wildlife, and habitat destruction of endangered and threatened species, such as bald eagles and the lesser prairie chicken.⁹⁸ Significant litigation has emerged over wind energy.⁹⁹ Litigation has emerged from complaints by neighbors about noise¹⁰⁰ and aesthetic concerns,¹⁰¹ concerns by environmental

92. Mark Alan Hughes, *Reducing Emissions is More Important than Reducing Fossil Fuel Combustion*, WHARTON SCH., U. PA., <https://riskcenter.wharton.upenn.edu/climate-risk-solutions-2/reducing-emissions-is-more-important-than-reducing-fossil-fuel-combustion/> [<https://perma.cc/E87N-3MDV>] (last visited Oct. 17, 2020).

93. THE DOORS, *Riders on the Storm*, on L.A. WOMAN (Elektra Records 1971).

94. Engelman, *supra* note 19, at 10549 (noting that wind production has its own set of environmental costs).

95. Du Vivier & Witt, *supra* note 28, at 1460 (observing that “a ten MW wind farm could impact an area of approximately four square miles”).

96. *See id.* at 1493.

97. Freund & Hannold, *supra* note 63, at §3.01.

98. Freeman & Kass, *supra* note 30, at 44, 49, 52.

99. Litigation with regard to wind farms often focuses on the law of nuisance. *See, e.g.,* Rose v. Chaiken, 453 A2d 1378, 1380 (N.J. Super. Ct. Ch. Div. 1982).

100. *See, e.g.,* David R. Bliss, *Tilting at Wind Turbines: Noise Nuisance in the Neighborhood after Rassist v. Houim*, 69 N.D. L. REV. 535, 535–36 (1993).

101. Offshore wind energy has been prone to litigation but is a potential source of an enormous amount of energy. Katharine Q. Seelye, *After 16 Years, Hopes for Cape Cod Wind Farm Float Away*, N.Y. TIMES (Dec. 29, 2017), <https://www.nytimes.com/2017/12/19/us/offshore-cape-wind-farm.html> [<https://perma.cc/6SXS-WZZ8>]. The U.S. currently has a commercial offshore wind project on the Block Island Wind Farm with 30 MW of capacity off the coast of Block Island in Rhode Island. *Offshore Wind*, R.I. OFF. ENERGY RES., <http://www.energy.ri.gov/renewable-energy/wind/offshore-wind.php> [<https://perma.cc/JAH7-MEHP>] (last visited Oct. 17, 2020). According to the American Wind Energy Association, the DOE predicts that under the correct regulatory conditions, offshore wind energy projects could produce up to 86 gigawatts of energy by 2050. *Offshore Wind Energy Development in the U.S.*, AM. WIND ENERGY ASS’N (Sep. 2020), <https://www.amea.org/Awea/media/Resources/Fact%20Sheets/Offshore-Fact-Sheet.pdf> [<https://perma.cc/MA2F-LH5R>].

groups about avian mortality,¹⁰² and generalized concerns about setback issues.¹⁰³ Finally, decommissioning increasingly poses a serious safety concern with regard to wind projects.¹⁰⁴

The increasing number of both commercially centralized wind energy utilities and small owners is creating conflicts between the owners of wind turbines and their neighbors. Developing utility scale wind projects often creates resistance from local communities.¹⁰⁵ The expansion of wind energy means that industrial wind turbines are getting closer to property owners, causing contentious debates in some communities.¹⁰⁶ Local disputes over land use have flared up, engaging state and local landowners. In the early 2000s, disputes centered around access to the surface were often between wind developers and oil and gas companies that had leased mineral rights.¹⁰⁷

In the mid to late 2000s, wind farms were approaching suburban areas in states with high wind potential, creating increasingly intense conflict.¹⁰⁸ DuVivier and Witt have highlighted that even those who support renewable energy may harbor Not in My Back Yard (“NIMBY”) views.¹⁰⁹ In contrast to larger cities, smaller towns usually do not have strong zoning regulations.¹¹⁰

One example of this problem is illustrated by Reno County, Kansas. Kansas has become a leader in wind energy over the past two decades.¹¹¹

102. See BROWN ET AL., *supra* note 67, at 89.

103. Klass, *supra* note 11, at 107 (observing that local government occasionally opposes wind energy systems based on citizen concerns).

104. *The Cost of Decommissioning Wind Turbines is Huge*, INST. FOR ENERGY RSCH. (Nov. 1, 2019), <https://www.instituteforenergyresearch.org/renewable/wind/the-cost-of-decommissioning-wind-turbines-is-huge/> [<https://perma.cc/5TFM-6ZXW>]. Ironically, wind turbines, which are supposed to reduce pollution, are very difficult to recycle. *Id.*

105. DuVivier & Witt, *supra* note 28, at 1462 (noting that because wind farms are large infrastructure projects, those who oppose industrial uses may oppose their construction).

106. Engelman, *supra* note 19, at 10549.

107. See Stephan, *supra* note 79, at 75 (noting that wind energy may implicate issues of severance).

108. Zachary Shahan, *History of Wind Turbines*, RENEWABLE ENERGY WORLD, (Nov. 21, 2014), <https://www.renewableenergyworld.com/2014/11/21/history-of-wind-turbines/#gref>.

109. DuVivier & Witt, *supra* note 28, at 1462; see also Susan Lorde Martin, *Wind Farms and NIMBYS: Generating Conflict, Reducing Litigation*, 20 FORDHAM ENVTL. L. REV. 427, 428–429 (2010).

110. Engelman, *supra* note 19, at 10559–60 (observing that wind companies and private landowners utilize gaps in regulation and inconsistent zoning to cash in on a land grab for future wind development).

111. Jonathan Shorman, ‘A landmark case’: After Kansas Residents Stop Wind Farm, Is More Resistance Ahead?, THE WICHITA EAGLE (June 27, 2019, 3:40 PM), <https://www.kansas.com/news/politics-government/article231824228.html> [<https://perma.cc/3C2L-F9AW>].

Homeowners in Reno County fiercely opposed a wind development of 80 turbines by the company NextEra because the turbines would have been too close to homes.¹¹² Importantly, Reno County has significantly higher population density than other areas of Western Kansas which boast high rates of wind development.¹¹³ Residents feared a decrease in their property values due to wind energy development, as well as a loss of enjoyment in their residences and acreages.¹¹⁴ As wind farms move into more densely populated areas, conflict is likely to increase. Stakeholder concerns so far have largely gone unrecognized. Concerns include damage to viewsheds, reductions of property values, and interference of enjoyment.¹¹⁵ Other concerns include noise and health hazards, as well as negative environmental impacts on fragile land and species.¹¹⁶

Another example of conflict between wind power and other forgotten constituencies (discussed in more detail later in this Article) is *United States v. Osage Wind*.¹¹⁷ The narrow holding of the court is that the wind company's extraction, sorting, and crushing of minerals as part of its excavation work constituted mineral development and required a federally approved lease.¹¹⁸ However, the implications of the case are broader than simply requiring Osage Wind to acquire a lease prior to construction. The *Osage Wind* case could be construed as indicating that wind projects must pay special attention to tribal rights in pursuing their projects and that the era of unfettered development of wind projects is over, and a more highly

112. *Id.*

113. *Population Density Classifications in Kansas by County, 2019*, INST. FOR POL'Y & SOC. RSCH., <http://www.ipstr.ku.edu/kdata/kshh/population/popden2.pdf> [<https://perma.cc/FW3S-BXSL>] (last visited Oct. 17, 2020).

114. Shorman, *supra* note 111.

115. See Jude Clemente, *Do Wind Turbines Lower Property Values?*, FORBES (Sep. 23, 2015, 10:28 AM), <https://www.forbes.com/sites/judeclemente/2015/09/23/do-wind-turbines-lower-property-values/#3956613c48cb> [<https://perma.cc/NW44-UGZU>] (noting that despite common concerns of wind turbines' harmful effect on property values, property values may actually increase when wind turbines are installed).

116. See *Environmental Impacts and Siting of Wind Projects*, U.S. DEPT. OF ENERGY, <https://www.energy.gov/eere/wind/environmental-impacts-and-siting-wind-projects> [<https://perma.cc/LFA7-CDZU>] (last visited Oct. 17, 2020); see also Klass, *supra* note 111 at 107.

117. *United States v. Osage Wind*, LLC 871 F.3d 1078, 1093 (10th Cir. 2017), *cert. denied*, 139 S. Ct. 784 (2019). Procedurally, on September 30, 2015, the District Court for the Northern District of Oklahoma awarded summary judgment to Osage Wind, holding that its excavation activities did not constitute "mining" as defined under 25 C.F.R. Part 211. *United States v. Osage Wind*, LLC, No. 14-CV-704-JHP-TLW, 2015 WL 5775378, at *7 (N.D. Okla. Sept. 30, 2015), *rev'd*, 871 F.3d 1078 (10th Cir. 2017). The Osage Mineral Council filed a motion to intervene in the action, and then appealed the summary judgment order against the government to the U.S. Court of Appeals for the Tenth Circuit, which issued a decision on September 18, 2017. *United States v. Osage Wind*, LLC, 871 F.3d at 1093. The US Supreme Court denied certiorari on January 7, 2019. *Osage Wind*, LLC v. Osage Minerals Council, 139 S. Ct. 784 (2019).

118. *United States v. Osage Wind*, 871 F.3d at 1093.

regulated future is likely to prevail in the medium to long run.

1. Aesthetic concerns about wind energy

One example of conflict between tribal rights and wind power can be seen in the aesthetic arena.¹¹⁹ Residents and Native American tribes raised strenuous objections to the siting of offshore wind turbines in Cape Cod, Massachusetts based in part on aesthetic concerns.^{120,121} Some residents object to “shadow flicker,” which occurs when spinning turbines cast large moving shadows.¹²² Such objections were raised by citizens near Tehachapi in California about 100 miles north of Los Angeles, who objected to the wind towers taller than the Statue of Liberty obscuring their view and lights that interfered.¹²³

2. Safety and Health Hazards of Wind Energy

Other potential negative externalities of wind energy include blade throw, ice throw, and turbine noise. For example, one couple with a farm near the Canadian Hills Wind Farm in Oklahoma were frustrated by the alternating shadows and the low hum of droning blades.¹²⁴ In addition, some studies suggest that wind farms emit “infrasound” at a level close to 45 decibels.¹²⁵ Other observers argue that these aspects of wind farms can contribute to declining property values of neighbors who own land next to

119. Stephan, *supra* note 79, at 88 (noting that many find wind turbines ugly). A small cottage industry of citizens opposed to wind power has grown; *see also* DuVivier & Witt, *supra* note 28, at 1460 (noting that wind power is often sited on “imposing, highly visible ridge tops”).

120. Christopher Talgo, *Controversial Cape Wind Project Terminated*, HEARTLAND INST. (Jan. 23, 2018), <https://www.heartland.org/news-opinion/news/controversial-cape-wind-project-terminated> [<https://perma.cc/53YL-82UH>]; Engelman, *supra* note 19, at 10552 (arguing that the debate over siting offshore wind turbines in Cape Cod, MA, illustrates the balancing of resources and aesthetic values); *see* Martin, *supra* note 109, at 450–51 (discussing the end of a wind farm project off the Cape Cod Coast, and litigation due to owners’ concerned about scenery).

121. DuVivier, *supra* note 83, at 3; *see also* DuVivier & Witt, *supra* note 28, at 1460.

122. U.S. Dept’t of Energy, *Wind Energy Projects and Shadow Flicker*, WINDEXCHANGE, <https://windexchange.energy.gov/projects/shadow-flicker> [<https://perma.cc/AFNG-QKRK>] (last visited Aug. 25, 2020); Engelman, *supra* note 19, at 10552 (observing that shadow flicker occurs “when blades cross sunlight and create intermittent shadows on adjacent land and buildings”).

123. Tiffany Hsu, *Wind Farms Multiply, Fueling Clashes With Nearby Residents*, L.A. TIMES (July 24, 2011), <https://www.latimes.com/business/la-xpm-2011-jul-24-la-fi-wind-power-20110724-story.html> [<https://perma.cc/B9KN-H5C2>].

124. Casey Smith, *Old Friends Face Off in Oklahoma Wind Farm Debate*, TULSA WORLD (June 15, 2014), https://tulsaworld.com/news/local/old-friends-face-off-in-oklahoma-wind-farm-debate/article_e79d351a-afb5-57f8-8a17-7d7430325786.html [<https://perma.cc/23TC-JHNG>].

125. Stephan, *supra* note 79, at 88 (noting that many find the noise generated by wind turbines to be a nuisance and suggesting that other natural resource doctrines can be adapted to wind energy); Engelman, *supra* note 19, at 10552 (observing that wind turbines produce “an estimated 45 decibels at distances of 1,150 feet, which is typically reduced to 35–40 decibels at twice that distance”).

such projects, yet have little ability to control the actions of turbine operators.¹²⁶ Importantly, these assertions regarding the effect of wind farms on property values have not yet been confirmed.¹²⁷ Wind turbines generate wakes, which can cause mechanical failures in nearby turbines, particularly when turbines are clustered in large arrays.¹²⁸ These wakes can extend to distances of nearly forty miles, causing losses to down-wind turbines.¹²⁹ The literature does not reveal litigation over the health impacts of such wakes, but one can only assume that such claims are pending. Finally, wind power requires the movement of large amounts of dirt and rock, resulting in ecosystem disruption, as well as the building of significant infrastructure, including roads and transmission lines,¹³⁰ which were factors in the Osage wind litigation, addressed later in this Article.

3. Negative Environmental Impacts of Wind Energy

Many discussions of wind energy focus on the positive environmental aspects of wind. However, several scholars have noted that wind energy projects have negative environmental impacts as well. For example, wind energy projects have a high land use intensity per unit of electrical production.¹³¹ Turbines can range in height from 50 to 100 meters.¹³² Further, turbines must be connected to the electricity grid, and also “often require the construction of additional power lines to link the turbine[s] to existing distribution lines.”¹³³ Because the turbines are large and require significant construction and digging, wind energy facilities require new roads and tower pads in areas that were often previously undisturbed.¹³⁴ As a result, wind energy projects may result in a variety of environmental impacts, including storm-water runoff, avian and mammal mortality, the danger of abandoned parts left by plants not properly decommissioned,

126. Clemente, *supra* note 115.

127. According to the American Wind Energy Association, “many studies have shown that wind power increases the value of homes with turbines on the property. And importantly, it does not affect nearby neighbors’ property values long-term.” *Property Values, AM. WIND ENERGY ASS’N*, <https://www.awea.org/wind-101/benefits-of-wind/wind-in-my-community/property-values> [<https://perma.cc/93TL-FRKKZJ>] (last visited Aug. 29, 2020).

128. DuVivier, *supra* note 83, at 6.

129. *Id.* at 7.

130. See Engelman, *supra* note 19, at 10552–53 (observing that wind has a strong presence on the landscape but noting that the disturbance is small when compared with fossil fuel energy processes).

131. Engelman, *supra* note 19, at 10551.

132. *Id.*

133. *Id.*

134. Freeman & Kass, *supra* note 30, at 44.

and disturbance of surface areas.¹³⁵

4. Avian and Bat Mortality

As noted above, one frequent objection raised against wind energy is that turbines can result in avian mortality.¹³⁶ For example, every year, more than 2,500 birds, including nearly 70 golden eagles, which are protected under the Bald and Golden Eagle Protection Act,¹³⁷ are killed by the wind turbines in the Altamont Pass Wind Resource Area (APWRA).¹³⁸ Owls, hawks, kestrels, and other birds also face high mortality in this area.¹³⁹ Further, according to the U.S. Geological Survey, “bats are being found dead beneath wind turbines all over the world.”¹⁴⁰ Tree bats, which migrate long distances and rely on trees as roosts, are particularly susceptible to turbine-related fatalities.¹⁴¹

The Altamont project, however, was built in the 1980s, before permitting and design were a regular feature of wind projects.¹⁴² Permitting and design can significantly reduce mortality in bats and birds.

^{135.} See Engelman, *supra* note 19, at 10551. Hopefully, a future paper will attempt to discuss the environmental impacts of transmission. In addition, wind turbines need to be connected to the grid. In order to get the energy to the grid, wind projects require the construction of high-capacity transmission lines, which come with their own visual and health related negative externalities. Building transmission lines may require the acquisition of rights-of-way.

^{136.} Cassie Teague, *Wind Energy Development and Protection of Wildlife: Creating a Balance Between Two Competing Interests*, 45 TEX. ENVTL. L. J. 223, 224 (2015) (observing that “many birds have met a premature death” due to the Altamont Pass wind farm); Duviolier & Witt, *supra* note 18, at 1461 (noting that environmental groups have raised concerns about wind turbine impacts on bat and avian species); Martin, *supra* note 109, at 443 (observing that 4000 bats and migratory birds were killed at a wind farm in West Virginia and Altamont Pass in California).

^{137.} Bald and Golden Eagle Act, 16 U.S.C.A. §§ 668–668c, (West, Westlaw through Pub. L. No. 116-158).

^{138.} Engelman, *supra* note 19, at 10551; U.S. Gov’t Accountability Off, GAO-05-906, *Wind Power: Impacts on Wildlife and Government Responsibilities for Regulating Development and Protecting Wildlife*, 10 (2005).

^{139.} ICF Int’l, *Altamont Pass Wind Resource Area Bird Fatality Study*, 1-1, 3-1 (Dec. 2010), https://yellowbilledtours.com/wpcontent/uploads/2011/11/APWRA_BirdfatalityReport_120610_red.pdf [<https://perma.cc/2KJA-F6J7>].

^{140.} See *Bat Fatalities at Turbines—Investigating the Causes and Consequences*, U.S. GEOLOGICAL SURVEY, https://www.usgs.gov/centers/fort/science/bat-fatalities-wind-turbines-investigating-causes-and-consequences?qt-science_center_objects=0#qt-science_center_objects [<http://perma.cc/2ZMY-FHNN6>] (last visited Oct. 17, 2020).

^{141.} See, e.g., Paul M. Cryan, P. Marcos Gorresen, Cris D. Hein, Michael R. Schirmacher, Robert H. Diehl, Manuela M. Huso, David T. S. Hayman, Paul D. Fricker, Frank J. Bonaccorso, Douglas H. Johnson, Kevin Heist, & David C. Dalton, *Behavior of Bats at Wind Turbines*, 111 PROC. NAT’L ACAD. SCI. U.S., no. 42, at 15126 (Oct. 2014); see also Stephan, *supra* note 78, at 88.

^{142.} *California’s Altamont Pass: A Catalyst for Collaboration*, AM. WIND WILDLIFE INST. <https://awwi.org/news-events/success-stories/success-story-altamont/#:~:text=The%20original%20wind%20farms%20built,interactions%20between%20wind%20and%20wildlife> [<https://perma.cc/6JK3-HT43>] (last visited Oct. 17, 2020).

Furthermore, avian and bat mortality have been found to be concentrated in specific geographic areas, such as northern California, which means those areas could benefit from design modification of wind farms.¹⁴³ It is important to point out that there is a lack of standardized information on causes of bird mortality. There are numerous causes of avian mortality, including collisions with buildings, windows, and high-tension lines, pesticides, and—most importantly—cat predation.¹⁴⁴ According to Californians for Renewable Energy, bird deaths could be halved without reducing energy output significantly if turbines most deadly to the birds were removed, and if turbines were shut down in winter months.¹⁴⁵

The success of permitting and design modifications highlights a significant benefit of wind energy: wind projects are highly configurable. They can be sited out of flyways, turbine heights can be adjusted, as can turbine design and density.¹⁴⁶ Golden eagle fatalities in particular can be avoided if regulators work with developers before wind facilities are built to design wind facilities with attention to geographic location, topographical features, and flightpath information.¹⁴⁷ Indeed, the Sierra Club, the Audubon Society, and the American Bird Conservancy support the development of wind energy and encourage the management of the negative impacts of wind through site selection, site evaluation, and technological configuration.¹⁴⁸

143. Engelman, *supra* note 19, at 10551.

144. Approximately 100 million birds are killed by cat predation annually. Wallace P. Erickson, Gregory D. Johnson, & David P. Jr. Young, *A Summary and Comparison of Bird Mortality from Anthropogenic Causes with an Emphasis on Collisions*, Bird Conservation Implementation and Integration in the Americas: Proceedings of the Third International Partners in Flight Conference 1037 (John C. Ralph & Rich D. Terrel eds. 2005), <https://www.fs.usda.gov/treesearch/pubs/32103> [<https://perma.cc/178A-5VTM>]. Only 37,000 birds are killed annually by wind turbines. *Id.* at 1036.

145. *See Avian Mortality*, GOLDEN GATE AUDUBON SOC., <https://goldengateaudubon.org/conservation/birds-at-risk/avian-mortality-at-altamont-pass/> [<https://perma.cc/5GFQ-72SZ>] (last visited Oct. 17, 2020).

146. *See* R. May, O. Reitan, K. Bevinger, S.H. Lorentsen, T. Nygård, *Mitigating Wind-Turbine Induced Avian Mortality: Sensory, Aerodynamic and Cognitive Constraints and Options*, 42 RENEWABLE & SUSTAINABLE ENERGY REV. 170, 175 (2015).

147. *Renewable Energy and Wildlife Conservation, Fact Sheet 2016-3067*, U.S. GEOLOGICAL SURV. (Sept. 2016) <https://pubs.usgs.gov/fs/2016/3067/fs20163067.pdf> [<https://perma.cc/7PBL-QC7C>].

148. *See, e.g., Wind Siting Advisory*, SIERRA CLUB (2002), <https://www.sierraclub.org/policy/energy/wind-siting-advisory> [<https://perma.cc/8465-NFFF>]; *Audubon's Position on Wind Power*, AUDUBON, <https://www.audubon.org/conservation/audubons-position-wind-power> [<https://perma.cc/R95X-CJV3>] (last visited Oct. 17, 2020); *Bird-smart Wind Energy: Protecting Birds from Poorly Sited Wind Turbines*, AM. BIRD CONSERVANCY, <https://abcbirds.org/program/wind-energy-and-birds/#~:text=Our%20Bird%20Smart%20Wind%20Energy,%E2%80%9D%20and%20%E2%80%9Cconserve%20habitats.%E2%80%9D> [<https://perma.cc/JJC3-TNLJ>] (last visited Oct. 17, 2020).

5. Decommissioning and Recycling

One emerging challenge with regard to wind energy is that decommissioning requirements for wind plants are currently insufficient, and appropriate bonding requirements should be established to guarantee the proper decommissioning of wind turbines at the end of their useful lives.¹⁴⁹ Local and state governments may have specific decommissioning requirements as a permitting condition.¹⁵⁰

Successful decommissioning efforts require significant planning by local and state government as well as wind energy operators. Turbines can last from twenty years¹⁵¹ to several decades,¹⁵² and indeed some turbines from California's original wind farms remain in operation.¹⁵³ In some cases, old turbines can be refurbished.¹⁵⁴ Some wind turbines and foundations can be removed, updated, and repowered.¹⁵⁵ Decommissioning, by contrast, involves completely removing a wind plant, and is less common. Decommissioning has begun for projects built in the 1980s, showing the longevity of wind installations.¹⁵⁶ Decommissioning requires removing the defunct turbines, and the cost of decommissioning is carried by wind farm companies.¹⁵⁷ Most wind farms are built on private land, but wind farms on federal lands are regulated by the Bureau of Land Management.¹⁵⁸

An interesting and unexpected side effect of wind power is that wind turbine blades are difficult to recycle.¹⁵⁹ The amount of composite waste from decommissioned turbines is increasing as fiber-reinforced plastic (FRP) composites are used to produce wind-turbine blades.¹⁶⁰ Wind tower

149. APT & JARAMILLO, *supra* note 64, at 13.

150. *Decommissioning*, AM. WIND ENERGY ASS'N, <https://www.awea.org/policy-and-issues/project-development/state-and-local-permitting/decommissioning> [https://perma.cc/PBL2-QSM7] (last visited Oct. 17, 2020).

151. William S. Stripling, *Wind Energy's Dirty Word: Decommissioning*, 95 TEX. L. REV. 123, 124 (2016).

152. Hannah Hunt, *What Happens to a Wind Turbine at the End of Its Life?*, AM. WIND ENERGY ASS'N (Feb. 23, 2017), [https://perma.cc/CD94-XJCQ](https://www.aweablog.org/happens-wind-turbine-end-life/) (Wind turbines have long life cycles, lasting several decades. Some turbines from the first wind farms built in California nearly 35 years ago still operate today.).

153. *Decommissioning*, *supra* note 150.

154. *See id.*

155. *Id.*

156. *Id.*

157. *Id.*

158. *Id.*

159. Kaline Oroschakoff, *Small Old Wind Towers Make for Big New Problems*, POLITICO (Feb. 28, 2018, 3:12 PM), <https://www.politico.eu/article/small-old-wind-towers-make-for-big-new-problems/> [https://perma.cc/ZN6K-ZVUL].

160. *Id.*

foundations are made of concrete and steel, and the steel in the installation can be recycled.¹⁶¹ However, the rotor blades, which are increasingly light and flexible, are difficult to recycle.¹⁶² The blades must be cut or shredded, which can produce dangerous amounts of dust.¹⁶³ Improving options for recycling wind turbine blades presents a challenge, but it also provides a potential economic opportunity in areas with large numbers of wind energy farms.

IV. BLOWIN' IN THE WIND:¹⁶⁴ ARE CURRENT LEGAL APPROACHES ADEQUATE TO RESOLVE THIS PROBLEM?

Due to the absence of regulation in this arena, conflicts that arise are often addressed through litigation, which is expensive, inefficient, time-consuming and piecemeal. Since wind power directly implicates land use planning concerns, a more comprehensive approach would be desirable. In federal courts, litigation has been brought under a variety of theories, from violations of the Endangered Species Act, to violations of the Coastal Zone Management Act, to violations of federal permitting requirements.¹⁶⁵ In state courts, litigation is often pursued under nuisance claims.¹⁶⁶ Currently, there is no comprehensive federal authority governing the siting of wind energy projects.¹⁶⁷

A. *Dark Wind*.¹⁶⁸ *Federal Litigation to Reduce the Negative Impacts of*

161. *Id.*

162. *See id.*; Chris Martin, *Wind Turbine Blades Can't be Recycled, So They're Piling Up in Landfills*, BLOOMBERG GREEN (Feb. 7, 2020), 10:54 AM), <https://www.bloomberg.com/news/features/2020-02-05/wind-turbine-blades-can-t-be-recycled-so-they-re-piling-up-in-landfills> [<https://perma.cc/8WCQ-UJT3>]; Christina Stella, *Unfurling the Waste Problem Caused by Wind Energy*, NPR (Sept. 10, 2019, 4:37 PM), <https://www.npr.org/2019/09/10/759376113/unfurling-the-waste-problem-caused-by-wind-energy> [<https://perma.cc/34TH-ATDH>]; *see also* Jared Paben, *Company Expands Wind Turbine Recycling Operation*, RESOURCE RECYCLING (Mar. 27, 2019), <https://resource-recycling.com/plastics/2019/03/27/company-expands-wind-turbine-recycling-operation/> [<https://perma.cc/ZN5K-NR4L>].

163. Oroschakoff, *supra* note 159.

164. BOB DYLAN, *Blowin' in the Wind*, on THE FREEWHEELIN' BOB DYLAN (Columbia Recording Studios 1963).

165. *See, e.g.*, Freeman & Kass, *supra* note 30, at 47 (discussing claims brought under the Endangered Species Act); Coastal Habitat All. v. Patterson, 601 F. Supp. 2d 868, 875 (W.D. Tex. 2008), *as amended* (May 22, 2009), *aff'd*, 385 F. App'x 358 (5th Cir. 2010) (hearing a case brought under the Coastal Zone Management Act).

166. *See* Freeman & Kass, *supra* note 30, at 53–54.

167. *Id.* at 43.

168. M8Y LEGIT, *Dark Wind*, on DARK WIND SINGLE (2020 M8Y LEGIT MUSIC 2020).

Wind Energy

Federal court decisions concerning wind power have resulted in dramatically different outcomes depending on whether the jurisdiction is in the Eastern United States or the Western United States. This section discusses federal challenges to wind power west of the 100th Meridian. This Article focuses only on cases in which plaintiffs attempt to challenge wind farms using an aspect of federal law to challenge the construction of a wind farm, or to attempt to dismantle turbines already built. It does not consider criminal cases.¹⁶⁹ These cases explicitly balance competing federal interests—such as federal policies encouraging development of renewable energy resources—against federal policies protecting endangered species or migratory birds,¹⁷⁰ federal compliance with the National Environmental Policy Act (“NEPA”), or federal policies ensuring that sovereign Native American nations can control their own lands.

1. Endangered Species Act (ESA)

In a Kansas case, plaintiff brought a citizen’s suit in federal court under the ESA.¹⁷¹ The plaintiff expressed concerns that wind towers built in the Aransas-Wood Buffalo flyway would kill or injure endangered Whooping Cranes in the process of their annual migration.¹⁷² The case relates to wind farms in Pratt and Kingman Counties in Kansas.¹⁷³ The plaintiff requested “a permanent injunction against the construction of wind farms in the Aransas-Buffalo Wood flyway, and an order to dismantle those that have already been erected.”¹⁷⁴ The plaintiff, Petrowsky, asserted that the defendant, NextEra, “was violating the ESA by constructing and operating wind farms in areas that will take whooping cranes without having obtained an incidental take permit.”¹⁷⁵ The court dismissed the case.¹⁷⁶ The court found that it did not have subject matter jurisdiction because the plaintiff had not complied with the ESA’s 60-day

169. See, e.g., *United States v. Citigo Petroleum Corp.*, 801 F.3d 477, 494 (5th Cir. 2015) (holding that commercial activity that unintentionally and indirectly caused migratory bird deaths was not a taking of migratory birds under the Migratory Bird Treaty Act (MBTA)).

170. See 16 U.S.C.A. §§ 1531–1544.

171. *Petrowsky v. NextEra Energy Res., LLC*, No. 17-1043-EFM-KGG, 2017 WL 2666361, at *1 (D. Kan. June 21, 2017).

172. *Id.*

173. *Id.*

174. *Id.*

175. *Id.*

176. *Id.* at *7.

notice requirement.¹⁷⁷ Although the court dismissed the case due to lack of subject matter jurisdiction, one can imagine a set of facts under which the plaintiff may succeed on the merits. In addition, it is crucial that wind farms comply with federal mandates such as the ESA, the Migratory Bird Treaty Act (MBTA), and Marine Mammal Protection Act (MMPA), among others, particularly when adjusting siting is one of the easiest changes that can be made to a wind farm, in terms of configuration. In addition, it is worth noting that, in a case discussed below, the Kansas Supreme Court upheld county limitations on a utility scale wind farm which would have negatively affected a delicate ecosystem.¹⁷⁸

2. National Environmental Policy Act (NEPA)

In *Protect our Communities Foundation v. Salazar*, plaintiffs filed a wide ranging and comprehensive federal action challenging the US Department of Interior's approval of the Ocotillo Wind Energy Facility Project in the Sonoran Desert in Imperial County, CA.¹⁷⁹ Plaintiffs brought a range of causes of action. These included complaints about noise violations, potential threats against endangered species and concerns about environmental justice.¹⁸⁰ At its core, the action challenged the sufficiency of the agency's NEPA analysis as well as a violation of the Federal Land Policy and Management Act of 1976 (FLPMA) and the MBTA.¹⁸¹ Plaintiffs challenged the Bureau of Land Management's (BLM) selection of sites.¹⁸² Plaintiffs also challenged BLM's assessment of public health impacts of noise generated by the project.¹⁸³

Further, plaintiffs challenged the assessment of wind turbine setbacks.¹⁸⁴ They argued that a setback of 1.25 miles for residents would be desirable.¹⁸⁵ Plaintiffs also asserted that BLM's visual analysis was insufficient,¹⁸⁶ expressed concerns about impacts on the Peninsular

177. *Id.*

178. *Zimmerman v. Bd. of Cty. Comm'rs*, 218 P.3d 400, 418 (Kan. 2009).

179. *Protect Our Cmty's. Found. v. Salazar*, No. 12CV2211-GPC PCL, 2013 WL 5947137, at *1 (S.D. Cal. Nov. 6, 2013), *aff'd sub nom. Backcountry Against Dumps v. Jewell*, 674 F. App'x 657 (9th Cir. 2017).

180. *Id.*

181. *Id.*

182. *Id.* at *5.

183. *Id.* at *6--*9. The BLM observed that there is no scientific consensus on the health impacts of infrasound, and also noted the paucity of data on the topic. *Id.* at *7.

184. *Id.* at *10.

185. *Id.* There was no way to mitigate impacts without removal of wind turbines. *Id.*

186. *Id.* at *11.

Bighorn Sheep,¹⁸⁷ and that the EIS failed to protect Native American cultural and religious sites.¹⁸⁸ The court found that the EIS engaged in a reasonably thorough discussion of scientific literature on both infrasound and audible noise.¹⁸⁹ The court found that the BLM adequately analyzed visual impacts.¹⁹⁰ Further, the court found that BLM's decision to limit its analysis to one-half mile of the project was reasonable and entitled to deference and did not violate NEPA.¹⁹¹ The Court observed that the Fish and Wildlife Service (FWS) had conducted a formal Endangered Species Act Section 7 consultation on the impacts to the species on the project.¹⁹² As a result of this consultation, the BLM developed a mitigation plan, including a Habitat Restoration Plan, which the court found to be sufficient.¹⁹³ Overall, the court upheld the BLM's decision under NEPA, FLPMA, and the MBTA.¹⁹⁴

3. Coastal Zone Management Act (CZMA)¹⁹⁵

In *Coastal Habitat Alliance v. Patterson*, plaintiffs challenged two Texas agencies for failing to perform an environmental consistency review, and for not allowing public comment on the construction of energy generating wind farms along the Texas Gulf Coast, and also challenged the agencies under the CZMA.¹⁹⁶ The district court dismissed the case on the pleadings and plaintiffs appealed to the Fifth Circuit.¹⁹⁷ The Fifth Circuit found that the CZMA does not provide a federal procedural right that would force Texas agencies to conduct a consistency review and allow for public participation before authorizing the private construction of wind farms.¹⁹⁸ This case highlights the idea that state laws may be a more helpful avenue for ensuring the protection of environmental values than

187. *Id.* at *12.

188. *Id.* at *13.

189. *Id.* at *8.

190. *Id.* at *12.

191. *See id.* at *15.

192. *Id.* at *12. Indeed, the BLM and the FWS are both sub agencies of the Department of the Interior. *See History of the Department of the Interior*, U.S. DEP'T OF THE INTERIOR, <https://www.doi.gov/whowere/history> [<https://perma.cc/GY7J-XW2K>] (last visited Oct. 7, 2020).

193. *Salazar*, 2013 WL 5947137 at *12–*13.

194. *Id.* at *16–*19.

195. The purpose of the CZMA is to “preserve, protect, develop, and where possible, to restore or enhance the resources of the nation’s coastal zone.” 16 U.S.C. § 1452; *see Coastal Zone Management Act*, NAT’L OCEANIC & ATMOSPHERE ADMIN. OFF. FOR COASTAL MGMT., <https://coast.noaa.gov/czm/act/> [<https://perma.cc/2UTV-CQHS>] (last visited Nov. 9, 2020).

196. *Coastal Habitat All. v. Patterson*, 385 F. App’x. 358, 359 (5th Cir. 2010).

197. *Id.*

198. *Id.* at 361.

relying on federal laws with a more attenuated connection to the location of federal wind farms.

4. Permitting on Tribal Lands

The Osage Nation has likewise attempted to leverage litigation to oppose wind farm development within its reservation boundaries. Together with the federal government, the Osage Nation has aggressively exercised energy sovereignty against a legal backdrop with a limited amount of regulation.¹⁹⁹ The Principal Chief of the Osage has stated that he opposes wind turbines for a variety of reasons, including protecting unobstructed views, worries about health concerns, as well as effects on natural habitats and wildlife.²⁰⁰ While one motivation is a desire to preserve tribal lands, another motivation, however, is that the tribe wishes to share in the financial benefits gained from the wind industry.²⁰¹ Finally, the Osage Nation wishes to protect their sizable oil and gas interests.²⁰²

This strong stance by the Osage Nation against wind energy has resulted in a flurry of litigation, with both the tribe and the federal government as interested parties. In October, 2011, the Osage Mineral Council (OMC) filed a lawsuit against Osage Wind LLC (Osage Wind) to prevent the company from constructing a commercial wind farm.²⁰³ In that litigation, the OMC expressed a concern that the underground work required for constructing the wind farm would interfere with the tribes' ability to produce oil and gas reserves.²⁰⁴ The district court dismissed the case, finding evidence lacking that the wind company's operations would interfere with the development of the mineral estate.²⁰⁵

Yet the litigation continued, resulting in a ruling against the wind farm

199. See Summer L. Carmack, *Loyalties and Royalties: The Osage Nation's Energy Sovereignty Plan and Wind Farm Opposition*, 40 PUB. LAND & RES. L. REV. 145, 155 (2019) (observing the importance the Osage nation places on protecting its assets and discussing the exercise of energy sovereignty by the Osage).

200. Flanakin, *supra* note 6; *id.* (citing Geoffrey M. Standing Bear, *Business Viewpoint with Osage Chief Standing Bear: Wind Farms Cause Cultural, Economic Damage*, TULSA WORLD (Apr. 22, 2017), https://tulsaeworld.com/business/business-viewpoint-with-osage-chief-standing-bear-wind-farms-cause-cultural-economic-damage/article_b18980bb-d5c3-5f7d-aaf4-7fe1a20ef36c.html [<https://perma.cc/R53S-Z57B>]).

201. Carmack, *supra* note 199, at 156–57.

202. *Id.* at 158.

203. Osage Nation *ex rel.* Osage Mins. Council v. Wind Cap. Grp., LLC, No. 11-CV-643-GKF-PJC, 2011 WL 6371384, at *1 (N.D. Okla. Dec. 20, 2011).

204. *Id.* at *2; *see* 25 C.F.R. § 226.19 (2016).

205. United States v. Osage Wind, LLC, 871 F.3d 1078, 1084 (10th Cir. 2017), *cert. denied*, 139 S. Ct. 784 (2019).

in *United States v. Osage Wind*.²⁰⁶ The outcome of this case rests in part upon a tragic aspect of Osage history. Like many other native peoples, the Osage were moved from their ancestral lands.²⁰⁷ Lands possessed by the Osage in present-day Kansas were sold, and Congress used the proceeds to purchase land in Oklahoma, meaning that the Osage Nation effectively bought its own reservation.²⁰⁸ Per the General Allotment Act of 1887, many reservations were broken up.²⁰⁹ Native Americans received lands in severalty, and the remaining lands were opened to settlement.²¹⁰ The Indian reservation of the Osage Nation²¹¹ comprises approximately 1,475,000 acres and was incorporated as Osage County, Oklahoma in 1906.²¹² The Osage Allotment Act was approved by Congress in June, 1906,²¹³ but the mineral estate was not allotted.²¹⁴ Congress severed the Osage mineral estate from the surface estate.²¹⁵ The Osage Act required that any mining or prospecting activities be conducted with the written consent of the Secretary of the Interior.²¹⁶

206. *Id.* at 1093. Procedurally, on September 30, 2015, the District Court for the Northern District of Oklahoma awarded summary judgment to Osage Wind, holding that its excavation activities did not constitute “mining” as defined under 25 C.F.R. § 211. *Id.* The Osage Mineral Council filed a motion to intervene in the action, and then appealed the summary judgment order against the government to the U.S. Court of Appeals for the Tenth Circuit, which issued a decision on September 18, 2017. *Id.* The U.S. Supreme Court denied certiorari on January 7, 2019.

207. *See generally* Carmack, *supra* note 199, at 148 (observing Osage ancestral lands were scattered throughout present day Oklahoma, Kansas, Arkansas, Missouri, and Illinois to their current home in Oklahoma).

208. *Id.*

209. General Allotment Act of 1887, Pub. L. No. 49-105, 24 Stat. 388 (1887).

210. Judith V. Royster, *The Legacy of Allotment*, 27 ARIZ. ST. L.J. 1, 8–9 (1995).

211. The Osage Nation received an Indian reservation as a result of the Osage Nation in 1872, Act of June 5, 1872, ch. 310, 17 Stat. 228. Oklahoma incorporated the Osage-occupied territory as Osage County. OKLA. CONST. art. XVII, § 8. Osage County is Oklahoma’s largest county in terms of area. Jon D. May, *Osage County*, OKLA. HISTORICAL SOC’Y, <https://www.okhistory.org/publications/enc/entry.php?entry=OS004> [https://perma.cc/7Z9D-MPJT] (last visited Oct. 17, 2020).

212. Act of June 28, 1906 (Osage Act), ch. 3572, 34 Stat. 539, §§ 2–3.

213. Micah T. Zomet, Comment, *Returning Sovereignty to the Osage Nation: A Legislative Remedy Allowing the Osage to Determine Their Own Membership and System of Government*, 32 AM. INDIAN L. REV. 257, 257–58 (2008).

214. Morgan Potts, *United States v. Osage Wind, LLC: Wind Energy Being Blown Away by New Rules?*, 4 OIL & GAS, NAT. RES., & ENERGY J. 63, 68 (2018); *see* Osage Act § 3 (“That no mining of or prospecting for any of said mineral or minerals shall be permitted on the homestead selections herein provided for without the written consent of the Secretary of the Interior.”).

215. Benjamin Schiller, *Legal Perspective: Tenth Circuit Broadly Interprets “Mineral Development” in Osage Wind Case*, TULSA WORLD (Nov. 2, 2017), https://www.tulsaworld.com/archive/legal-perspective-tenth-circuit-broadly-interprets-mineral-development-in-osage/article_f900933c-0cdf-52dc-8bb8-a32b77c1778b.html [https://perma.cc/BP9L-TAKS] (last visited Oct. 17, 2020).

216. Osage Act § 3. *See also* Christopher Gnaedig, “Mining” on Indian Land: It is Not What You Think, 39 ENERGY L.J. 547, 558 (detailing the Indian Mineral Leasing Act of 1938).

The Osage Reservation shares the same borders as Osage County, and the mineral estate is held in trust by the federal government for the benefit of the Osage Nation.²¹⁷ Other regulations govern all other resources in the mineral estate,²¹⁸ including solid mineral resources. Importantly, if Osage Wind was engaged in “mining,” within the meaning of federal regulations, the Osage mineral estate as defined in the regulations promulgated by the Department of the Interior, then it was required to secure a lease with approval from the DOI prior to beginning operations.²¹⁹

In October 2014, Osage Wind began excavation work for the planned wind turbines.²²⁰ The eighty-four planned turbines required electrical lines, an electrical substation, an overhead transmission line, meteorological towers and access roads.²²¹ To prepare the foundations for the turbines, the wind company dug large holes in the ground and extracted sand, soil and rock, crushed them, and compacted the rock back into the excavation site.²²² Acting in its capacity as Trustee for the mineral estate, the U.S. filed an injunction to halt the excavation work in November 2014, arguing that this was mining under the Department of Interior regulations and accordingly required a mineral lease.²²³ The Northern District of Oklahoma rejected the claims of the Bureau of Indian Affairs and allowed the wind company to conduct excavation without obtaining a permit or approval from the OMC.²²⁴

Osage Wind entered into leases for a large amount of land, around 8,400 acres, from surface estate owners in 2010 for the commercial wind farm.²²⁵ The project was located west of Pawhuska, Oklahoma, and interconnected with transmission lines at the Remington Substation. The project aimed to produce 150 MW of energy.²²⁶ To put the size of the

217. *Frequently Asked Questions*, OSAGE NATION, <https://www.osagenation-nsn.gov/who-we-are/minerals-council/frequently-asked-questions> [<https://perma.cc/S43B-J4GU>] (last visited Oct. 17, 2020).

218. See 25 C.F.R. § 214.

219. 25 C.F.R. § 214.7. The Osage Nation manages its mineral resources through the Osage Mineral Council. *Minerals Council*, THE OSAGE NATION, <https://www.osagenation-nsn.gov/who-we-are/minerals-council> [<https://perma.cc/D8K2-UPNX>] (last visited Oct. 17, 2020). The Osage Nation Reservation consists of approximately 1,475,000 acres and is otherwise known as Osage County, Oklahoma. *United States v. Osage Wind*, 871 F.3d 1078, 1092 (10th Cir. 2017).

220. *Osage Wind*, 871 F.3d at 1083.

221. *Id.*

222. *Id.*

223. *Id.*

224. Flanakin, *supra* note 6.

225. *Id.*

226. The turbines were GE 1.79-100 MW and the power was to be purchased by Associated Electric (now Enel Green Power). *Osage Wind Project*, TRADEWIND ENERGY, <https://tradewindenergy.com/project/osagewindproject/> [<https://perma.cc/WM28-QM2S>] (last visited Oct. 18, 2020).

project into perspective, this wind farm would cover the equivalent of 13.125 square miles. The planned wind farm would have included approximately 84 turbines.²²⁷ In fact, the company dug 84 holes as large as 36 feet in diameter, extracting more than 50,000 cubic yards of rock including limestone and dolomite.²²⁸

The Tenth Circuit unanimously found that the wind company's excavation work constituted mining.²²⁹ The three-judge panel held that the definition of "mining" on Indian land included changing the form of the minerals so they can be used for another purpose, including as backfill for wind turbines.²³⁰ This case expands the regulatory landscape for wind farm developers. In the future, wind projects in Indian Country may require approval from the land-owner, from the tribe affiliated with the land, and from the Secretary of the Interior.²³¹ The ruling in *Osage Wind* is likely to increase delays and financial obligations of commercial scale wind projects on tribal lands.²³²

B. *The Cold Wind*.²³³ *State Litigation Against Wind Projects*

Alongside tribal governments, State Supreme Courts have also waded into the fray in an attempt to assert control over the vast and unwieldy wind industry. Four State Supreme Courts in the Great Plains and the West have considered actions against wind farm projects.²³⁴ As discussed below, state Supreme Courts in Iowa, Wyoming, and North Dakota have allowed wind farm projects to go forward. By contrast, the Kansas Supreme Court has ruled in favor of efforts to stop a wind project.²³⁵

227. *Osage Wind*, 871 F.3d at 1083 (noting that the wind turbines would be "secured in the ground by reinforced concrete foundations, underground electrical lines running between the turbines and a substation, an overhead transmission line, meteorological towers, and access roads.")

228. Flanakin, *supra* note 6.

229. *Osage Wind*, 871 F.3d at 1090.

230. *Id.*

231. Flanakin, *supra* note 6. The wind company appealed the Tenth Circuit's decision to the U.S. Supreme Court and challenged it on the grounds that the tribe was not a party in the original case, and also on the ground that the wind company was not engaged in mining. *Id.* The U.S. Supreme Court declined to consider an appeal of the Tenth Circuit's decision granting the Osage Nation the right to seek damages from the operators of the Osage Wind project. *Id.*

232. See Gnaedig, *supra* note 216, at 558; see also Whitney Jones Roy & Whitney Hodges, *Tenth Circuit Takes Expansive View of the Definition of the Term "Mining," Holding Wind Farm Project Needs Permit Prior to Commencement of Excavation in Tribal Mineral Estate*, ABA ENVTL. LITIG. & TOXIC TORTS COMM. NEWSL. (ABA, Chicago, Ill.), Dec. 2017, at 5.

233. GRETA VAN FLEET, *The Cold Wind*, on ANTHEM OF THE PEACEFUL ARMY (Republic Records 2018).

234. The author found no cases in Colorado, New Mexico, South Dakota, or Nebraska involving efforts to stop wind farms or challenging the construction or siting of wind turbines.

235. Zimmerman v. Bd. of Cnty. Comm'rs, 218 P.3d 400, 422 (Kan. 2009).

Courts of appeals in Texas have been unsympathetic to nuisance claims against wind projects.²³⁶ California cases brought in courts of appeals have been brought under a number of theories including public trust, including challenging a project's environmental impact report, but have not been successful in stopping wind projects due to the states regulatory scheme which manages some of the more problematic aspects of wind projects before construction commences.²³⁷

1. Western Wind:²³⁸ State and Federal Litigation against Wind Projects under Nuisance Laws

Private parties in Texas, North Dakota and Oklahoma have filed repeated litigation using the common law of nuisance.²³⁹ Nuisance actions against wind projects west of the 100th Meridian have not been adequately discussed in the law review literature. Currently, many landowners are using nuisance law to deal with unwanted turbine construction. Nuisance actions may be brought for blocking a view, while another option is seeking an injunction.²⁴⁰ Land use statutes and regulations can also be used under zoning to ensure that buildings are in character with the area.²⁴¹ Such regulations are useful at protecting neighbors in the immediate vicinity of undesirable construction. DuVivier, Witt and Lorde Martin have thoroughly discussed nuisance actions in New York, Wisconsin, and Pennsylvania in previous articles. Accordingly, this Article focuses on nuisance actions in the Great Plains and the Western United States.

Courts in Texas, North Dakota and Oklahoma have been unsympathetic to nuisance claims brought with regard to wind farms. In 1992, a landowner filed suit in North Dakota arguing that a neighboring landowner's use of a wind generator in a residential area constituted a private nuisance.²⁴² The district court below dismissed her lawsuit, and the North Dakota Supreme Court affirmed.²⁴³ A resident erected a wind tower on his residential lot, and a family purchased an adjoining lot two

236. Rankin v. FPL Energy, LLC, 266 S.W.3d 506, 511 (Tex. App. 2008).

237. This article does not discuss the California case, *DIII Properties, LLC v. EDF Renewable Energy, Inc.*, No. A148356, 2017 WL 3712454, at *1 (Cal. Ct. App. Aug. 29, 2017), because that case involves an easement agreement, not an effort to prevent construction of a wind farm, or to remove wind turbines already constructed.

238. THE LIMELITERS, *Western Wind*, on THE SLIGHTLY FABULOUS LIMELITERS (RCA 1961).

239. See, e.g., Walker v. Kingfisher Wind, LLC, No. CIV-14-914-D, 2016 WL 5947307, at *1 (W.D. Okla. Oct. 13, 2016) (denying Plaintiff landowners' nuisance claim).

240. See, e.g., *id.* at *7.

241. See, e.g., KAN. STAT. ANN. § 19-2960 (West, Westlaw through 2020 Reg. Sess.).

242. Rassierv. Houim, 488 N.W.2d 635, 636 (N.D. 1992).

243. *Id.*

years later.²⁴⁴ When she sued her neighbor, two years later, claiming that the wind generator was a private nuisance, the plaintiff asserted problems with noise and ice throw.²⁴⁵ The court also noted that Plaintiff, who had notice of her neighbor's installed wind generator, was subject to the "coming to the nuisance" doctrine.²⁴⁶ In addition, the court was unsympathetic to claims that the neighbor had erected the wind generator in violation of restrictive covenants, because the plaintiff herself had built in violation of those covenants, and the residents had basically abandoned those provisions through acquiescence.²⁴⁷ The court affirmed the trial court's finding that the defendant's action did not unreasonably interfere with the plaintiff's use of her property.²⁴⁸

Texas appellate courts have also rejected nuisance claims against wind projects.²⁴⁹ The plaintiffs in a 2008 case "sought injunctive relief and asserted public and private nuisance claims relating to construction and operation of the Horse Hollow Wind Farm."²⁵⁰ Plaintiffs were in part concerned about the wind farm's aesthetic impact, and emphasized the visual disturbance caused by blinking lights, shadow flicker, and operational noise.²⁵¹ The court found that the plaintiffs' "emotional response to the loss of their view due to the presence of numerous wind turbines," was insufficient to support a claim of nuisance and that aesthetic impact is not a substantial interference with the use and enjoyment of land.²⁵² This court ruling was based in part on the idea that there are few restrictions in Texas on the lawful use of property.²⁵³

In a 2013 Texas case brought in state court in Erath County, plaintiffs argued that the placement of twenty four wind turbines near their property caused a nuisance.²⁵⁴ The plaintiffs specifically objected to noise, the fact that the turbines are an eyesore, destruction of the natural beauty, shadow flicker, blinking red lights, interference with the night sky, and destruction of native wildlife habitat.²⁵⁵ The plaintiff also stated that the wind turbines

244. *Id.*

245. *Id.* at 638–39 (holding no violation of statute, ordinance or regulation on the reasonableness of the defendant's behavior).

246. *Id.* at 636, 638.

247. *Id.* at 639.

248. *Id.*

249. Rankin v. FPL Energy, LLC, 266 S.W.3d 506, 513 (Tex. App. 2018).

250. *Id.* at 508.

251. *Id.* at 510.

252. *Id.* at 511–13.

253. *Id.* at 512.

254. Ladd v. Silver Star I Power Partners, LLC, No. 11-11-00188-CV, 2013 WL 3377290, at *1 (Tex. App. May 16, 2013).

255. *Id.*

dramatically reduced his land value.²⁵⁶ In this case, the aesthetic issues had been severed from the other nuisance claims.²⁵⁷ Relying on previous Texas cases, the court found that as a matter of law in Texas, the plaintiff could not recover damages because the wind turbines are unsightly, create an eyesore, or destroy the scenic view.²⁵⁸

A federal court in Oklahoma followed the Texas pattern, rejecting tort claims for anticipatory nuisance from a nonprofit organization consisting largely of landowners near the Kingfisher Wind Project in Kingfisher and Canadian Counties in Oklahoma.²⁵⁹ The plaintiffs challenged Kingfisher Wind alleging concerns about aesthetics, annoyance, health concerns, noise pollution, interference with the use and enjoyment of their property, and an annoyance caused by “shadow flicker” and “glint” from the sun reflecting off of the turbine blades, and asked for a 1.7 mile setback of the wind farm from plaintiffs.²⁶⁰ More than one plaintiff indicated that they had no present claims regarding health, but worried that the wind farm was likely to affect her health in the future.²⁶¹ Other plaintiffs asserted that the wind farm was interfering with their health, but had not sought medical treatment for their ailments.²⁶²

The court found that Oklahoma law provides a cause of action for private nuisance under both common law and statutory law.²⁶³ Common law nuisance is defined as the “unwarrantable, unreasonable or unlawful use by a person of his own property to the injury of another.”²⁶⁴ The court also found that a plaintiff can seek injunctive relief for anticipatory nuisance if the harm suffered is irreparable, and there is clear and convincing evidence of a reasonable probability of injury.²⁶⁵ The court held that plaintiffs had not made sufficient showing that shadow flicker and infrasound were likely to cause health effects.²⁶⁶ In addition, the court echoed the decision of the Texas Court of Appeals in *Ladd v. Silver Star I Power Partners* stating that aesthetic concerns alone, in the absence of actual adverse health effects, were insufficient on their own to constitute

^{256.} *Id.*

^{257.} *Id.*

^{258.} *Id.* at *4.

^{259.} *Walker vs. Kingfisher Wind, LLC*, No. CIV-14-914-D, 2016 WL 5947307, at *8 (W.D. Okla. Oct. 13, 2016).

^{260.} *Id.* at *1–2.

^{261.} *Id.* at *2–3.

^{262.} *Id.* at *3.

^{263.} *Id.* at *6.

^{264.} *Id.*

^{265.} *Id.* at *7.

^{266.} *Id.*

an actionable nuisance.²⁶⁷ Plaintiffs had failed to pursue preliminary injunctive relief, and the wind farm was already operational, at a cost of \$450 million.²⁶⁸ Given this specific fact pattern, the court declined injunctive relief.²⁶⁹

C. *State Litigation against Wind Projects under Other Legal Theories*

Litigation based on otherwise extraneous existing regulation also shows limited signs of success. The Iowa Supreme Court has ruled in favor of wind farms in the face of permitting challenges.²⁷⁰ Plaintiffs in California have brought numerous challenges against wind farms under the public trust doctrine and by challenging the certification of environmental impact reports under the CEQA.²⁷¹ Such actions have been unsuccessful.²⁷² In a decision that seems to be an outlier in the area west of the 100th Meridian, Kansas courts have been more sympathetic to claims against wind farms brought under county wide zoning challenges.

1. Crosswinds:²⁷³ California Challenges to Wind Energy

Litigants have also relied on extensive environmental administrative regulation to limited success. In at least three California cases, plaintiffs unsuccessfully attempted to challenge a final environmental impact report.

In a 2007 case, plaintiffs brought a challenge under California Environmental Quality Act (CEQA) against a wind farm of eighty turbines in Kern County near the City of Tehachapi.²⁷⁴ The Board of Water and Power Commissioners had adopted a resolution certifying the final environmental impact report, and approving the Pine Tree wind farm.²⁷⁵ The court found that the draft environmental impact report (DEIR) considered numerous public comments and comments from public hearings about potential songbird, raptor, and bat fatalities, found them to be of low significance, and recommended monitoring.²⁷⁶ The court noted that the agency included numerous responses to critical comments on the

^{267.} *Id.*

^{268.} *Id.* at 8.

^{269.} *Id.*

^{270.} *Mathis v. Iowa Utils. Bd.*, 934 N.W.2d 423, 424 (Iowa 2019).

^{271.} *See infra* notes 273–308.

^{272.} *Id.*

^{273.} PEABO BRYSON, *Crosswinds, on Crosswinds* (Capital Records 1978).

^{274.} *Kemcrest Audubon Soc’y v. City of L.A. Dep’t of Water and Power*, No. F050809, 2007 WL 2208806, at *1 (Cal. Ct. App. Aug. 2, 2007).

^{275.} *Id.* at *2.

^{276.} *Id.* at *3.

DEIR. The agency responded and noted that the site was not in a flyway, and also that it had carefully considered avian fatality studies.²⁷⁷ The court found that the Final Environmental Impact Report (FEIR) conclusions were based on substantial evidence, and upheld the Board's decision to certify the Pine Tree wind farm.²⁷⁸

In a 2008 case, plaintiffs alleged that owners and operators of wind turbine generators in the Altamont Pass Wind Resource Area in Alameda and Contra Costa counties were responsible for killing and injuring raptors and other birds in violation of the public trust doctrine.²⁷⁹ In this action, there were extended administrative proceedings, which included eight public hearings spanning two years.²⁸⁰ In addition, Alameda County created a Wind Power Working Group including representatives of the USFWS, the California Fish and Game Department, and many other stakeholders, including the Center for Biological Diversity.²⁸¹ The court found that wildlife, including birds, are considered a public trust resource of all the people of the state.²⁸² However, the court also found that the agencies had adequately protected these trust resources and upheld the dismissal of the actions on the pleadings.²⁸³

In a 2012 case, parties who lived near a wind farm project challenged Santa Barbara County's certification of a project's environmental impact report.²⁸⁴ This case was brought before the construction of a commercial wind farm.²⁸⁵ The wind farm in question would have been comprised of 65 wind turbine generators spread over 2950 acres of agricultural land.²⁸⁶ The environmental impact report process, conducted under California Environmental Quality Act (CEQA),²⁸⁷ included public hearings and written comments. The environmental impact report (EIR) considered a reasonable range of potentially feasible alternatives, and thoroughly considered environmental impacts as well as visual impacts.²⁸⁸ Further,

277. *Id.* at *6.

278. *Id.* at *18.

279. *Ctr. for Biological Diversity, Inc. v. FPL Grp., Inc.*, 83 Cal. Rptr. 3d 588, 591 (Cal. Ct. App. 2008), *as modified on denial of rehearing* (Oct. 9, 2008).

280. *Id.* at 593.

281. *Id.*

282. *Id.* at 591.

283. *Id.*

284. *Bedford v. Santa Barbara Cty.*, No. B228958, 2012 WL 310784, at *1 (Cal. Ct. App. Feb. 2, 2012).

285. *Id.*

286. The wind project's locations were limited to 400 feet wide construction corridors on less than 650 acres. *Id.*

287. CAL. PUB. RES. CODE §§ 21000–21178 (West, Westlaw through Ch. 31 of 2020 Reg. Sess.).

288. *Bedford*, 2012 WL 310784, at *4.

the EIR included noise mitigation measures which would limit noise levels to 65 dBA at participating residences, and 43.3 dBA at nonparticipating residences.²⁸⁹ The court upheld the County's certification of the EIR, and found that the project met local policies and objectives.²⁹⁰

In Kern County in 2014, a second case was brought challenging permits to build and operate a wind farm in the Tehachapi Wind Resource Area.²⁹¹ Kern County prepared a study pursuant to the CEQA, and issued a draft environmental impact report.²⁹² The County circulated the draft for public review, and conducted at least one public hearing.²⁹³ The court found that the EIR described legally feasible mitigation measures.²⁹⁴

In 2015, a similar theory was advanced when the plaintiffs challenged a FEIR certification by the San Diego County Board of Supervisors.²⁹⁵ Specifically, the FEIR amended the County General Plan and Zoning Ordinance relating to wind turbines, which was a review of regulatory frameworks for wind turbines in support of California's climate change initiatives.²⁹⁶ These plaintiffs argued that the FEIR did not adequately analyze the environmental impacts of the project.²⁹⁷ The draft EIR specifically aimed to maximize the production of energy from renewable wind sources and minimize potential land use conflicts.²⁹⁸ The EIR process included several hearings, as well as the receipt of written public comments.²⁹⁹ The court specifically reviewed concerns caused by turbine blade throw, turbine collapse, setbacks, and potentially negative effects on bats.³⁰⁰ The court observed that large turbine projects must obtain a major use permit, and comply with groundwater ordinances, and other land use regulations.³⁰¹ The court specifically noted that the alternatives examined in an EIR help foster informed decision-making and public participation.³⁰² The court found that the FEIRs technological and

289. *Id.* at *6.

290. *Id.* at *7.

291. *Citizens Opposing a Dangerous Env't v. Cty. of Kern*, 174 Cal. Rptr. 3d 683, 686 (Cal. Ct. App. 2014).

292. *Id.*

293. *Id.* at 693.

294. *Id.* at 701.

295. *Backcountry Against Dumps v. San Diego Cty. Bd. of Supervisors*, No. D0666135, 2015 WL 5451508, at *1 (Cal. Ct. App. Sept. 16, 2015).

296. *Id.*

297. *Id.*

298. *Id.* at *2.

299. *Id.* at *2. The CEQA process requires substantial evidence in support of certain evidentiary determinations. *Id.* at *3.

300. *Id.* at *4–10.

301. *Id.* at *1.

302. *Id.* at *12.

regulatory benefits were supported by substantial evidence, and upheld the Board's decision to certify the wind farm.³⁰³

The California cases are tied together by the fact that California has a well-developed regulatory scheme. The CEQA requires that whenever a project must have a significant and adverse physical effect on the environment, an EIR must be prepared.³⁰⁴ In addition, EIRs must contain mitigation and alternatives sections.³⁰⁵ First, California's regulatory scheme forces county boards to consider environmental impacts to birds, bats and other species.³⁰⁶ Second, California's regulatory scheme requires significant stakeholder consultation, the establishment of public hearings and receipt of public comments. In the Altamont Pass case, for example, eight public hearings were held.³⁰⁷ Third, California's regulatory scheme forces the consideration of issues such as location in an avian flyway, noise impacts and minimization of potential land impacts, and safety considerations such as turbine blade throw, turbine collapse, and setbacks.³⁰⁸ In essence, California's CEQA provides a powerful blueprint for mitigating the impacts of wind farm construction before wind farms are built.

2. Windswept Plains:³⁰⁹ Challenges to Wind Energy in Wyoming, Iowa, and Kansas

Litigation based on administrative and regulatory processes has shown similar limitations. The Supreme Court of Wyoming considered a consolidated case involving permits issued to a wind operator to construct and operate a wind energy project in Converse County Wyoming, involving sixty-two wind turbines, support structures and transmission lines on private land.³¹⁰ In one case, the plaintiffs challenged the Converse County Board of County Commissioners' decision granting the wind

303. *Id.* at *1.

304. CAL. PUB. RES. CODE § 21100(a) (West, Westlaw through Ch. 38 of 2020 Reg. Sess.).

305. *Id.* § 21100(b)(2)-(4).

306. *See id.* § 21081(a)(1).

307. *Ctr. for Biological Diversity, Inc. v. FPL Grp., Inc.*, 83 Cal. Rptr. 3d 588, 593 (Cal. Ct. App. 2008), *as modified on denial of reh'g* (Oct. 9, 2008).

308. *See CALIFORNIA GUIDELINES FOR REDUCING IMPACTS TO BIRDS AND BATS FROM WIND ENERGY DEVELOPMENT, CAL. ENERGY COMM'N* (Sept. 2007) (The Guidelines provide consistent, scientifically sound recommendations for studying, siting, and operating wind energy facilities in the state, while at the same time avoiding, minimizing, and mitigating the impacts of that development on birds and bats).

309. CHASE MILLER, *Windswept Plains, on MOMENTS* (1082176 Records 2018).

310. *N. Laramie Range Found. v. Converse Cty. Bd. of Cty. Comm'rs*, 290 P.3d 1063 (Wyo. 2012).

energy company a permit.³¹¹ In the second case, plaintiffs challenged the decision of the Department of Environmental Quality, Industrial Siting Council (“ISC”), to issue an industrial siting permit for construction of the facility.³¹² The complex application process considered environmental, wildlife, residential, water, endangered species, agricultural, economics, employment, and tax impacts.³¹³ In particular, the ISC determined that the projects would not pose a threat of serious injury to land values or property values.³¹⁴ The ISC assessed a detailed traffic study,³¹⁵ a reclamation and decommission plan,³¹⁶ and took sworn testimony and appearance statements from the audience.³¹⁷ The ISC permit included numerous conditions to be fulfilled before construction commenced,³¹⁸ including additional financial assurances prior to commencement of construction.³¹⁹ The Court upheld the issuance of permits for the involved projects.³²⁰

The Iowa Supreme Court, in Palo Alto County, Iowa, considered whether a series of 170 wind turbines dispersed over eighty square miles constituted an “electric power generating plant.”³²¹ The Iowa Utilities Board had consistently ruled that wind turbines connected to a single gathering line were to be construed a single site or facility, whereas turbines connected to separate gathering lines would be treated as different sites.³²² This allowed certain large wind projects to avoid application for a certificate of public convenience, use and necessity.³²³ The plaintiffs argued that the wind farm was a facility which required a certificate of convenience, use, and necessity, from the Iowa Utilities Board before construction could commence.³²⁴ The Iowa Supreme Court, somewhat unenthusiastically, affirmed the decision of the district court upholding the determination that no certificate of public convenience was allowed.³²⁵ The court found the decision was supported by a longstanding administrative interpretation, “legislative acquiescence in that

311. *Id.* at 1068.

312. *Id.*

313. *Id.* at 1069.

314. *Id.* at 1095.

315. *Id.* at 1077.

316. *Id.* at 1080.

317. *Id.* at 1069.

318. *Id.*

319. *Id.* at 1080.

320. *Id.* at 1096.

321. *Mathis v. Iowa Utils. Bd.*, 934 N.W.2d 423, 424 (Iowa 2019).

322. *Id.*

323. *Id.*

324. *Id.* at 425.

325. *Id.* at 424.

interpretation, and the legislature's endorsement of a similar standard in a different wind energy statute.³²⁶

In related litigation, the Iowa Supreme Court considered the decisions of a county board of supervisors approving a wind energy ordinance and a specific wind energy project.³²⁷ Invenergy wished to develop a 300 MW, 170 turbine wind energy project in Palo Alto County, Iowa.³²⁸ The Palo Alto County Planning and Zoning Commission believed a more detailed ordinance was needed to regulate wind turbines.³²⁹ The Commission proposed a 2640-foot setback while the Wind Companies preferred a 1000-foot setback.³³⁰ Other contentious issues in the ordinance included shadow flicker, measures to protect species, birds and bats, noise analysis, construction near unmarked graves and cemeteries, buffer areas between turbines, riparian areas, and wildlife conservation areas.³³¹ Finally, the board considered decommissioning issues.³³² The plaintiffs challenged the validity of the ordinance, arguing wind companies had too much influence in its drafting.³³³ The court found that the ordinance was enforceable, and that there was substantial compliance with the ordinance.³³⁴ The court found that the Board of Supervisors was better placed to weigh the drawbacks of the wind project against the benefits.³³⁵

The Kansas Supreme Court specifically considered whether the Board of County Commissioner's Resolution to amend the county's zoning regulations were unlawful or unreasonable.³³⁶ In Wabaunsee County, in the Flint Hills of Kansas, the county zoning administrator was contacted by a company which wished to build a wind farm.³³⁷ The Board of County Commissioners passed a moratorium on the issuance of wind farm applications so that they could review the zoning regulations.³³⁸ The commission then conducted its first public meeting.³³⁹ A two-year period followed which included numerous public meetings, a county wide survey, focus groups, and the adoption of a revised County

326. *Id.* at 433.

327. *Mathis v. Palo Alto Cnty. Bd. of Supervisors*, 927 N.W.2d 191, 193 (Iowa 2019).

328. *Id.*

329. *Id.* at 193–94.

330. *Id.* at 194. One mile comprises 5,280 feet.

331. *Id.* at 194–99.

332. *Id.* at 199–200.

333. *Id.* at 196.

334. *Id.* at 198.

335. *Id.* at 200.

336. *Zimmerman v. Bd. of Cnty. Comm'rs of Wabaunsee Cnty.*, 218 P.3d 400, 405 (Kan. 2009).

337. *Id.*

338. *Id.*

339. *Id.*

Comprehensive Plan (2004).³⁴⁰ The Board of County Commissioners allowed small wind farms, but prohibited commercial wind farms in the county, for a number of reasons including quality of life, history and culture, wildlife, the protection of the tallgrass ecosystem, and aesthetics.³⁴¹ In reviewing the evidence during the case, the district judge required the Board “to produce evidence that it had acted reasonably.”³⁴² The court considered the fact that the wind farms were likely to be located on ridge lines within the county, which could be seen from a distance of twenty or more miles.³⁴³ Further, the court considered that the Flint Hills of Kansas contained Tallgrass Prairie, one of the most endangered ecosystems in North America, as well as critical habitat of the Prairie Chicken.³⁴⁴ Finally, the court considered the impact of the wind farms on tourism in the area.³⁴⁵ Importantly, the court considered that the Board allowed small wind farms (less than one KW),³⁴⁶ while disallowing the large, commercial wind farms.³⁴⁷ The court upheld the Board’s ability to amend its zoning regulations to prohibit commercial wind farms.³⁴⁸

The Kansas and Iowa cases are notable because, in contrast to California, these states lack a comprehensive regulatory scheme. Accordingly, in both Iowa and Kansas, plaintiffs had to find a separate cause of action under which they can bring their cases. The Kansas case and one of the Iowa cases were brought at the county level. One Iowa case challenged the decision of a statewide regulatory agency that did not actually consider concerns such as turbine blade throw, turbine collapse, and setbacks.³⁴⁹ The facts in the Kansas case set it apart as uniquely successful: here, the proposed site was assessed to be far more likely to dramatically and negatively affect the Tallgrass Prairie, a delicate and rare ecosystem which also attracts tourism due to its unusual ecological features.

340. *Id.* at 406.

341. *Id.* at 408–09.

342. *Id.*

343. *Id.* at 417.

344. *Id.* at 417–18.

345. *Id.* at 419.

346. The Board also limited small wind energy conversion systems by specifying parcel, size, density, spacing, setback distance blade height, and advertising. *Id.* at 422.

347. *Id.*

348. *Id.*

349. *Mathis v. Palo Alto Cnty. Bd. of Supervisors*, 927 N.W.2d 191, 193 (Iowa 2019).

V. COLORS OF THE WIND.³⁵⁰ WHY, WHAT, AND WHO?

A. *Why Should We Regulate?*

As the above cases illustrate, in the absence of a state-wide regulatory scheme for wind, plaintiffs must rely on the law of nuisance, or alternatively, attempt to challenge wind projects by obliquely challenging permitting and zoning decisions occurring at the county or state level. However, the ad hoc nature of private lawsuits does not provide for a considered approach to particular ecosystems as a whole, nor do they yield land use decisions with a holistic land use plan, and most importantly, they do not involve all relevant stakeholders.³⁵¹ Another downside of nuisance suits is they are post hoc remedies. They are usually brought after a particular development has occurred.³⁵² In the context of wind energy, nuisance suits essentially allow for damages for some harm caused. They only compensate the affected landowner. They cannot help reconfigure a wind farm, or prevent drilling on an Indian Reservation, or ensure appropriate setbacks from residential areas.³⁵³ A review of litigation decisions indicates that courts are unwilling to tear down wind turbines once they have been built. To fully reach its potential, wind energy will require a more coordinated system of land use regulation.³⁵⁴

The worst case scenario is that wind energy faces some of the obstacles which have plagued hydraulic fracturing, where municipalities in New York, Pennsylvania, and other states have banned hydraulic fracturing, weakening the ability of state regulators to influence the pace, location, and conditions of development.³⁵⁵ Some environmental groups have called for closer attention to risks and precautionary regulation, which is indeed what this article proposes in the wind context.

B. *Considering the Regulatory Dilemma Posed by Wind Energy*

As noted above, wind energy presents an interesting regulatory

350. JUDY KUHN, *Colors of the Wind*, on POCAHONTAS: AN ORIGINAL WALT DISNEY RECORDS SOUNDTRACK (Disney 1995).

351. *Environmental Land Use Regulation*, *supra* note 56, at 1584–85.

352. *Id.* at 1584.

353. *Id.*

354. *Id.* at 1579.

355. See Hari M. Osofsky & Hannah J. Wiseman, *Hybrid Energy Governance*, 2014 U. ILL. L. REV. 1, 15 (2014). In the case of hydraulic fracturing, much of the law is state based and is comprised of common law property in addition to statutory environmental and energy regulation. *Id.* at 17.

dilemma.³⁵⁶ The federal government regulates some aspects of wind energy, as well as particular issues related to air traffic, endangered species, migratory birds, NEPA, construction on federal lands, and matters on Native American tribal lands.³⁵⁷ Some aspects of wind energy, such as setbacks and turbine height, are occasionally regulated at the municipal or the county level.³⁵⁸ Some states, such as California, impose some regulatory floors.³⁵⁹ By contrast, other states fail completely to regulate wind energy, aggravating conflicts with local landowners. Businesses looking to invest in wind energy face a confusing regulatory landscape which can vary considerably county to county. Similarly, residents in one county may be subjected to a stricter regulatory landscape than other residents nearby.³⁶⁰

The regulatory challenge, then, is to create systems that simultaneously encourage renewable energy development, yet also work with communities to ensure that they are not unduly harmed by the development of renewable energy projects. Indeed, J. B. Ruhl reminds us that laws should assist in harmonizing the domains of environmental, economic, and social forces.³⁶¹ Historically, the absence of laws and regulations in the field of wind energy may have promoted the development of wind energy.³⁶² However, as the field of wind energy matures, the absence of regulation and law in this area also makes it difficult to resolve some of the negative externalities generated by the construction of wind turbines and their transmission lines. Accordingly, I argue that states need to begin constructing more sophisticated regulatory regimes.

Wind suffers from two regulatory problems: under-regulation and overly strict local regulations. On its face, under-regulation does not allow states or localities to address some of the more obvious downsides of wind energy. States with no state-wide siting and permitting processes may

356. See generally William W. Buzbee, *State Greenhouse Gas Regul., Fed. Climate Change Legis., and the Preemption Sword*, 1 SAN DIEGO J. CLIMATE & ENERGY L. 23 (2009).

357. Stripling, *supra* note 145, at 150 (observing that other than these subsidies, however, federal law does not govern or regulate wind energy production).

358. See *Wind Vision: A New Era for Wind Power in the United States*, *supra* note 13.

359. See *supra* notes 304–306.

360. Cf. Nancy Hicks, *Lancaster Cty. Bd. Approves Strictest Distance Rule in State for Wind Turbines*, LINCOLN J. STAR (Feb. 19, 2019), https://journalstar.com/news/local-govt-and-politics/lancaster-county-board-approves-strictest-distance-rule-in-state-for-wind-turbines-homes/article_62a6cc79-a0f5-578a-89b3-761044df57ba.html [<https://perma.cc/W2VL-UA4K>].

361. J.B. Ruhl, *Sustainable Development: A Five-Dimensional Algorithm for Environmental Law*, 18 STAN. ENV'T L.J. 31, 56 (1999).

362. E. Donald Elliot, *Why the United States Does Not Have a Renewable Energy Policy*, 43 ENV'T L. REP. NEWS & ANALYSIS 10095, 10100–01 (2013).

exhibit a high level of variation from county to county in regard to minimum lot size, setbacks, turbine height, blade size, decommissioning requirements, and minimum distance separation between turbines.³⁶³ Alternatively, archaic land use regulations and overly strict zoning variances can hinder reasonable wind projects.³⁶⁴ Local incentives, as noted above, can stymie wind energy completely, yet state incentives can be important drivers for the deployment of renewable energy.³⁶⁵

State regulations should be designed to encourage renewable energy development. However, state government can also play a key role in creating zoning and permitting systems which foster “resident friendly” development. Wind turbine operators, and the state regulators who govern them, need to carefully consider environmental legal issues, as well as the impact of wind projects on neighboring residents and Native American nations, when designing and constructing their projects. States can enact legislation that optimizes wind production while creating a regulatory floor that reduces the negative externalities caused by wind energy. Indeed, the appropriate level of regulation for wind energy must operate in the deliberative space between strengthening efforts at alternative energy development while balancing environmental tradeoffs.³⁶⁶ Some regulatory middle ground is required that provides private sector wind developers with some regulatory certainty, while allowing reasonable development of wind energy, while also reducing negative impacts on residents near such facilities.³⁶⁷

C. *What to regulate?*

1. Different Types of Wind Installations

There are two different kinds of wind systems which may need different regulatory frameworks: large-scale wind farm developments and localized small-scale production. First, small wind systems, generating 5 kW of energy are best suited to meeting the electricity needs of homes, small businesses, and local governments which may need systems which can power individual buildings.³⁶⁸ Larger wind systems include wind

³⁶³. See RYNNET AL., *supra* note 13, at 79–83.

³⁶⁴. Beverly J. Shane, *Solving California’s Energy Crisis: The Answer May be Blowing in the Wind*, 33 MCGEORGE L. REV. 403, 404 (2002).

³⁶⁵. See Irfan & Zarracina, *supra* note 17.

³⁶⁶. Cassie Tighe, *Wind Energy Dev. and the Protection of Wildlife: Creating a Balance Between Two Competing Interests*, 45 TEX. ENV’T L.J. 223, 224–26 (2015).

³⁶⁷. Thank you to Thomas O. McGarity for this insight.

³⁶⁸. Klass, *supra* note 11, at 103.

farms utilizing turbines ranging from 1 to 3 MW.³⁶⁹ Furthermore, utility scale wind energy production requires consideration of state or even regional concerns, as wind farms can cover several counties, each of which may have different regulatory frameworks.³⁷⁰ The difficulty of regulating installations of different sizes, however, is far outweighed by the prospective costs of an utter failure to regulate entirely.

2. Siting and Setbacks

Siting can be a critical decision for wind projects.³⁷¹ A select group of states have investigated state-wide wind siting requirements.³⁷² State approaches to wind facility siting fall into two categories: state-wide approaches and local approaches.³⁷³ The first approach designates siting decisions to state agencies such as public utility commissions or siting councils and boards. Five states reserve the power to a centralized state agency to regulate the siting of wind facilities, regardless of size.³⁷⁴ An example of such an approach is found in North Carolina.³⁷⁵ North Carolina prohibits the construction or operation of a wind energy facility without a permit from the Department of Environment and Natural Resources. North Carolina further requires that turbines be set back at least half a mile from the boundary of an adjacent property owner.³⁷⁶ The state also has strict guidelines for siting near military facilities.³⁷⁷ The second approach to siting is to promulgate state-wide regulations. Connecticut has promulgated state-wide regulations which include provisions addressing tower height, distance, flicker, decommissioning, ice throw, noise, and public hearings.

369. *Id.* at 103–04.

370. *Id.* at 106–07 (noting that wind energy use requires significant cost and a large system, and that wind energy production is regional in nature).

371. Duvivier & Witt, *supra* note 17, at 1464.

372. Jaelyn Kahn & Laura Shields, *State Legislative Approaches to Wind Energy Facility Siting*, NAT'L CONF. OF STATE LEGISLATURES (Sept. 2, 2020), <https://www.ncsl.org/research/energy/state-wind-energy-siting.aspx> [https://perma.cc/L6BG-587J].

373. *Id.* A third approach, which is actually quite common in the wind context, is to leave siting decisions completely unregulated at the state level, leaving the matter in the hands of local, county, or municipal governments. *Id.*

374. *Id.*

375. *Id.*

376. N.C. GEN. STAT. § 143-215.116 (West, Westlaw through S.L. 2020-74 of the 2020 Reg. Sess.).

377. *Id.* § 143-215.119(a)(4).

3. Decommissioning

Many states' laws and regulations, including Texas, Colorado, Iowa, Kansas, New Mexico, and Montana, do not even address decommissioning. Texas has no legal or regulatory requirements for decommissioning.³⁷⁸ In these states, decommissioning is controlled only by the lease agreements signed between landowners and wind-farm operators. In Nebraska, for example, decommissioning is negotiated by contract between wind energy providers and landowners.³⁷⁹ Often, these contracts do not clearly require operators to remove wind farm installations and restore the land, with the result that non-operating turbines and their related structures may be left to decay on the land.³⁸⁰ Even strong lease requirements are ineffective against bankrupt and dissolved operators.³⁸¹

By contrast, some states require facilities owners to decommission, but do not require a performance bond or a letter of credit.³⁸² California requires that wind-farm owners close their facilities, but does not require a bond.³⁸³ Some states, including California, North Dakota, and Ohio, effectively rely on the cooperation of wind farm operators for successful decommissioning. As a result, local and state taxpayers are often left to pay for the cleanup.

Third, a final group of states have enacted thoughtful and comprehensive decommissioning regulations that lay out specific requirements for decommissioning and that also require the posting of a bond, or that operators post a decommissioning security for wind farms.³⁸⁴ These states include Oklahoma, Oregon, and Indiana.³⁸⁵ In addition, some counties in states such as New York, Minnesota, Kansas, and Illinois, have imposed local regulations which require financial assurances for decommissioning.³⁸⁶

³⁷⁸ Stripling, *supra* note 151, at 124.

³⁷⁹ Chris Dunker, *Proposal Setting Requirements for Decommissioning Wind Turbines Stalls in Legislature*, LINCOLN J. STAR (Apr. 23, 2019), https://journalstar.com/legislature/proposal-setting-requirements-for-decommissioning-wind-turbines-stalls-in-legislature/article_764a2df7-349d-5769-867b-8f3effa72c94.html [<https://perma.cc/X9ML-MPR4>].

³⁸⁰ Stripling, *supra* note 151, at 140.

³⁸¹ In Nebraska, legislation, LB700, was introduced to suggest baseline decommissioning standards for renewable energy-generation facilities, but it failed. Dunker, *supra* note 379.

³⁸² Stripling, *supra* note 151, at 135.

³⁸³ *Id.* at 136. See CAL. PUB. RES. CODE § 25532 (West, Westlaw through Ch. 35 of Reg. Sess. 2020).

³⁸⁴ Stripling, *supra* note 151, at 141.

³⁸⁵ *Id.*

³⁸⁶ *Id.* at 144.

D. Who should regulate?

The issue of regulating wind raises the question of how to allocate different responsibilities among multiple sovereign powers. Stated a different way, it is important to identify the appropriate level of government at which regulatory authority should be exercised.³⁸⁷ Wind energy illustrates a problem of overlapping and fragmented authority.³⁸⁸ Wind energy is governed by a combination of federal, state and local statutes, and the regulation of the arena varies from no regulation to overregulation, with many states presenting a patchwork to potential energy developers. In the absence of clear federal direction, and in the absence of strong regulatory frameworks in the renewable energy sector, states have a real opportunity to exercise leadership in the renewable energy field.³⁸⁹

Further, state regulation has played a key role in helping to set up America's wind farms.³⁹⁰ Some western states, such as Oregon, and Washington, "have replaced or supplemented local approvals with a statewide permitting process for some wind energy projects."³⁹¹ In this new era, state regulation will be key for ensuring the sustainability of wind energy and reducing resistance to wind from neighboring residents.

This paper argues that the appropriate locus of regulation is at the state level, not at the federal or the local level.³⁹² Federal regulation of wind is likely to devolve into gridlock. In addition, John DeWitt observes federal regulation often does not recognize local conditions,³⁹³ which vary dramatically in the case of wind. Local siting and zoning requirements have drawbacks. Local regulation can be poorly crafted; further, large wind-farm projects are often large and stretch across municipal and county borders.³⁹⁴ Wind capacity varies significantly depending on location.³⁹⁵ In addition, population density is an important variable in determining how

387. *Environmental Land Use Regulation*, *supra* note 56, at 1590.

388. Osofsky & Wiseman, *supra* note 355, at 7.

389. Joseph H. Margolies, *Powerful Friends: EPSA, Hughes, and Cooperative Federalism for State Renewable Energy Policy*, 118 COLUM. L. REV. 1425, 1444 (2018) (observing that states have led the charge in encouraging the construction and use of renewable resources).

390. Stripling, *supra* note 151, at 126 (observing that state and federal incentives in the 1980s led to a boom in the renewable energy field).

391. Klass, *supra* note 11, at 108.

392. Stripling, *supra* note 151, at 150 (arguing that state regulation promotes uniformity).

393. John DeWitt, *Top-Down, Grassroots, and Civic Environmentalism, Three Ways to Protect Ecosystems*, 4 FRONTIERS ECOLOGY & ENV'T 45, 45 (2006).

394. Stripling, *supra* note 151, at 150.

395. Fred Mays, *Wind Generation Seasonal Patterns Vary Across the United States*, U.S. ENERGY INFO. ADMIN. (Feb. 25, 2015), <https://www.eia.gov/todayinenergy/detail.php?id=20112>.

high the level of conflict between residents and wind facilities will be. Stated another way, states can enact legislation that optimizes wind production while reducing the negative externalities caused by wind energy, and while also supporting efforts at sustainable development.³⁹⁶

One remedy for the current hodge-podge of federal, state and local requirements³⁹⁷ which apply to wind energy is that states with large wind production move towards adopting minimum levels of regulation for wind energy systems above a certain size, particularly with regard to siting and permitting. It should be noted that the US cannot make significant progress with regard to setting an emissions reduction target, and thus comply with efforts to address climate change, without the participation of state governments.³⁹⁸ I argue that a state-wide permitting process which replaces or supplements local approval is preferable to an approach which allows local jurisdictions to determine what standards are in place, such as Texas.³⁹⁹ The state is particularly appropriate as the regulatory locus for siting decisions because utility-scale wind projects can include dozens, or hundreds, of wind turbines that can cross county lines. In addition, state governments have actively supported the construction of wind turbines through the incentives to create renewable energy projects.⁴⁰⁰

E. Examples of Statewide Regulation of Wind Energy

1. Wyoming: Strict Statewide Regulations Disadvantage Wind Power.

Wyoming represents an example where state-wide regulation is actually being used to limit and discourage wind energy. Ranking

396. One mechanism by which this could occur would be if state governments can assist wind power companies with developing transmission routes in exchange for more stringent regulation of the negative externalities of wind.

397. Manuca, *supra* note 70, at 396 (large wind and solar projects are governed by a complex thicket of federal and state electricity laws).

398. See Hari M. Osofsky, *Multiscale Governance and Climate Change: Reflections on the Role of States and Cities at Copenhagen*, 25 MD. J. INT'L L. 64, 69–70 (2010) (considering how significant efforts by states, provinces and cities might fit into international efforts to address climate change).

399. Klass, *supra* note 11, at 109 (observing that at least five states allow all siting and permitting of wind energy systems to take place at the local level); Engelman, *supra* note 18, at 10549 (arguing that a hybrid regulatory model should come from the state level).

400. See *Renewable Portfolio Standards*, NAT'L RENEWABLE ENERGY LAB., [https://www.nrel.gov/state-tribal/basics-portfoliostandards.html#:~:text=A%20renewable%20portfolio%20standard%20\(RPS,as%20a%20renewable%20electricity%20standard](https://www.nrel.gov/state-tribal/basics-portfoliostandards.html#:~:text=A%20renewable%20portfolio%20standard%20(RPS,as%20a%20renewable%20electricity%20standard) [<https://perma.cc/7JLJ-464E>] (last visited Oct. 10, 2020); *Renewable Energy Explained: Portfolio Standards*, U.S. ENERGY INFO. ADMIN., <https://www.eia.gov/energyexplained/renewable-sources/portfolio-standards.php> [<https://perma.cc/D7AP-Q8GJ>] (last updated Nov. 18, 2019).

fifteenth nationally in wind production,⁴⁰¹ Wyoming has significant unused wind production potential, but it also has a complicated, multi-layered legal framework, which makes it difficult to produce wind energy. Indeed, it is more difficult to produce wind energy in Wyoming than other kinds of energy.⁴⁰² For example, the permitting and siting process requires both “state and local approval with a right to a contested hearing.”⁴⁰³ Wyoming also has the highest wind generation tax in the country.⁴⁰⁴ Only two states in the nation have a wind production tax, and Wyoming has the highest.⁴⁰⁵ Wind projects in Wyoming require developers to participate in two permit application processes with “the Wyoming Industrial Siting Council (ISC) and the county commissioners in whichever Wyoming county the proposed project lies.”⁴⁰⁶ Wind farms in Wyoming must fill out a wind facility permit, called a 109 Permit.⁴⁰⁷ The application fee “cannot exceed .5% of the project or one hundred thousand dollars, whichever is less.”⁴⁰⁸ Wind facilities, argues Ben Reiter, are subject to the same permitting requirements as commercial radioactive waste facilities.⁴⁰⁹ The result is that wind developers need to “spend millions of dollars in upfront costs in preparing its application materials and participating in various public proceedings.”⁴¹⁰ Despite the fact that wind represents a real opportunity for the state to retool its economy in line with the Green New Deal, Wyoming’s regulatory scheme is dramatically constraining the state’s wind potential.⁴¹¹

401. Ben N. Reiter, *Blowing It: Why is Wyoming Failing to Develop Wind Energy Projects?*, 19 WYO. L. REV., 45, 49 (2019).

402. *Id.* at 51.

403. *Id.* at 51.

404. *Id.*

405. Cooper McKim, *The Window for Wyoming’s Wind Industry*, INSIDE ENERGY (Nov. 3, 2017), <http://insideenergy.org/2017/11/03/the-window-for-wyomings-wind-industry/>.

406. Reiter, *supra* note 401 at 51–52.

407. *Id.* at 52–53.

408. *Id.* at 54.

409. *Id.* at 52.

410. *Id.*

411. Wyoming produces a significant amount of energy from extractive industries such as coal, natural gas, and crude oil. Indeed, Wyoming has been the top coal producing state in the US since 1986 and produces approximately 40 percent of the US coal supply. *Id.* at 46. However, coal in Wyoming faces imminent collapse as the three largest coal producers in the state filed for bankruptcy. *Id.* at 46–47. The real competition for coal in Wyoming is not wind, however, but cheap natural gas. *Wyoming Coal*, WYO. STATE GEOLOGICAL SURV., <https://www.wsgs.wyo.gov/energy/coal> [<https://perma.cc/AH4P-JFJ7>] (last visited Feb. 28, 2020); E.A. Crunden, *Fiscal Collapse of Coal Towns Increasingly Likely*, *New Research Shows*, THINK PROGRESS (July 16, 2019), <https://thinkprogress.org/trump-coal-data-just-transition-green-new-deal-8718cc39df7e> [<https://perma.cc/894Q-LABK>]; Carl Segerstrom, *With Coal in Free Fall, Wyoming Faces an Uncertain Future*, HIGH COUNTRY NEWS (July 17, 2019), <https://www.hcn.org/articles/coal-with-coal-in-free-fall-wyoming-faces-an-uncertain-future> [<https://perma.cc/H62Z-T64J>].

2. Texas: Laissez Faire Approach Combining Strong Protection of Private Property with Minimal Regulation of Wind Energy

As noted above, Texas is a national leader in wind energy. Obviously, all wind projects require federal certification from a variety of agencies, including the EPA, the Forest service, the Federal Aviation Administration, and possibly other agencies. Yet, Texas represents the rare case of a state with a significant wind energy footprint yet minimal state-wide regulation of the industry.⁴¹² Texas generally lacks state-wide legislation regarding wind turbine siting.⁴¹³ However, Texas does have regulations regarding decommissioning, and requires that wind power facilities clear, clean and remove wind turbines, greases or oils, substations, tower foundations, and cables.

3. California: Creating Comprehensive Regulations Which Focus on Environmental and Residential Concerns of Wind Facilities While Supporting Renewable Energy

California has a detailed, and careful state-wide regulatory approach, which encompasses wind as well as other sources of energy. The CEQA requires local governments to analyze wind generator environmental impacts.⁴¹⁴ California enacted Chapter 562 in 2002 to promote the use of wind energy systems and to harmonize regulatory restrictions imposed by local governments on the use of wind energy.⁴¹⁵ The legislature determined that the regulation of small wind energy systems was a matter of statewide concerns calling for uniform standards.⁴¹⁶ Chapter 562 restricts “land use controls to levels no greater than those established by the state.”⁴¹⁷ As a result, local controls on wind in California can be less restrictive than state controls, but not more restrictive.⁴¹⁸ Rural areas are limited to towers no higher than sixty-five feet on parcels less than five

412. See Abby Coufal, *The Case for Regulating Siting of Wind Turbine Farms in Texas*, 19 TEX. TECH. ADMIN. J. 175-76 (2017).

413. *Id.*; see also 16 TEX. ADMIN. CODE § 25.174 (West, Westlaw through 2019 Reg. Sess.) (establishing competitive renewable energy zones); TEX. UTIL. CODE ANN. § 301.0001 (West, Westlaw through 2019 Reg. Sess.) (definitions relevant to wind power facilities); *Id.* § 301.0004 (West, Westlaw through 2019 Reg. Sess.) (required agreement provisions on facility removal).

414. CAL. PUB. RES. CODE § 21100(a) (West, Westlaw through Ch. 33 of 2020 Reg. Sess.).

415. CAL. GOV'T CODE §§ 65100-65107, 65893-65899 (West, Westlaw through Ch. 33 of 2020 Reg. Sess.).

416. Shane, *supra* note 14, at 408.

417. *Id.*

418. *Id.*

acres in size.⁴¹⁹ The small wind-energy system must be set back at least thirty feet from the property line, and the noise emitted by the system must be limited to sixty decibels.⁴²⁰ If the parcel comprises more than five or more acres, the locality must allow tower heights of eighty feet or more.⁴²¹ Counties are authorized to adopt an ordinance that provides for the installation of wind generators 5 MW or smaller, conditioned on maximum restrictions for tower high, parcel size, setbacks, public notice and noise level.⁴²² The state has established that minimum setbacks can be no further from the property line than the system height. “The small wind-energy system must also comply with California’s building codes, the National Electric Code, and Federal Aviation Administration requirements.”⁷⁴²³ Equally friendly for local and citizen stakeholders, however, is the fact that California allows local agencies to set standards for required notice.⁴²⁴

4. Oklahoma: An Emerging Regulatory Approach after Years of Laissez-Faire

For many years, wind energy in Oklahoma and other states was basically not regulated at all. The first Oklahoma state-wide regulation was put in place in 2011.⁴²⁵ Until 2011, wind farms were not regulated by the Oklahoma Department of Environmental Quality or the Oklahoma Corporation Commission.⁴²⁶ One particularly challenging aspect of wind energy is creating guidelines for care and diligence in siting wind energy facilities.⁴²⁷ This resulted in an environment where safety, health, and environmental concerns were not addressed as more and more wind farms began to be built.⁴²⁸

419. *Id.* at 409.

420. *Id.*

421. *Id.* at 410.

422. Kahn & Shields, *supra* note 372.

423. Shane, *supra* note 14, at 410.

424. *Id.*

425. Oklahoma Wind Energy Development Act, 17 OKLA. STAT. ANN. tit. 17, § 160.11–160.22 (West, Westlaw through Sept. 1 of 2020 2d Reg. Sess.).

426. *Id.*

427. Freeman & Kass, *supra* note 30, at 44.

428. Wind energy is expanding in Oklahoma, and Oklahoma is an important state in terms of wind energy generated. Several wind farms are under construction in the state. According to National Public Radio, Oklahoma politicians and commerce officials aim to make the state a hub for manufacturing turbines and towers. Wind energy may be an important job creator for Oklahoma. *Wind Energy*, STATEIMPACT OKLA., [https://perma.cc/5HJT-BYRZJ](https://stateimpact.npr.org/oklahoma/tag/wind-energy/#~:text=Wind%20energy%20is%20expanding%20in,capacity%2C%E2%80%9D%20AWEA%20data%20show) (last visited Oct. 18, 2020). The Oklahoma State Legislature has found that “Oklahoma’s wind energy resources are an important asset for the continued

In Oklahoma, owners of new wind energy facilities must submit a notification of intent to build with the Corporation Commission.⁴²⁹ Owners of new wind facilities must also submit copies of the notification to the county commissioners of any counties in which the facility will be located and the governing bodies of any municipalities (if any) in which the facility will be located.⁴³⁰ The notification to the Corporation Commission must be submitted within 6 months of the initial filing of commencement of construction with the Federal Aviation Administration (FAA).⁴³¹ In addition, the owner of the wind energy facility shall submit copies of the notification with the board of county commissioners of every county in which all, or a portion of the wind energy facility is to be located within 24 hours of filing with the Commission.⁴³² Wind operators must also notify oil and gas operators working on the surface estate, publish a notice in a newspaper, and hold a public meeting.⁴³³ Oklahoma has also promulgated thoughtful regulations with regard to decommissioning.⁴³⁴

VI. WIND OF CHANGE:⁴³⁵ HOW SHOULD WE REGULATE?

For wind energy to reach its full potential, it will require the assistance—and discipline—of regulation in order to win the trust of its ultimate stakeholders—citizens. In states with low levels of regulation, the permitting of wind projects should be conducted at both the state and

economic growth of the state and for the provision of clean and renewable power to the state and the nation as a whole.” 17 OKLA. STAT. ANN. tit. 17, § 160.12 (West, Westlaw through Sept. 1 of 2020 2d Reg. Sess.). The legislature further found that “Promotion of the development of wind energy resources is important to the economic growth of the state.” *Id.* As much as 14.8% of the electricity generated in Oklahoma came from wind-power in 2013. *Id.* By 2016, 28% of the electricity generated in Oklahoma came from wind. As of 2018, Oklahoma ranked second in the nation for installed wind capacity. Rhett Morgan, *Corporation Commission: Oklahoma Ranks Second in Nation in Wind Generation*, TULSA WORLD (Jan. 10, 2020), https://tulsaworld.com/business/corporation-commission-oklahoma-ranks-second-in-nation-in-wind-generation/article_0ed7d583aab05279a8244bd5b0483d9e.html#:~:text=The%20Corporation%20Commission%20also%20reported,number%20of%20installed%20wind%20turbines [https://perma.cc/4UQU-55DL]. The wind industry employs roughly 9000 Oklahomans. Megan Potts, United States v. Osage Wind, LLC; *Wind Energy Being Blown Away by New Rules?*, 4 OIL & GAS, NAT. RES., & ENERGY J. 63, 63 (2018).

429. 17 OKLA. STAT. ANN. tit. 17, § 160.21 (West, Westlaw through Sept. 1 of 2020 2d Reg. Sess.).

430. *Id.*

431. *Id.*

432. *Id.*

433. *Id.*

434. See OKLA. STAT. tit. 17, § 160.14 (West, Westlaw through 2d Reg. Sess.).

435. SCORPIONS, *Wind of Change*, on CRAZY WORLD (Vertigo Recs. 1990); BETTE MIDLER, *Wind Beneath My Wings*, on BEACHES: ORIGINAL SOUNDTRACK RECORDING (Atl. Recs. 1989).

local level.⁴³⁶ Ten states have adopted model ordinances which detail local land use regulations, considerations in wind siting, and examples of local government actions.⁴³⁷ Model ordinances discuss 1) system height; 2) setbacks from neighboring inhabited dwellings and property lines; 3) overhead power lines; 4) access to prevent unauthorized climbing; 5) signage; 6) compliance with building codes; 7) compliance with FAA regulations; 8) compliance with electric codes; and 9) utility notifications, antennas, and decommissioning.⁴³⁸ Yet more is needed to have truly effective state-wide regulation. Ideally, wind regulation should be determined by a state-level agency. Placing regulatory authority in such a state-wide agency would ensure that the agency has expertise in regulation of wind, and a more impartial technocratic perspective than counties, or courts. In addition, ensuring that permitting authority resides at the state level will ensure fairer evaluations of NIMBY behavior, environmental matters, as well as balancing residential concerns against state policies in support of renewable energy.⁴³⁹

Regulations are a good vehicle for ensuring that wind projects which may generate significant resistance are stopped before they start. Land use regulations can prospectively contemplate issues such as siting and planning processes. In addition, whereas nuisance actions leave land use decision-making to the courts, regulations can place wind farm land use decisions in the hands of a state regulator with the necessary scientific and technical expertise to handle complex land use problems.⁴⁴⁰ I argue that states should provide basic guidelines on matters such as siting, setbacks, tower height, noise, decommissioning, and permitting, while allowing localities to make appropriate adjustments to ensure that local citizens have input, and the special characteristics of local ecosystem are considered.⁴⁴¹

436. Klass, *supra* note 11, at 67 (urging scholars and policymakers to keep sight of the pollution control and permitting aspects of wind energy development).

437. Kahn & Shields, *supra* note 372.

438. *Id.*

439. See Coufal, *supra* note 412, at 193.

440. *Environmental Land Use Regulation*, *supra* note 56, at 1585 (noting that nuisance actions leave land use decision making to the courts).

441. See, e.g., Brian Dietz, *Turbines v. Tallgrass, Law Policy and A New Solution to Conflict over Wind Farms in the Kansas Flint Hills*, 54 U. KAN. L. REV. 1131 (2006).

*A. Elements of A Successful Model Regulatory Scheme for Wind Energy*⁴⁴²

There are some minimum elements that any successful state-wide scheme to regulate wind should consider. First, communities must distinguish between utility scale wind projects—which have a capacity measured in kilowatts, and which may include dozens or hundreds of turbines—versus small scale systems, and non-utility scale wind systems which may include larger systems or micro systems. Prohibited applications should be clearly listed as prohibited, whereas larger, yet non-utility scale systems should most likely be listed as conditional or permitted, to minimize nuisances and ensure public comment.⁴⁴³ As the review of litigation above indicates, noise was a significant factor in both state and federal litigation challenging wind turbines.⁴⁴⁴ Accordingly, state-wide regulations should include a public process for handling both infrasound and audible noise concerns. Further, like the California statute, state regulations should contemplate both a floor which specifies the minimum standards which wind projects should meet, as well as a provisional ceiling, which prevent counties from banning all wind projects unless there is a compelling reason, such as safety, violation of federal law under the MBTA, the MMPA, or the ESA. The section below details some areas that need increased attention in future statewide regulatory schemes.

1. Take a Firm Position on Decommissioning

On the whole, decommissioning has been under-regulated.⁴⁴⁵ This Article argues that the best practice with regard to decommissioning is modeled by states such as Oklahoma, Oregon and Illinois. These states have enacted thoughtful and comprehensive decommissioning regulations that lay out specific requirements for decommissioning and that also require the posting of a bond, or that operators post a decommissioning security for wind farms.⁴⁴⁶ California needs to improve its decommissioning requirements, and ensure that financial assurances by wind farms are adequate, and also that wind farms are responsible for removing wind farm installations and restoring the land. In addition, no

442. A future version of this article will spend more time discussing sample state-wide regulations.

443. *Minnesota Local Government Wind Toolkit*, GREAT PLAINS INST. 2 (July 2017), <http://www.macpza.org/2017WindModelOrdinanceFinal.pdf> [<https://perma.cc/LRH2-L3VZ>].

444. See Bliss, *supra* note 100, at 535–36.

445. Stripling, *supra* note 151, at 140.

446. *Id.* at 141.

states seem to be actively regulating recycling of wind blades. This is an important area to improve, in terms of reducing negative impacts of wind energy on the environment. Further, this represents a potential business opportunity for wind entrepreneurs or local residents. Strong regulation in the area, coupled with the kind of generous incentives which started the wind boom in the first place, would kick start a decommissioning and recycling industry in this area.

2. Siting and Setbacks

Ideally, siting and setback decisions should be handled at the state level. Areas requiring setbacks include residential homes, distinguishing between homes of people who are financially participating in the project and those who are not. Wind companies would be wise to consider financially remunerating non-participating households a regular incentive payment to reduce NIMBY resistance. A minimum setback for residential purposes should probably be a mile for utility scale wind farms. In more densely populated areas, setbacks as much as three miles may be desirable. This is a good example of an area where a regulatory floor and ceiling may be desirable. A regulatory floor at the state-wide level will ensure that utility scale wind projects do not overly encroach on residential areas, whereas a regulatory ceiling at the state-wide level will allow micro wind projects in urban areas while suppressing NIMBY sentiments. By creating a floor and a ceiling, states can allow reasonable wind project development while also allowing flexibility to design projects appropriate to the particular local context.⁴⁴⁷

More importantly, it is crucial that state-wide regulations consider the impact of wind projects, whether utility scale, or non-utility scale, on designated conservation or wildlife areas, or wetlands, whether they are located in endangered species areas, or critical habitat areas or simply delicate ecosystems. In addition, siting and setback decisions in such delicate areas should require assessment by the State Department of Environmental Quality. Setback requirements can actually improve energy efficiency because wind turbines placed too close together can reduce energy production.⁴⁴⁸ For example, in Colorado, both the local and state government permit the siting of wind facilities.⁴⁴⁹ “In addition to its preferred alternative within its permit application, the public utility or

447. In addition, setbacks should consider property lines and road rights of way.

448. *Klass, supra* note 11, at 103 (observing that wind turbines placed too close together can have significant negative impacts on energy production and also stating that setback requirements may not be adequate to avoid wind access conflicts).

449. COLO. REV. STAT. ANN. § 29-20-108 (West, Westlaw through 2020 Reg. Sess.).

power authority shall consider and present reasonable siting and design alternatives to the local government or explain why no reasonable alternatives are available.⁷⁴⁻⁵⁰

3. Regulate Design, Siting and Setbacks in Migratory Pathways to Reduce Avian and Bat Mortality

Technologically, wind power is fairly malleable, which means it is comparatively easy and affordable—compared to say coal mines or oil rigs—to reconfigure projects spatially and adjust issues such as siting and setbacks. Architectural adjustments, height constraints, and path configuration can all be adjusted to reduce the negative externalities of wind energy. For example, avian mortality may be solved in part by designing wind farms in a manner which avoids migratory pathways. The Department of Energy notes “computer models can accurately predict when, where, and to what degree this problem will occur, so wind project developers can mitigate this impact during the site selection process. In addition, many local ordinances incorporate language addressing shadow flicker to minimize any potential impact on neighbors.”⁷⁴⁻⁵¹

Careful decisions regarding siting may dramatically reduce avian and bat fatalities caused by wind facilities. The USGS states some of these fatalities may be avoided by adding dim, flickering ultraviolet light that only bats can see, or to have turbines emit high frequency sounds that interfere with bat echolocation during migration season.⁴⁵²

4. Protect Native American Interests in Sacred Viewscapes and Consider Residential Concerns Regarding Aesthetic Claims

Aesthetic claims represent one of the more difficult aspects regarding wind farm regulations. Some aesthetic claims are purely NIMBY attempts to limit wind farm development. For those who have driven west through the Staked Plains of Texas, or have viewed installations in the California hills, wind farms can have an otherworldly beauty. By contrast, in delicate ecosystems, or ecosystems in which windswept vistas are a key element of the ecosystem or where tourism is a fundamental consideration, such as the Kansas Tallgrass Prairie, aesthetic considerations demand careful attention. State-wide regulations should particularly consider scenic river

450. *Id.* § (4)(b).

451. *Wind Energy Projects and Shadow Flicker*, OFF. OF ENERGY EFFICIENCY & RENEWABLE ENERGY, <https://windexchange.energy.gov/projects/shadow-flicker> [<https://perma.cc/LTH8-AQL5>].

452. *Renewable Energy and Wildlife Conservation, Fact Sheet 2016-3067*, *supra* note 147.

bluffs, designated scenic byways, and protected view sheds. American Indians have their own special concerns regarding landscape views that have cultural or religious significance. Chief Standing Bear of the Osage Nation has observed that the horizon is an important spiritual element for the Osage, and that a clear, unobstructed view of the horizon is essential to allow seeing the gates of heaven.⁴⁵³ The Wampanoag Tribe of Gay Head (Aquinnah) worked to protect the Nantucket Sound viewscape from the adverse impacts of the Cape Wind Energy Project.⁴⁵⁴ Accordingly, state regulations should carefully consider claims of aesthetic harms, but also respond with a thorough balancing test that balances such claims against other environmental and economic concerns.

5. Expand and Emphasize Stakeholder Involvement to Prevent and Address Risk

The traditional role of environmental land use regulation focused on protecting natural ecosystems, controlling pollution and other environmental spillovers.⁴⁵⁵ In the wind context, land use regulation needs to continue to consider protecting ecosystems and preventing environmental spillovers, but regulation should also try to reduce or ameliorate “social” spillovers that make residents reluctant to live near wind farms.

By adding procedural components to regulations, state legislatures can ensure that affected stakeholders have some input into key decision-making junctures. The California cases reviewed above are good examples of how CEQA allows vigorous public participation and input, and also helps to ensure that County approval boards have all the expert technical and scientific information they need to make thoughtful decisions regarding wind farm placement. William Buzbee reminds us that state governments provide venues in which citizens and stakeholders can nudge governments and corporate entities to improve.⁴⁵⁶ Such input is crucial in the wind sector. Resident friendly development of wind power can reduce the NIMBY problem. If wind farms can be configured to reduce negative externalities, then residents are less likely to resist increased development.

States should look to NEPA for insight into how to design their

453. Carmack, *supra* note 199, at 155.

454. Allison M. Dussias, *Room for a (Sacred) View? American Indian Tribes Confront Visual Desecration Caused by Wind Energy Projects*, 38 AM. INDIAN L. REV. 333, 336–37 (2013).

455. *Environmental Land Use Regulation*, *supra* note 56, at 1579.

456. See William W. Buzbee, Preemption, *Hard Look Review, Regulatory Interaction, and the Quest for Stewardship and Intergenerational Equity*, GEO. WASH. L. REV. 1521, 1574 (2009).

regulations. NEPA requires the filing of an environmental impact statement for any federal or federally assisted development project which will have a significant impact on the environment.⁴⁵⁷ Such requirements at the state level may be useful to ensure that wind projects are appropriately configured. Thus, state level NEPA requirements could require environmental impact statements for any significant state project and for some private major development projects. While state NEPA statutes have shortcomings—by themselves, they are not sufficient to serve the functions of land use planning—they do impose procedural requirements which contemplate environmental consequences and open such actions to public comment and scrutiny before approving permits, licenses, or developments.

As Tom Soto points out, closer community consultation results in more effective state-wide laws and regulations.⁴⁵⁸ In addition, community consultation reduces conflict by addressing concerns before projects are installed. Additionally, Soto observes, a close community consultation can result in customized and balanced wind portfolios rather than massive undifferentiated utility-scale projects. This customization of installations to local needs means portfolios could include smaller wind projects (including home wind turbines and smaller turbines), take advantage of local knowledge (crucial for accounting for variables such as bird corridors, aesthetic tastes, and land use), and negotiation over the placement, setback, and timing of installation operations. Thus, closer community consultation allows projects to consider residential and tribal impacts, mitigate social conflict while increasing net local social utility, enhance local buy-in, and thereby create increased feasibility for renewable energy sources at a time when their value is viewed skeptically.

6. Involve the State Department of Environmental Quality in Wind Permitting Decisions

In terms of model approaches, both California and North Carolina involve their departments of environmental quality in wind projects.⁴⁵⁹ As a review of the litigation above indicates, California has a NEPA-like process (CEQA) which requires consideration of environmental impacts.⁴⁶⁰ Colorado considers reasonable siting and design alternatives

457. 42 U.S.C. § 4332.

458. Hsu, *supra* note 123 (observing “[t]hese large projects enter at their own peril without involving the community.”).

459. Wind Energy State Information, *supra* note 428.

460. CAL. PUB. RES. CODE § 21100(a) (West, Westlaw through Ch. 372 of 2020 Reg. Sess.).

in permit application.⁴⁶¹ It seems highly desirable to ensure that state departments of environmental quality are involved in regulatory permitting and licensing decisions regarding utility scale wind projects in particular, since such state department are repositories of technical expertise relevant to these licensing decisions.

VII. CONCLUSION

Court cases against wind companies have utilized several disparate theories and raised numerous claims. Some of the most popular claims against wind energy installations in the West and the Great Plains have included challenges of problems including noise, health, aesthetic problems, and wildlife protection (including birds and bats) and Native American permitting concerns. Cases have been brought in both federal and state court against “shadow flicker,” noise, ice throw, and proximity to neighborhoods, but as a general rule these actions have not been effective west of the 100th Meridian, with the notable exception of the Flint Hills case in Kansas. Yet, this Article argues that litigation is not the preferred tool to regulate wind. Litigation actions against wind energy are piecemeal, one-project-at-a-time, post hoc propositions. In response, judges are reluctant to legislate from the bench, and justifiably so. Instead, the proper locus of regulation should reside at the state level.

States with minimal regulatory standards, like Texas, have different negative externalities than California, which has a stringent regulatory framework for wind energy that comprises environmental concerns, and residents’ concerns, among other matters. Uneven regulation can and will impede sustainable growth in the wind sector. Instead, energy decisions deserve high level involvement from key public and private stakeholders. Such involvement results in better decision-making on issues like siting and setbacks, which will reduce resistance to wind energy projects. A proper level of regulation will permit projects to develop and adapt to local priorities, create wind projects that are more suitable for regional and local conditions, as well as to more directly respond to those stakeholders who are left to a disadvantage.

461. COLO. REV. STAT. ANN. § 29-20-108(4)(b) (West, Westlaw through 2020 Reg. Sess.).

