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Sustainable Development Arrested by U.S. Criminal Law

SUSTAINABLE DEVELOPMENT ARRESTED BY U.S. CRIMINAL LAW

STEVEN FERREY*

In the United States, it is a criminal felony offense for killing, even unintentionally, any one of more than 1000 species of protected birds. If a perpetrator company violates this law, officials of the company can be sent to jail for up to two years and be fined up to one-quarter million dollars per bird killed. Over the past decade, wind power has grown to be the most-installed energy source in the United States and will hold that top position going forward. Wind power in the United States now kills an estimated several hundred thousand of these birds that are protected by strict federal criminal statutes every year. As wind power's small three percent share of the energy market multiplies rapidly in the next decades, and as the United States moves to renewable energy as the keystone of its mobilization against climate change and global warming, this bird mortality number likely will increase commensurately.

This Article examines several emerging legal conflicts between mitigation of global warming and criminal prosecution of sustainable energy development through three federal species protection statutes and an international treaty. Wind turbines indisputably are one of the premier technologies providing the world a chance to mitigate global climate change before there are irreversible, dire effects on the world environment, which could include bird mortality.

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This Article contrasts the significant change in executive branch policies between the Obama and Trump administrations, now increasing the number of felony statute bird disputes under U.S. law.

Despite the significant number of bird mortalities linked to operating wind turbines, as of this publication, there is no court decision ever construing prosecution of, or criminal penalties applied to, any wind turbine operation that kills protected bird species. Some U.S. Senators have accused the executive branch of a lack of equal enforcement of the laws. Sustainable energy law now confronts criminal law in a case of legal first impression. This Article analyzes, in detail, analogous court decisions applied to other technologies creating an uneven legal foundation on which wind turbines are built. This Article analyzes conflicting case law regarding the mens rea requirement for criminal felonies in the deployment of sustainable energy development, original congressional intent construed in the courts, and recent court decisions restricting executive branch discretion in such environmental matters. It concludes by comparing the relative risk of different technologies to our environment, in the context of the current climate change response imperative and the role of courts to resolve these conflicts now of first impression.

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I. CRIMES IN THE WIND

Killing any one of more than 1000 species of protected birds is a criminal felony offense in the United States that can send officials of the perpetrator company to jail for up to two years and impose a fine up to a quarter million dollars per dead bird. Wind power rapidly ascended as the now most-deployed energy source in the United States during the past decade and will hold the top position going forward.¹ Yet, wind power in the United States kills several hundred-thousand of these treaty-protected birds every year. Sustainable energy development can trigger criminal law liability. “Sustainable energy” and “criminal law” violations aren’t normally mentioned in the same sentence. New wind technology now must navigate legally uncharted and conflicted territory at a time when recent Supreme Court decisions are restricting executive branch discretion.

This Article breaks new legal ground analyzing the direct legal confrontation between three federal criminal species protection statutes in U.S. law and an international treaty, with new sustainable wind technology killing an estimated several hundred thousand federally protected birds annually.² A significant change between the Obama and Trump administrations’ legal practices creates additional friction regarding this legal question of first impression on felony conduct. Existing principles of constitutional separation of powers and *Chevron*³ deference in recent opinions are being restricted and reshaped by the Supreme Court. This Article critically examines relevant precedent

1. U.S. DEP’T OF ENERGY, 2011 WIND TECHNOLOGIES MARKET REPORT 3–4, 6 (2012), <https://www.nrel.gov/docs/fy12osti> [<https://perma.cc/EL9E-YTF8>].

2. *Threats to Birds*, U.S. FISH & WILDLIFE SERV., <https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php> [<https://perma.cc/7LCG-DA9M>].

3. *Chevron, U.S.A., Inc. v. NRDC*, 467 U.S. 837 (1984).

regarding the mens rea requirement for criminal felonies in the deployment of sustainable energy development and congressional intent. In addition, it discusses recent Supreme Court decisions restricting executive agency discretion and potential defenses of first impression to criminal prosecution.

Three federal bird protection statutes—the Migratory Bird Treaty Act (“MBTA”),⁴ the Endangered Species Act (“ESA”),⁵ and the Bald and Golden Eagle Protection Act (“BGEPA”)⁶—protect more than 1000 bird species and mammals, delegating to federal agencies the authority to criminally prosecute individuals and corporations that “take” or kill a single protected bird. The penalties for a misdemeanor under the MBTA extend to up to six months imprisonment and a \$15,000 fine for each violation,⁷ and for a felony violation, impose a penalty of up to two years imprisonment and a \$250,000 fine.⁸ Penalties under the BGEPA include two years imprisonment and a \$10,000 fine, with sanctions doubled where the violator is an organization or company.⁹ The oldest of these statutes is an international treaty to which the United States has been a party for a century.¹⁰ With an estimated several hundred thousand protected birds killed by wind turbines annually in the United States,¹¹ each killing, unless legally excused, includes the possibility of jail time for project owners.¹²

Sustainable energy, criminal law; direct legal conflict, legal first impression. This unresolved legal conflict implicates the separation of powers and a long-established foundation of American law: the *Chevron* doctrine of executive branch court deference. This Article analyzes the law, as it has been compelled to adapt to new sustainable technology and the evolving science surrounding climate change and sustainable power; I develop criminal law defenses for wind project development.

4. 16 U.S.C. §§ 703–712 (2012).

5. 16 U.S.C. § 1532(1)–(21).

6. 16 U.S.C. §§ 668, 668a–c.

7. 16 U.S.C. § 707(a)–(b).

8. 18 U.S.C. § 3571(b); *Federal Laws that Protect Bald Eagles*, U.S. FISH & WILDLIFE SERV. MIDWEST REGION, <https://www.fws.gov/midwest/eagle/protect/laws.html> [<https://perma.cc/EY3E-ZUBC>] (last updated Mar. 4, 2019).

9. 16 U.S.C. § 668(a); *Federal Laws that Protect Bald Eagles*, *supra* note 8.

10. 16 U.S.C. § 703.

11. The 2017 bird mortality rate due to wind turbine collisions ranges from a minimum of 140,438 to a maximum of 327,586 with a median estimate of 234,012 birds killed annually. *Threats to Birds*, *supra* note 2.

12. 16 U.S.C. §§ 668, 668a–c, 703–712, 1532(1)–(21).

Section II examines the transformation of wind technology as a sustainable power source. It explores the science and engineering principles for harnessing wind power to generate renewable electricity, the rapidly increasing importance of electricity in the American economy, and wind power as a fulcrum to leverage coherent policy responses to accelerating climate change. Section II also analyzes the shifting base of effective legal regulation, as one quarter of U.S. states deregulated their retail power sectors. New, lower-cost, independent, sustainable non-utility power projects now are the norm, eclipsing new utility power generation projects.¹³ Section II further examines in detail exactly how modern wind turbines increase avian and mammal mortality and mitigation.

Section III dissects and analyzes each of the three critical U.S. laws that protect birds and mammals from harm or death by imposing criminal penalties, jail time, and large fines: The MBTA,¹⁴ the ESA,¹⁵ and the BGEPA.¹⁶ While there are important legal distinctions among these statutes, collectively, they create strict liability felony crimes where a wind turbine operator kills, even unintentionally and indirectly, almost anything that flies.

Section IV analyzes, from both legal and policy perspectives, how these strict liability criminal statutes are being applied to burgeoning wind power development by:

- Comparing wind turbine bird mortality to other causes of bird mortality;
- Contrasting Congress's original legislative intent with agency prosecutorial discretion;
- Charting exemptions from prosecution and Equal Protection concerns;
- Analyzing who has standing to initiate suit and whether there is a private right of action;
- Determining whether the prosecution must prove *mens rea*¹⁷ for these criminal felonies; and
- Examining court decisions involving other analogous activities that kill birds.

13. *See infra* Section II.A.2.

14. 16 U.S.C. §§ 703–712.

15. § 1532(1)–(21).

16. §§ 668, 668a–c.

17. *See infra* Section IV.B.1.

The federal government issued a new set of government guidelines, which potentially provide a legal “safe harbor” for wind project developers and operators, analyzed in Section IV. This Article concludes by setting forth legal defenses of wind turbine developers and operators to criminal liability when bird mortality unintentionally results, as now occurs approximately several hundred thousand times annually.¹⁸ Next, we turn to how the law is adapting to changing power technology.

II. HUMAN EVOLUTION, POWER, LEGAL REGULATION

A. *Power, Technology, and Law Evolve*

New technology, new power, new conflict. New zero-carbon emission renewable energy technology is the key technology whose implementation can effectively address and mitigate rapid climate change.¹⁹ However, this new technology’s operation conflicts with requirements of a century of existing U.S. law protecting endangered and migratory animals. How will U.S. law address and resolve this current legal conflict as to new technology and law?

Electric energy is the fundamental technology essential to power the developed twenty-first century America²⁰ and the foundation of the modern economy.²¹ Electric power has a delivered value in the United States of approximately \$390 billion annually,²² exceeding the total amount of corporate income taxes collected in the United States, even *before* the corporate tax rate was dramatically reduced in

18. *Threats to Birds*, *supra* note 2 (estimating that there is a median of 328,000 birds killed annually).

19. *See infra* Section II.A.3.

20. MICHAEL BRUCH ET AL., POWER BLACKOUT RISKS: RISK MANAGEMENT OPTIONS 4 (Markus Aichinger ed., 2011), <https://www.thecroforum.org/wp-content/uploads/2012/09/CRO-Position-Paper-Power-Blackout-Risks-1-1.pdf> [<https://perma.cc/9SPM-ZPHG>].

21. STEVEN FERREY, ENVIRONMENTAL LAW: EXAMPLES & EXPLANATIONS 580–81 (7th ed. 2016).

22. *Revenue of the Electric Power Industry in the United States from 1970 to 2017*, STATISTA (June 7, 2019), <https://www.statista.com/statistics/190548> [<https://perma.cc/Q9VY-6AES>] (showing \$390.34 billion in utility power sale revenue in 2017). The average delivered price in 2011 of all electricity nationwide was \$0.0966/kilowatt hour (Kwh) and \$0.1102/Kwh for residential customers. *See Average Retail Price of Electricity to Ultimate Customers by End-Use Sector, by State, Year-to-Date through February 2011 and 2010*, PUB. POL’Y INST. OF N.Y. STATE, INC., <http://ppinys.org/reports/jtf/2011/employ/average-retail-price-of-electricity2010-11.htm> [<https://perma.cc/5WM4-S6DR>].

2018.²³ Engineers named the transmission network as the twentieth century's most critical engineering accomplishment. The law tightly controls its operation.

According to a list summarizing humanity's greatest inventions,²⁴ the second most important invention in human history is electric power, which was harnessed for the first time less than 150 years ago.²⁵ Placing this in historical perspective, the Earth itself has existed for an estimated 4.5 billion years, and the use of mammals for power as draft animals only appeared a few thousand years ago.²⁶ Energy, as a means of magnifying human efficiency within the environment, was only discovered and used in the last few thousand years of the approximate 200,000 years that human beings and their predecessor species are estimated to have been on the Earth.²⁷ Windmills were invented late in pre-

23. *Historical Amount of Revenue by Source*, TAX POL'Y CTR., <https://www.taxpolicycenter.org/statistics/amount-revenue-source> [<https://perma.cc/W7VJ-6SF2>].

24. James Fallows, *The Fifty Greatest Breakthroughs Since the Wheel*, ATLANTIC MONTHLY, Nov. 2013, at 56, 64 (arguing that only the moving-type printing press ranked as more important, and further adding that the movable-type printing press is now significantly replaced by electronic media for print). Electricity is the signature technology of modern civilization. *Id.* at 58.

25. STEVEN FERREY, LAW OF INDEPENDENT POWER § 2:2 (48th ed. 2019). Many modern inventions utilize electricity and have no substitutes to operate in any other modes. Electricity is essential to operate seven other "top fifty" inventions of all time: the Internet, computers, air-conditioning, radios, televisions, telephones, and semiconductors. *See* Fallows, *supra* note 24, at 68.

26. VACLAV SMIL, ENERGIES: AN ILLUSTRATED GUIDE TO THE BIOSPHERE AND CIVILIZATION 105 (1999); *see also* C. Stuart Hardwick, *How Do We Know the Earth is 4.5 Billion Years Old?*, FORBES (Feb. 7, 2017), <https://www.forbes.com/sites/quora/2017/02/07/how-do-we-know-the-earth-is-4-5-billion-years-old> [<https://perma.cc/P2NK-23KW>]. Land plants appeared 475 million years ago, and mammals appeared 200 million years ago. *The 25 Biggest Turning Points in Earth's History*, BBC, <http://www.bbc.com/earth/bspoke/story/20150123-earths-25-biggest-turning-points> [<https://perma.cc/C5B3-QW7N>]. Humans have existed for only 200,000 years of the Earth's history. *Id.* The rise of early civilizations was related to the domestication of cattle, oxen, and water buffalo, which made it possible to cultivate fields with primitive plows. SMIL, *supra*, at 108–09. When cattle and horses were ultimately harnessed to plows, they provided the ability to do deep plowing in heavier soils as well as threshing, oil extraction, and lifting groundwater for agricultural irrigation and drinking. *Id.* at 110.

27. *The 25 Biggest Turning Points in Earth's History*, *supra* note 26; *see also* Andrew C. Scott, *When Did Humans Discover Fire? The Answer Depends on What You Mean By 'Discover'*, TIME (June 1, 2018), <https://time.com/5295907/discover-fire> [<https://perma.cc/WR3B-ND47>] (explaining that humans only learned to harness fire about 7000 thousand years ago).

industrial society, never supplanting human labor as the primary energy source, and originally made “marginal contributions” to mechanical energy for pressing, grinding, and milling.²⁸

Advancing beyond basic burning of wood and early use of wind power, the use of fossil fuels for energy has existed only for the most recent 200 years or less.²⁹ Fossil fuels are directly linked as a causative factor in rapid climate change.³⁰ The amount of global warming anthropogenic carbon dioxide (CO₂) emitted to the atmosphere has corresponded directly with the combustion of those fossil fuels.³¹ Energy use is also a function of recent population increase.³²

As to time: If human history were stretched along one mile, energy capture would only occur in the final one foot of this mile. In the final two inches of these 5280 feet, energy prime movers were invented to exploit the chemical energy in fossil fuels to produce steam for heating, transportation, and other industrial tasks. These inventions created the industrial age that quickly displaced the medieval windmill, which had first powered the final six inches of our mile-long human history.³³ Only in the final inch were oil and electricity harnessed.³⁴ Now, in the final fraction of an inch of this human history, this Article analyzes the

28. See SMIL, *supra* note 26, at 105–06.

29. *Id.* at 117–25, 133. The efficiency of the burning of these fuels was comparatively quite low. *Id.* at 118. Charcoal was the preferred fuel for smelting and processing metals, primarily steel, iron, and copper, because of its relatively high energy density. *Id.* Wood will not ignite when it has more than 67% moisture content and burns inefficiently when the moisture level is above 40%; even air-dried wood contains about 15% moisture. *Id.* Charcoal contains only trace amounts of moisture; its energy density is comparable to that of high-quality coal, composed of virtually pure carbon; and it is able to achieve very high temperatures in a smokeless manner. *Id.* Therefore, it can be used for firing bricks, tiles, and lime, as well as for smelting metals. *Id.* While charcoal was capable of greater energy density and higher temperatures, the production of charcoal in primitive kilns was only about 15–25% of the energy content of the wood used to make the charcoal. *Id.* Thus, as a derived form of energy, it shares similarities with electricity, which typically is derived from fossil, renewable, or nuclear power, with a significant loss of efficiency under the second law of thermodynamics.

30. *The Causes of Climate Change*, NASA, <https://climate.nasa.gov/causes> [<https://perma.cc/PT64-P3RE>].

31. *Id.*

32. David Funkhouser, *Population, Consumption and the Future*, COLUMBIA UNIV. EARTH INST.: STATE OF THE PLANET (Apr. 27, 2012), <https://blogs.ei.columbia.edu/2012/04/27/population-consumption-and-the-future> [<https://perma.cc/3C6B-RKVA>].

33. See SMIL, *supra* note 26, at 105–06.

34. *Id.*

current climate change-regulatory-renewable energy multi-level transition in fundamental power technology, governed by law.

1. *Climate change; more renewable power*

In the first technology transition, there was a relatively rapid transition to renewable energy in lieu of conventional coal-fired power. Much of this shift was augmented by significant concerns about climate change. After hundreds of years of significantly lower greenhouse gas (“GHG”) levels, they now have increased to more than 400 ppm and are climbing rapidly.³⁵ And the earth is warming and sea level is rising.³⁶ The United Nations International Panel on Climate Change 2014 report concludes that, in order to maintain world warming below an additional 2°C, there must be a 40–70% reduction of GHG emissions from 2010 levels by no later than 2050.³⁷

The Congressional Research Service concluded that during 2010, 78% of U.S. primary energy production could be attributed to fossil fuel sources.³⁸ Until the last handful of years, the U.S. electric system relied primarily on coal-fired technology resources: 406 U.S. coal-fired power plants produced about 95% of the coal-fired power in the United States, accounting for approximately half of total U.S. electricity production in 2009, which has diminished to less than one-third of electric power now.³⁹ In 2017, coal provided 27.2% of our nation’s electricity, while natural gas use had increased dramatically to supply 34.9%.⁴⁰ With carbon dioxide constituting 82% of all GHG

35. See *Global Carbon Dioxide Growth in 2018 Reached 4th Highest on Record*, NAT’L OCEANIC & ATMOSPHERIC ADMIN., <https://www.noaa.gov/news/global-carbon-dioxide-growth-in-2018-reached-4th-highest-on-record> [<https://perma.cc/VQP9-7CST>]; Pieter Tans & Ralph Keeling, *Trends in Atmospheric Carbon Dioxide*, NAT’L OCEANIC & ATMOSPHERIC ADMIN., <http://www.esrl.noaa.gov/gmd/ccgg/trends> [<https://perma.cc/2ZWA-F6FG>].

36. *Climate and Energy: Climate Calamity?*, WWF, http://wwf.panda.org/our_work/climate_and_energy [<https://perma.cc/6JJH-WMJ2>].

37. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2014 SYNTHESIS REPORT 20 (Rajendra K. Pachauri et al. eds., 2014), <https://reliefweb.int/report/world/climate-change-2014-synthesis-report> [<https://perma.cc/84FZ-GU5F>].

38. MOLLY F. SHERLOCK, CONG. RESEARCH SERV., R41953, ENERGY TAX INCENTIVES: MEASURING VALUE ACROSS DIFFERENT TYPES OF ENERGY RESOURCES 3 (2012), <https://www.hsdl.org/?view&did=722543> [<https://perma.cc/ZAX9-FN29>].

39. See *What Cost Energy? What Market Prices Fail to Reveal*, 22 ELECTRICITY J. 3, 3 (2009).

40. *Industry Data*, EDISON ELECTRIC INST., <http://www.eei.org/resourcesandmedia/industrydataanalysis/industrydata/Pages/default.aspx> [<https://perma.cc/T6SV-NLRR>]. Natural gas supplied 34.0%, nuclear energy produced 19.2%, hydropower

emissions in the United States, the electric sector of the economy's exceeding transportation, agriculture, industrial, and commercial and residential sectors of the economy in its emission of GHGs, climate change is primarily a power sector issue.

2. *Transition to independent wholesale power*

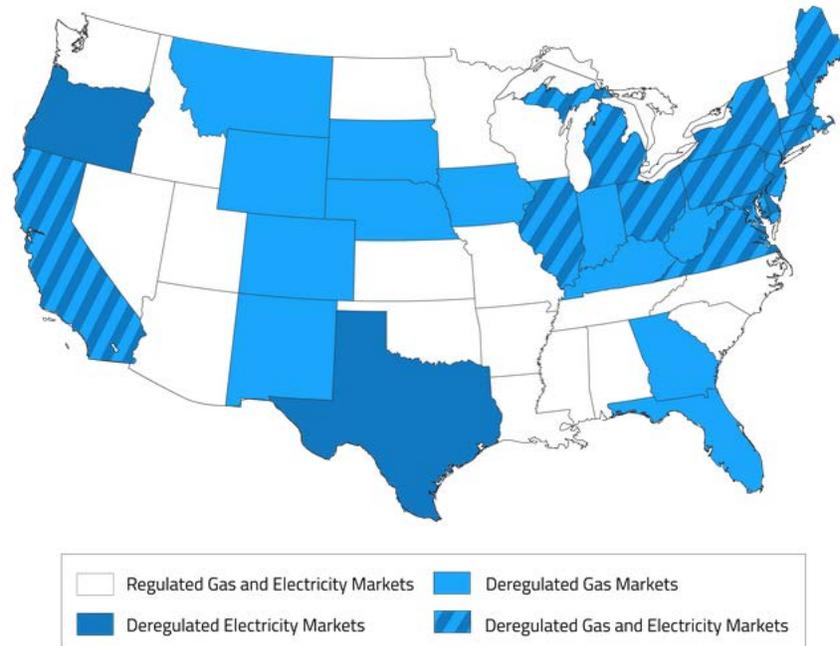
In the second regulatory level, during the past twenty years, sixteen states deregulated retail sale of power in their states.⁴¹ Several of these states, in order to spur competition, have excluded their regulated utilities from generation of power, having them divest their power generation assets and transition to purchasing their power wholesale from independent producers.⁴² In a significant number of these sixteen deregulated states, this resulted in the regulated monopoly utilities selling their power generation units to independent power companies.⁴³

provided 6.9%, and other renewable resources, such as geothermal, solar, and wind, provided 10.7% of electric power. *Id.*

41. *Map of Deregulated Energy States & Markets (Updated 2018)*, ELECTRIC CHOICE (2018), <https://www.electricchoice.com/map-deregulated-energy-markets> [<https://perma.cc/T89V-9VNW>].

42. STEVEN FERREY, *THE NEW RULES: A GUIDE TO ELECTRIC MARKET REGULATION* 238–39 (2000).

43. See U.S. DEP'T OF ENERGY, ENERGY INFO. ADMIN., *THE CHANGING STRUCTURE OF THE ELECTRIC POWER INDUSTRY 2000: AN UPDATE* 106 (2000).

Figure 1.⁴⁴ State Utility Deregulation

The majority of power generation facilities added each year now are constructed by independent power companies operating in the wholesale market that, pursuant to preemptive federal law, cannot be regulated by state energy regulatory authorities. The independent power companies produce more than the annual power supply added by the conventional regulated utilities, which still own the transmission and distribution networks.⁴⁵ In 2017, U.S. investor-owned electric companies accounted

44. *Map of Deregulated Energy Market (Updated 2018)*, *supra* note 41.

45. ELECTRIC ENERGY MARKET COMPETITION TASK FORCE, REP. TO CONGRESS ON COMPETITION IN WHOLESALE AND RETAIL COMPETITION MARKETS FOR ELECTRIC ENERGY 10 (Apr. 5, 2007). “In the 1970s, vertically integrated utility companies (investor-owned, municipal, or cooperative) controlled over 95 percent of the electric generation in the United States . . . [B]y 2004 electric utilities owned less than 60 percent of electric generating capacity. Increasingly, decisions affecting retail customers and electricity rates are split among federal, state, and new private, regional entities.” *Id.*; Steven Ferrey, *Sale of Electricity*, in *THE LAW OF CLEAN ENERGY: EFFICIENCY AND RENEWABLES* 217–18 (Michael B. Gerrard ed., American Bar Association Press, 2011); *see also Scheduled 2015 Capacity Additions Mostly Wind & Natural Gas; Retirements Mostly Coal*, U.S. ENERGY INFO. ADMIN. (Mar. 10, 2015), <https://www.eia.gov/todayinenergy/detail.cfm?id=20292> [<https://perma.cc/KH22->

for only 37.8% (1,516,629 GWh) of total U.S. electricity generation; independent non-utility facilities produced 44.3% (1,852,598 GWh) of total electricity generation in the United States.⁴⁶ The Federal Energy Regulatory Commission (FERC), exercises exclusive legal authority over wholesale and interstate electric power transactions.⁴⁷ The Federal Power Act Sections 205 and 206⁴⁸ empower FERC exclusively to regulate rates for the interstate wholesale sale of power and transmission of electricity.⁴⁹

The U.S. Supreme Court held that “Congress meant to draw a bright line easily ascertained,” and not require case-by-case analysis, legally segregating state and federal jurisdiction over power.⁵⁰ When a transaction is subject to exclusive FERC jurisdiction and regulation, state regulation is preempted as a matter of federal law and the Constitution’s Supremacy Clause, according to a long-standing and consistent line of rulings by the U.S. Supreme Court.⁵¹ FERC has exclusive jurisdiction over the wholesale rates that now drive the electric power market with power produced by more independent power generators.⁵² As held by

SPV2] (showing the trend toward natural gas, solar, and wind generating capacity in the U.S.) [hereinafter *EIA 2015 Capacity Additions*].

46. *Industry Data*, *supra* note 40.

47. 16 U.S.C. §§ 824b(a)(1), 824d(a)–(b), 824e(a)–(b) (2012).

48. 16 U.S.C. §§ 824d, 824e.

49. *Pub. Util. Dist. No. 1 v. FERC*, 471 F.3d 1053, 1058, 1066 (9th Cir. 2006) (citing *Miss. Power & Light Co. v. Mississippi ex rel. Moore*, 487 U.S. 354, 371 (1988)), *aff’d in part, rev’d in part sub nom*; *Morgan Stanley Capital Grp., Inc. v. Pub. Util. Dist. No. 1*, 554 U.S. 527, 548 (2008).

50. *Fed. Power Comm’n v. S. Cal. Edison Co.*, 376 U.S. 205, 215–16 (1964).

51. *New Eng. Power Co. v. New Hampshire*, 455 U.S. 331, 344 (1982). The Supreme Court overturned an order of the New Hampshire Public Utilities Commission that restrained, for the financial advantage of in-state ratepayers, low-cost hydroelectric energy produced within the state. The Court held this to be an impermissible violation of the Dormant Commerce Clause of the U.S. Constitution and the Federal Power Act: “Our cases consistently have held that the Commerce Clause of the Constitution . . . precludes a state from mandating that its residents be given a preferred right of access, over out-of-state consumers, to natural resources located within its borders or to the products derived therefrom.” *Id.* at 338; *see also Nantahala Power & Light Co. v. Thornburg*, 476 U.S. 953, 955, 962–63 (1986); *Miss. Power & Light Co.*, 487 U.S. at 371 (finding that FERC-mandated allocations of power bind the states); *Entergy La., Inc. v. La. Pub. Serv. Comm’n*, 539 U.S. 39, 46–47 (2003) (citing *Nantahala Power & Light Co.*, 476 U.S. at 962) (stating that FERC interstate power rates bind state utility commissions); *Mont.-Dakota Co. v. Nw. Pub. Serv. Comm’n*, 341 U.S. 246, 251 (1951) (holding that “the right to a reasonable rate is the right to the rate which the Commission files or fixes”).

52. *Pub. Util. Dist. No. 1*, 471 F.3d at 1066–67; *see also Entergy Nuclear Vt. Yankee, LLC v. Shumlin*, 733 F.3d 393, 399 (2d Cir. 2013) (recognizing that Entergy received FERC approval to sell wholesale power within the interstate market).

the United States Court of Appeals for the Ninth Circuit and affirmed by the Supreme Court: while states have historically held a more active role in maintaining reasonable power rates, FERC's now exclusive control over the wholesale rates have led it to "largely determine the rates ultimately charged to the public."⁵³

Quantity matters in power markets. The amount of power wholesaled before it is sold at retail, which is subject exclusively to federal rather than state legal jurisdiction, has shifted from only 5% in the 1960s to a majority of all new power installed each year recently and close to 32% of all historically installed power generation capacity today.⁵⁴ In 2014, nearly 40% of U.S. electricity was generated by what the U.S. Department of Energy's Energy Information Administration ("EIA") terms "independent power producers,"⁵⁵ demonstrating a 400% increase from a 10% share just two decades earlier.⁵⁶ Now, independent power companies are responsible for more power generation than the regulated utilities each year.⁵⁷

This fundamentally changes how the commerce in electric power is regulated. As noted by federal courts and affirmed by the Supreme Court, this greater amount of structured wholesale sales shift legal power over from the states to federal authority:⁵⁸ Between energy market reforms and federal preemption law, jurisdiction has substantially shifted from states to FERC. The result of state and federal electricity regulations is that the states, "despite their continued authority over rates charged directly to consumers," now have less power over those rates.⁵⁹

53. *Pub. Util. Dist. No. 1*, 471 F.3d at 1067.

54. FERREY, *supra* note 42, at 10–11; *see also* FERREY, *supra* note 21, at 608 (explaining that in "1983 about 8 percent of power was sold wholesale prior to being sold at retail").

55. U.S. ENERGY INFO. ADMIN., ELECTRIC POWER MONTHLY WITH DATA FOR AUGUST 2015, at tbls. 1.2, 1.3, 1.4, 1.5, 1.6a <http://www.eia.gov/electricity/monthly/archive/October2015.pdf> [<https://perma.cc/U5UZ-YLT6>].

56. Promoting Wholesale Competition Through Open Access Non-Discriminatory Transmission Services by Public Utilities, 61 Fed. Reg. 21,540, 21,545, 21,549 (May 9, 1996) (to be codified at 18 C.F.R. pts. 35, 385).

57. *U.S. Wind Energy Production and Manufacturing Reaches Record Highs*, U.S. DEP'T. OF ENERGY (Aug. 6, 2013), <http://energy.gov/articles/energy-dept-reports-us-wind-energy-production-and-manufacturing-reaches-record-highs> [<https://perma.cc/SK5J-DWQ9>] [hereinafter *U.S. Wind Energy Production*]; *EIA 2015 Capacity Additions*, *supra* note 45.

58. *See* FERREY, *supra* note 42, at 269–70.

59. *Pub. Util. Dist. No. 1 v. FERC*, 471 F.3d 1053, 1066–67 (9th Cir. 2006), *vacated*, 547 F.3d 1081 (2008); *Morgan Stanley Capital Grp., Inc. v. Pub. Util. Dist.*

3. *Renewable wind power supplants conventional fossil fuels*

Third, the vast majority of this new, independent power has been wind power.⁶⁰ And for each of the past ten years, wind has been the primary new power source deployed in America, constituting 30% of all new generation.⁶¹ Wind power has continued to substantially increase.⁶² In 2012, wind energy was the most deployed new U.S. electricity generation capacity, contributing 43% of all new electric generation, constituting 8598 MW.⁶³ In 2015, wind energy constituted 41% of all new power generating capacity installed, by far the largest single form of new power.⁶⁴ It is expected to increase to 14,000 MW by 2020.⁶⁵ This growth accounted for a record amount of new installations worldwide, which totaled roughly forty-two GW in 2011 alone.⁶⁶

From reducing our nation's dependency on foreign oil to drastically cutting back on pollution from burning fossil fuels, wind energy has the potential to mitigate or resolve several of America's energy-related challenges. Not only is wind a clean, renewable resource, it also is abundant.⁶⁷ The contiguous forty-eight states have enough potential wind energy to generate far more electricity than the country currently consumes.⁶⁸

No. 1, 554 U.S. 527 (2008); *see also* *Entergy Nuclear Vt. Yankee v. Shumlin*, 733 F.3d 393 (2d Cir. 2013).

60. *Wind Adds the Most Generation Capacity in 2015, Followed by Natural Gas and Solar*, U.S. ENERGY INFO. ADMIN. (Mar. 23, 2016), <https://www.eia.gov/todayinenergy/detail.php?id> [<https://perma.cc/6WZH-KLLT>] [hereinafter *Wind Adds Capacity*].

61. *Advantages and Challenges of Wind Energy*, U.S. DEP'T OF ENERGY, <https://www.energy.gov/eere/wind/advantages-and-challenges-wind-energy> [<https://perma.cc/3EUA-4LWD>].

62. *U.S. Wind Energy Production*, *supra* note 57.

63. *Id.*

64. *Wind Adds Capacity*, *supra* note 60.

65. Michael Dotten, *Integrating Wind Energy into Power Planning: Lessons from the Pacific Northwest*, MARTEN LAW (July 21, 2011), <http://www.martenlaw.com/newsletter/20110721-wind-energy-power-planning> [<https://perma.cc/GN2Q-6PLW>].

66. U.S. DEP'T OF ENERGY, *supra* note 1, at 5.

67. *See Advantages and Challenges of Wind Energy*, *supra* note 61.

68. *NREL Triples Previous Estimates of U.S. Wind Power Potential*, NAT'L RENEWABLE ENERGY LAB. (July 2011), <http://www.nrel.gov/docs/fy11osti/51555.pdf> [<https://perma.cc/XS9P-QWLE>].

B. Benefits and Costs of Wind Power

Wind energy is a multi-billion dollar-a-year, robust, and growing industry both in the United States and internationally.⁶⁹ It also is the world's fastest growing source of marketed energy.⁷⁰ In a congressionally commissioned study, the United States Government Accountability Office (GAO) explained that if wind power expansion in the United States occurs as anticipated, more than 62,000 wind turbines will have to be constructed.⁷¹ In 2004, when wind turbines were generating less than 1% of U.S. energy, there were merely 16,000 turbines.⁷² The predicted goal of 5% of U.S. energy coming from wind resources by the year 2020 would bring that number to approximately 80,000 wind turbines.⁷³ This rapid growth is due in great part to the advancement of the technologies produced by wind energy research and development. Since the early 1980s, wind turbines have more than quadrupled in maximum size and now produce sixty times more electricity.⁷⁴

This increase in size and the advancement of technology has also resulted in a drastic improvements in wind energy's cost efficiency,⁷⁵ and as a result, wind power is currently one of the most cost-competitive renewable energy technologies.⁷⁶ Over the last twenty years, the cost of electricity generated by wind power has declined

69. *China Leads Growth in Global Wind Power Capacity*, WORLDWATCH INST. (May 30, 2012), <http://www.worldwatch.org/china-leads-growth-global-wind-power-capacity> [<https://perma.cc/W8D4-V5NR>]. According to one calculation, “[n]early \$75 billion was invested in global wind energy installations in 2011” *Id.*; see U.S. DEP’T OF ENERGY, *supra* note 1, at iii. In the United States alone, over fourteen billion dollars were invested in the wind power market in 2011. *Id.*

70. U.S. DEP’T OF ENERGY, DOE/EIA-0383, ANNUAL ENERGY OUTLOOK 2012 75 (2012).

71. U.S. GOV’T ACCOUNTABILITY OFFICE, GAO-05-906, WIND POWER IMPACTS ON WILDLIFE AND GOVERNMENT RESPONSIBILITIES FOR REGULATING DEVELOPMENT AND PROTECTING WILDLIFE 9 (2005).

72. *Id.* at 7–9.

73. *Id.* at 9.

74. Victoria Markovitz, *Sizing Up Wind Energy: Bigger Means Greener, Study Says*, NAT’L GEOGRAPHIC NEWS (July 20, 2012), <http://news.nationalgeographic.com/news/energy/2012/07/120720-bigger-wind-turbines-greener-study-says> [<https://perma.cc/57EZ-YAEV>].

75. *See id.* (noting that when more energy can be generated with fewer turbines, the price of wind power will decrease).

76. Nathanael Greene, *Cheapest AND Cleanest: Renewables Are Winning*, NAT’L RES. DEF. COUNCIL, (Dec. 14, 2018), <https://www.nrdc.org/experts/nathanael-greene/cheapest-and-cleanest-renewables-are-winning> [<https://perma.cc/7D7R-9Q7G>].

substantially, primarily because of technological innovation.⁷⁷ In the last decade, the cost of electricity from wind systems has dropped by 69%.⁷⁸ When the first utility-scale turbines were installed in the early 1980s, wind-generated electricity costs were as high as \$0.30 per kilowatt-hour (kWh) generated.⁷⁹ Wind projects in the United States now cost an average of \$45/Mwh (\$0.045/Kwh) for capacity and energy without other subsidies; this compares to \$58/Mwh for solar power.⁸⁰ By 2040, as solar panels become more efficient and manufacturing costs continue to decline, solar power could operate at the identical cost to wind.⁸¹ With tax incentives and technological advances, net costs have now declined dramatically. With the aid of the federal Production Tax Credit (PTC),⁸² state-of-the-art wind power plants can now generate electricity for less than five cents per kWh in many parts of the United States.⁸³ The federal PTC subsidizes wind generation by as much as \$0.25/kWh for 2019, making wind energy a cost-competitive technology compared to both coal and natural gas.⁸⁴ This tax incentive, alone, is worth almost as much as the value of the wholesale power produced in current markets.

77. See ROBERT Y. REDLINGER ET AL., *WIND ENERGY IN THE 21ST CENTURY* 217 (2002) (noting the effects of technological innovation, such as improved reliability, siting, and efficiency).

78. Megan Mahajan, *Plunging Prices Mean Building New Renewable Energy Is Cheaper than Running Existing Coal*, FORBES (Dec. 3, 2018, 7:40 AM), <https://www.forbes.com/sites/energyinnovation/2018/12/03/plunging-prices-mean-building-new-renewable-energy-is-cheaper-than-running-existing-coal> [https://perma.cc/Y4X7-NPUJ].

79. Magdi Ragheb, *Economics of Wind Power Generation*, in *WIND ENERGY ENGINEERING* 538 (Trevor M. Letcher ed. 2017).

80. Jim Efstathiou Jr. & Brian K. Sullivan, *Smarter Wind Turbines Try to Squeeze More Power on Each Rotation*, BLOOMBERG (May 9, 2018), <https://www.bloomberg.com/news/articles/2018-05-09/smarter-wind-turbines-try-to-squeeze-more-power-on-each-rotation>.

81. *Id.*

82. The PTC was introduced in the Energy Policy Act of 1992 at 1.5-cents per kWh. 26 U.S.C. § 45(a)(1) (2012). It was intended to help balance the federal energy tax code that has classically favored conventional energy technologies. It is adjusted annually for inflation. See § 45(a)(1), (b)(2).

83. See Ragheb, *supra* note 79, at 538.

84. Mark Clayton, *A New Gust of Wind Projects Across the US*, CHRISTIAN SCI. MONITOR (Jan. 19, 2006), <https://www.csmonitor.com/2006/0119/p02s01-usec.html> [https://perma.cc/XU2E-9FDK]; *Wind PTC Increases to 2.5 Cents per Kilowatt Hour for 2019*, NOVOGRADAC (June 11, 2019, 10:45 AM), <https://www.novoco.com/news/wind-ptc-increases-25-cents-kilowatt-hour-2019> [https://perma.cc/NR94-MB4H].

Projects that commenced construction in 2015 and 2016 received a full-value PTC credit; projects that commenced construction in 2017 received a PTC credit at 80% of full value; in 2018, 60% of the value; and in 2019, 40% of the value.⁸⁵ There is an alternative federal tax credit to the PTC, which awards a credit for each kWh of wind power produced. This alternative is called the Investment Tax Credit (“ITC”), which offers a 30% tax credit for wind energy.⁸⁶ The ITC rewards developers, not on production of power, but based on construction capital costs, and the credit phases down: projects commencing construction by 2019 are eligible for a full 30% credit; in 2020, a 26% credit; in 2021, a 22% credit; or in 2022 and later, a 10% credit.⁸⁷ As part of the American Recovery and Reinvestment Act (ARRA) stimulus package after the 2008 financial recession, wind and other renewable developers had received \$28.5 billion in grants and loan guarantees from the Obama Administration by August 2011.⁸⁸ The U.S. Treasury section 1603 grant program implemented after the 2008 recession funneled approximately a quarter of this amount.⁸⁹ The other three-quarters flowed through the section 1705 loan guarantee program into thirty-two different projects.⁹⁰ The section 1603 program approved 9000 grants for a total amount of \$18.5 billion, with \$17 billion of that for wind power projects.⁹¹

Table 1, on page 2163, presents a snapshot of federal tax subsidies to electricity production by fuel type.⁹² Fossil fuels received a much smaller percentage allocation than their share of electric production.⁹³

85. H.R. Rep. No. 2029-797, pt. 302 (2015).

86. MOLLY F. SHERLOCK, CONG. RES. SERV., R43453, THE RENEWABLE ELECTRICITY PRODUCTION TAX CREDIT: IN BRIEF 2 (2018).

87. 26 U.S.C. § 45 (2012); *Investment Tax Credit for Solar Power*, ENERGY SAGE, <https://www.energysage.com/solar/cost-benefit/solar-investment-tax-credit> [https://perma.cc/3KYJ-7RFC] (last updated Jan. 11, 2019).

88. Steven Ferrey, *Constitutional Disputes in Multiple Dimensions: The Washington Post, The Wall Street Journal, and Sustainable Energy Law*, 25 FORDHAM ENVTL. L. REV. 251, 264 (2015).

89. *Id.*

90. *Id.*

91. See TIGTA: *Some Renewable Energy Groups May Have Double-Dipped on Tax Credits*, BLOOMBERG BNA: INFRASTRUCTURE INV. & POL’Y REPORT (Mar. 3, 2014) (noting that section 1603 provides reimbursements for costs associated with installing renewable energy sources for trade or business purposes).

92. MOLLY F. SHERLOCK & JEFFREY M. STUPAK, CONG. RES. SERV., R41953, ENERGY TAX INCENTIVES: MEASURING VALUE ACROSS DIFFERENT TYPES OF ENERGY RESOURCES 15, tbl. 4 (2015). The data is taken from the EIA. *Id.* at 15.

93. *Id.* at 15, tbl. 4.

Although 44.9% of generation in 2010 can be attributed to coal, coal received an approximate 10% of tax incentives.⁹⁴ Renewable energy subsidies dominated fossil fuel subsidies in the recent years.⁹⁵ Yet, according to the EIA, wind energy accounted for only about 3% of the national electric supply as of the end of 2011.⁹⁶ Wind sources receive a disproportionate amount of reimbursements compared to their energy output. Wind energy harnessed has increased substantially, providing 6.5% of total U.S. power supplies in 2018,⁹⁷ and solar power supplied 2.3% of U.S. electricity generation in 2018.⁹⁸

Several recent studies indicate that further technological innovation is likely to shrink the cost of wind power by another 15% to 45% by 2030.⁹⁹ Wind energy is a clean, renewable resource that can be produced domestically. It can therefore lower the nation's reliance on environment-damaging fuel sources from other countries. The American Wind Energy Association estimates that the amount of electricity generated by United States wind locations displaces over 200 million tons of carbon dioxide annually.¹⁰⁰

94. *Id.* at 14.

95. According to the U.S. government, “[m]ost current federal subsidies support developing renewable energy supplies (primarily biofuels, wind, and solar) and reducing energy consumption through energy efficiency. In FY 2016, nearly half (45%) of federal energy subsidies were associated with renewable energy, and 42% were associated with energy end uses.” See *Direct Federal Financial Interventions and Subsidies in Energy in Fiscal Year 2016*, U.S. ENERGY INFO. ADMIN. (Apr. 24, 2018), <https://www.eia.gov/analysis/requests/subsidy> [<https://perma.cc/73L5-YDDB>].

96. *U.S. Wind Generation Increased 27% in 2011*, U.S. ENERGY INFO. ADMIN. (Mar. 12, 2012), <https://www.eia.gov/todayinenergy/detail.php?id=5350> [<https://perma.cc/CED4-QVH5>].

97. U.S. DEP’T OF ENERGY, 2013 WIND TECHNOLOGIES MARKET REPORT iv (Aug. 2014).

98. *U.S. Renewable Electricity Generation Has Doubled Since 2008*, U.S. ENERGY INFO. ADMIN. (Mar. 19, 2019), <https://www.eia.gov/todayinenergy/detail.php?id=38752> [<https://perma.cc/9PEE-ZDRF>].

99. See Ryan Wiser et al., *Wind Energy*, in IPCC SPECIAL REPORT ON RENEWABLE ENERGY SOURCES AND CLIMATE CHANGE MITIGATION 535, 590 (Otmar Edenhofer et al. eds., 2011).

100. See *Environmental Benefits: Wind’s Environmental Record*, AWEA, <https://www.avea.org/wind-101/benefits-of-wind/environmental-benefits> [<https://perma.cc/EWX2-PEFT>].

Table 1. Subsidies to Electricity Production by Fuel Type, 2010 (Dollar Value in Millions)¹⁰¹

Fuel Type	Production		Federal Financial Incentives		
	FY2010 Net Generation (billion kWh)	% of Total	Tax Subsidies	Other Subsidies	% of Total
Coal	1,851	44.9%	486	703	10.0%
Nat. Gas & Petrol. Liquid	1,030	25.0%	583	72	5.5%
Nuclear	807	19.6%	908	1,591	21.0%
Renewables	425	10.3%	1,347	5,212	55.3%
Biomass	57	1.4%	54	61	1.0%
Geothermal	16	0.4%	1	199	1.7%
Hydropower	257	6.2%	17	198	1.8%
Solar	1	0.0%	99	869	8.2%
Wind	95	2.3%	1,178	3,808	42.0%
Transmission/ Distribution	(i)	(i)	58	924	8.2%
Total	4,091	100%	3,382	8,502	100%

101. This is similar to the EIA's data for 2007, "where 47.6% of generation was attributable to coal, 12.7% of total federal financial support for electricity production was provided to coal." SHERLOCK, *supra* at note 92, at 11, 17 tbl. 6.

C. Engineering Wind Generation

Wind energy electricity generation is relatively simple compared to traditional complex power plants, the latter of which employ combined-cycle technologies.¹⁰² Therefore, a great benefit of wind energy is that once a wind turbine is running, there is relatively little costly upkeep; it simply requires routine maintenance and repair.¹⁰³ Individual wind turbine height and capacity has increased over the last decade.¹⁰⁴

Wind turbines consist of two or three blades affixed to a rotor.¹⁰⁵ The rotor is mounted on a tower that can be more than 300 feet tall.¹⁰⁶ The rotor is attached to the tower via a nacelle, which houses the internal parts of the turbine.¹⁰⁷ When wind moves over the blades, it causes the blades to lift and rotate.¹⁰⁸ This spinning motion turns a low-speed shaft attached to the rotor at approximately thirty to sixty rotations per minute.¹⁰⁹ The low-speed shaft is connected to a high-speed shaft via a gearbox.¹¹⁰ The gears increase the rotational speed to approximately 1000 to 1800 rotations per minute, which is the speed required by most generators to produce electricity.¹¹¹ The high-speed shaft then connects to a generator.¹¹² Typically, the generators employed in wind turbines are common, “off-the-shelf” induction generators that produce sixty-cycle AC electricity.¹¹³ “[T]he front wall of propellers creates a wake that reduces the efficiency” of the wind turbines

102. See FERREY, *supra* note 42, at 4–5 (noting that combined cycle technologies are those that have two energy production cycles operating at the same time).

103. See Mary Grady, *Reaping the Wind in a Brand New Age*, 9 CONSERVATION MATTERS 1, 3 (2003).

104. *Wind Turbine Heights and Capacities have Increased over the Past Decade*, U.S. ENERGY INFO. ADMIN. (Nov. 29, 2017), <https://www.eia.gov/todayinenergy/detail.php?id=33912> [<https://perma.cc/89BJ-5XP8>].

105. *The Inside of a Wind Turbine*, OFFICE OF ENERGY EFFICIENCY & RENEWABLE ENERGY, <https://www.energy.gov/eere/wind/inside-wind-turbine> [<https://perma.cc/HA8Z-QLW6>].

106. *Id.*; see Chris Martin, *Some of Tallest Wind Turbines in the U.S. Are Going Up in Texas*, BLOOMBERG (Apr. 11, 2019), <https://www.bloomberg.com/news/articles/2019-04-11/some-of-tallest-wind-turbines-in-the-u-s-are-going-up-in-texas> [<https://perma.cc/A2SF-X6FJ>] (discussing a 590-foot windmill in Texas).

107. *The Inside of a Wind Turbine*, *supra* note 105.

108. *Id.*

109. *Id.*

110. *Id.*

111. *Id.*

112. *Id.*

113. *Id.*

located behind another turbine.¹¹⁴ By making each unit more integrated in terms of exact location with the rest, output could be boosted by as much as 15%, according to one estimate.¹¹⁵

The modular nature of wind turbines also makes them a safer form of power production compared to more prevalent conventional technologies. Greater use of localized power production will make large-scale blackouts less frequent and less harmful.¹¹⁶ Even on a 100- to 200-turbine wind site, each wind turbine contains its own generator and operates as its own independent power producer. Consequently, it would be much more difficult for a natural disaster or intentional attack to disrupt all turbines on an entire wind site than it would be to disrupt a single larger and more traditional fossil fuel burning power plant.¹¹⁷

D. Wind Turbine Threat to Species of Birds and Bats

The turbines necessary to generate wind energy—like many tall, human-made structures—pose a potentially deadly threat to airborne bird and bat species. Wind turbines have parts that must turn in the accessible, ambient open air, unlike all other forms of power generation, where moving parts typically are enclosed or screened. This exposed kinetic energy of the moving turbine blades is what creates the risk for avian and flying mammals. Because of the basic mechanics of harnessing wind energy for electricity production,¹¹⁸ there is no practical alternative design for wind turbines that would limit birds' exposure to moving blades.

The risks posed to birds and bats tend to increase as the conditions improve for more wind energy generation. For example, it takes a large number of wind machines to make a substantial contribution to

114. Efstathiou & Sullivan, *supra* note 80.

115. *Id.*

116. See Ellen Schenette, *Microgrids Can Help Prevent Extreme Power Outages, and Cities Are Taking Notice*, ENVTL. DEF. FUND (Nov. 14, 2017), <http://blogs.edf.org/energyexchange/2017/11/14/microgrids-can-help-prevent-extreme-power-outages> [<https://perma.cc/FER4-KM43>] (noting that localized power grids are autonomous, and autonomy increases a power source's ability to continue during extreme weather events).

117. See NAT'L RESEARCH COUNCIL, *TERRORISM AND THE ELECTRIC POWER DELIVERY SYSTEM* 57, 82 (2012) (commenting on the vulnerability of the electric grid system); see also BENJAMIN L. PRESTON ET AL., *RESILIENCE OF THE U.S. ELECTRICITY SYSTEM: A MULTI-HAZARD PERSPECTIVE* 26 (2016), <https://www.energy.gov/sites/prod/files/2017/01/f34/Resilience%20of%20the%20U.S.%20Electricity%20System%20A%20Multi-Hazard%20Perspective.pdf> [<https://perma.cc/A5XH-A9M8>] (discussing how interconnectedness can increase vulnerability).

118. See *The Inside of a Wind Turbine*, *supra* note 105.

a U.S. utility centralized grid, and the more turbines there are spinning, the more blades there are for animal collisions. Brisk winds increase wind turbines' power generation, but also increase the flight speed of nearby animals, causing more collisions. The power produced by a wind turbine is a function of the cubed velocity of the wind.¹¹⁹ For example, using this function, a wind speed of 100%, when cubed, would be 1,000,000% of the original wind power generated by the same wind turbine. This is a 10,000:1 increase in power ratio by locating wind turbines where there are greater velocity winds or constructing taller turbines to capture higher wind speeds at greater altitude—each change increases the compromised open air space for flying species.

In order to allow wind turbines to convert an optimal amount of energy, most turbines contain anemometers that ensure that the blades always face directly into the wind.¹²⁰ The blades on the central hub can be rotated to change their angle for optimal performance in different wind speeds, often accomplishing the course direction in the time it takes for a single rotation of the blade.¹²¹ This operational feature allows the swept area to pivot and change quickly, posing yet another variable moving obstacle in the path of birds.

Additionally, large wind machines have several advantages for power generation, yet they pose greater threats for birds and bats. Longer blades, for example, generate more electricity than shorter ones¹²² because the swept area of a wind turbine rotor is a function of the square of the blade length.¹²³ As a result, a small increase in blade length translates into a significantly greater increase in the swept area of the blade and consequently squares the amount of energy capture of the machine.¹²⁴ If one were to double the blade length, it would increase power output by 10,000%. Longer blades are only possible if mounted on taller masts, so the blades clear the

119. CLARK C.K. LIU, U.S. DEP'T OF THE INTERIOR BUREAU OF RECLAMATION, SYSTEMS DEVELOPMENT FOR ENVIRONMENTAL IMPACT ASSESSMENT OF CONCENTRATE DISPOSAL—DEVELOPMENT OF DENSITY CURRENT SIMULATION MODELS, RULE BASE, AND GRAPHIC USER INTERFACE 7 (2009).

120. See *The Inside of a Wind Turbine*, *supra* note 105.

121. See *id.*

122. See MARKOVITZ, *supra* note 74 (noting that bigger turbines reach stronger winds, and therefore create more energy).

123. DICK ANDERSON ET AL., NAT'L WIND COORDINATING COMMITTEE, PERMITTING OF WIND ENERGY FACILITIES: A HANDBOOK 6–7 (Aug. 2002).

124. *Id.*

ground. Furthermore, the winds at 100 feet (thirty meters) or more above ground are stronger and less turbulent.¹²⁵ Thus, the most effective wind turbines sit high atop tall towers; yet, avian mortality rates have been shown to increase commensurately with tower height.¹²⁶

The risks to birds and bats from wind turbines, however, are not constant because wind turbines only turn at full capacity approximately one-third of the time.¹²⁷ During the rest of the time, wind machines either generate at less than full capacity or do not generate at all for lack of sufficient wind. This intermittent and variable generation pattern is what differentiates wind turbines from steady-state so-called ‘base load’ generating units¹²⁸ and can pose an on-again/off-again hazard to avian navigation.

The negative impact of wind turbines on bird species is not limited to mortality. The construction of newer, larger, and more powerful wind turbines also has direct and indirect effects on avian habitats.¹²⁹ Direct loss of habitats can result from the construction of wind energy infrastructure such as turbine pads, roads, substations, and transmission

125. See DAN CHIRAS, WIND POWER BASICS 28 (2010) (discussing how turbulence is calculated); *Wind Energy*, RENEWABLE ENERGY WORLD, <https://www.renewableenergyworld.com/wind-power/tech.html> [<https://perma.cc/ZRM4-6ZQK>] (explaining how wind turbines over 100 feet “can take advantage of the faster and less turbulent wind”). The average wind turbine tower is between eighty and 100 meters tall. *U.S. Average Annual Wind Speed at 80 Meters*, ENERGY.GOV, <https://windexchange.energy.gov/maps-data/319> [<https://perma.cc/696A-ANA6>].

126. See WALLACE P. ERICKSON ET AL., AVIAN COLLISIONS WITH WIND TURBINES: A SUMMARY OF EXISTING STUDIES AND COMPARISONS TO OTHER SOURCES OF AVIAN COLLISION MORTALITY IN THE UNITED STATES 11 (2001), <https://www.osti.gov/servlets/purl/822418> [<https://perma.cc/94PN-99P3>] (attributing the increased mortality to the fact that taller towers have more wires and various forms of lights).

127. Wind turbines only generate about twenty to forty percent of the total capacity of energy available from the ambient wind. U. OF MASS. AT AMHERST: RENEWABLE ENERGY RES. LABORATORY, WIND POWER: CAPACITY FACTOR, INTERMITTENCY, AND WHAT HAPPENS WHEN THE WIND DOESN’T BLOW?, at 1, <http://www.windaction.org/posts/3589-wind-power-capacity-factor-intermittency-and-what-happens-when-the-wind-doesn-t-blow> [<https://perma.cc/W8D8-9GAL>].

128. See Glossary Definition of Base Load Plant, U.S. ENERGY INFO. ADMIN., <https://www.eia.gov/tools/glossary/index.php?id=B> [<https://perma.cc/AA4Y-9RYD>] (search base load plant in the glossary search box) (stating that a base load plant runs at “a constant rate and runs continuously”).

129. Dale Strickland & Michael Morrison, *A Summary of Avian/Wind Facility Interactions in the U.S.* (Feb. 26, 2008), http://www.fws.gov/habitatconservation/windpower/Past_Meeting_PresentationsMorrison_Strickland.pdf [<https://perma.cc/7D6K-7Z3W>].

lines.¹³⁰ Indirect loss can occur because of avian behavioral responses to wind plant facilities, infrastructure, and human activity in general.¹³¹ Permanent structures or even short-term construction may trigger long-term impacts such as avoidance of areas by species and could possibly prevent future habituation.¹³² The Wildlife Society stated:

Ultimately, the greatest habitat-related impact to wildlife may result from disturbance and avoidance of habitat. Because direct habitat loss appears to be relatively small for wind power projects, the degree to which this disturbance results in habitat fragmentation depends on the behavioral response of animals to turbines and human activity within the wind facility.¹³³

Other studies have reached more encouraging conclusions. One study found that, with the exception to poorly-sited wind-projects like those in the Altamont Pass in California, avian turbine fatalities, while a danger to individual birds, do not threaten overall bird populations.¹³⁴ This same study also suggested that preliminary information indicated a likely decline in risk for many bird species as new technology was implemented.¹³⁵ In its report on the environmental impacts of U.S. wind-energy projects, the National Research Council (“NRC”) found that the current wind capacity generally showed “no evidence of significant impacts” on entire avian populations.¹³⁶ The NRC, which, like the GAO, is a congressionally-commissioned body, estimated that as of 2003, bird collisions with wind turbines ranged between 20,000 and 37,000.¹³⁷ The GAO has predicted that this number would possibly grow to exceed 217,000 by the year 2020, which is nearly six times larger than the high end of the NRC’s 2003 estimates.¹³⁸ This estimate from a decade ago has been eclipsed.

130. *Id.*

131. *Id.*

132. *Id.*

133. EDWARD B. ARNETT ET AL., THE WILDLIFE SOC’Y, IMPACTS OF WIND ENERGY FACILITIES ON WILDLIFE AND WILDLIFE HABITAT 23 (2007), <https://wildlife.org/wp-content/uploads/2014/05/Wind07-2.pdf> [<https://perma.cc/7Q93-8QY3>].

134. See JESSICA KERNS, U.S. DEP’T OF ENERGY, UPDATE OF AVIAN AND BAT IMPACTS FROM WINDPOWER STUDIES (June 2006).

135. *Id.*

136. NAT’L RES. COUNCIL, REPORT IN BRIEF: ENVIRONMENTAL IMPACTS OF WIND-ENERGY PROJECTS 2 (2007), http://dels.nas.edu/dels/rpt_briefs/wind_energy_final.pdf [<https://perma.cc/3QDE-Y2RD>].

137. *Id.*

138. Wallace P. Erickson et al., USDA FOREST SERV., PSW-GTR-191, *A Summary and Comparison of Bird Mortality from Anthropogenic Causes with an Emphasis on Collisions*, in 2 BIRD CONSERVATION IMPLEMENTATION AND INTEGRATION IN THE AMERICAS:

According to the U.S. Fish & Wildlife Service (“FWS” or “the Service”), the 2018 bird mortality rate due to wind turbine collisions ranges from a minimum of 140,000 to a maximum of 327,000, with a median estimate of 234,000 birds killed annually.¹³⁹

Developers of wind resources must assess very site-specific factors, including potential bird collisions with turbines and concomitant displacement of birds’ habitats.¹⁴⁰ Birds collide with wind turbine blades even though these are large structures that emit some audible noise.¹⁴¹ Research to date does not fully understand the specific dangers of turbines with respect to each type of bird.¹⁴² Wind turbine noise is created by wind spinning the turbine blades. Wind gusts cause the blades to spin faster, producing higher noise levels. Research suggests that the resultant increase in blade noise, however, will be masked by an accompanying increase in ambient background noise created by the wind itself.¹⁴³ A phenomenon called “motion smear” also contributes to collisions.¹⁴⁴ As a bird approaches a spinning turbine, its retina is unable to process the high-speed motion, and thus it may unknowingly fly into the blades’ path.¹⁴⁵ It is unclear to what extent illumination on turbines

PROCEEDINGS OF THE THIRD INTERNATIONAL PARTNERS IN FLIGHT CONFERENCE 1029, 1039 (C. John Ralph & Terrell D. Rich eds., 2005).

139. *Threats to Birds*, *supra* note 2.

140. Gerard Winegrad, *Wind Turbines and Birds*, in WIND ENERGY AND BIRDS/BATS WORKSHOP: UNDERSTANDING AND RESOLVING BIRD AND BAT IMPACTS 22, 23 (Susan Savitt Schwartz ed., 2004).

141. See NAT’L WIND COORDINATING COMM., WIND TURBINE INTERACTIONS WITH BIRDS AND BATS: A SUMMARY OF RESEARCH RESULTS AND REMAINING QUESTIONS 1, 6 (2004), https://tethys.pnnl.gov/sites/default/files/publications/Wind_Turbine_Interactions_with_Birds_and_Bats.pdf [<https://perma.cc/8692-88WM>] (stating that research into the causes of bird collisions is ongoing).

142. *Id.* at 3.

143. Carolyn S. Kaplan & Richard M. Cogen, *Opportunities and Challenges for Developers of Wind Power Projects*, NIXON PEABODY (June 8, 2004), <https://www.nixonpeabody.com/zh-CN/ideas/articles/2004/06/08/opportunities-and-challenges-for-developers-of-wind-power-projects> [<https://perma.cc/94E9-BHUR>].

144. N.M. DEP’T OF GAME & FISH, RECOMMENDATIONS TO MINIMIZE ADVERSE IMPACTS OF WIND ENERGY DEVELOPMENT ON WILDLIFE 2 (2012), <http://www.wildlife.state.nm.us/download/conservation/habitat-handbook/project-guidelines/Wind-Energy-Guidelines.pdf> [<https://perma.cc/9GF7-84LN>].

145. *Id.* Modern turbines turn at speeds of up to about 30 revolutions per minute, a decrease from older technology, but the speed of the blade tips can exceed 180 miles per hour in high winds. Along with motion smear and turbine placement, other factors such as turbine height, birds’ flight speed, and species-specific behavior contribute to collision fatalities. See NAT’L WIND COORDINATING COLLABORATIVE, WIND TURBINE INTERACTIONS WITH BIRDS, BATS, AND THEIR HABITATS: A SUMMARY OF

may be dangerous to birds in poor weather.¹⁴⁶ Some studies conclude that wind projects can displace birds, causing them to avoid the area.¹⁴⁷

One computation assessing turbine avian mortality computed a yearly average rate for the United States of 2.19 birds per turbine, and 1.825 in states other than California.¹⁴⁸ Raptor fatalities (including eagles, owls, hawks, falcons, and vultures) at the wind projects at the Altamont Pass in California ranged from 0.05 to 0.10 per turbine per year, resulting in thirty to seventy Golden Eagle fatalities per year.¹⁴⁹ In contrast to the California Altamont Pass turbines, turbines at new wind plants in the United States are larger in size, have slower moving blades, and utilize a monopole structure.¹⁵⁰ Estimates at new plants range from zero to 0.04 raptor fatalities per turbine per year (compared with Altamont's 0.5 to 0.10).¹⁵¹

Approximately 6% of the U.S. contiguous land area is considered to be "good wind areas," which if developed, have the potential to provide over one and one half times our current total electric consumption.¹⁵² Many of these good wind areas are either offshore or on ridgelines due to the updrafts and concentrations of wind

RESEARCH RESULTS AND PRIORITY QUESTIONS 1, 7 (2010), http://www.eere.energy.gov/wind/pdfs/birds_and_bats_fact_sheet.pdf [<https://perma.cc/58LQJ7ZB>].

146. See PAUL KERLINGER, AVIAN MORTALITY AT COMMUNICATION TOWERS: A REVIEW OF RECENT LITERATURE, RESEARCH, AND METHODOLOGY 2, 4, 23 (2000), <https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1161&context=usfwspubs> [<https://perma.cc/P4RY-KSQN>] (citing studies that indicate that most bird species are attracted to lights in inclement weather, but also pointing out that there had been no "no definitive or suggestive studies regarding how or if lights disorient or attract songbirds to towers"); see also *Wind Turbine Interactions with Birds*, *supra* note 145, at 4 (stating that the "strobe-like lights" currently recommended by the FAA do "not appear to influence bat and songbird fatalities").

147. See *Wind Turbine Interactions with Birds*, *supra* note 145, at 6.

148. WINEGRAD, *supra* note 140, at 4 tbls. 1, 2.

149. WALLY ERICKSON ET AL., SYNTHESIS AND COMPARISON OF BASELINE AVIAN AND BAT USE, RAPTOR NESTING AND MORTALITY INFORMATION FROM PROPOSED AND EXISTING WIND DEVELOPMENTS 2-3 (2002), https://www.nrc.gov/docs/ML1409/ML1409_8A019.pdf [<https://perma.cc/ZC37-3T7E>]. The older technology used at Altamont produced smaller turbines with faster moving blades on lattice-built structures. The faster moving blades increase the motion smear phenomena and decrease the chance a bird has of safely passing through the blades' path. *Id.* at 10-11.

150. *Id.* at 3.

151. *Id.*

152. *Wind Power Basics*, PBS ONLINE NEWSHOUR, https://www.pbs.org/newshour/spc/indepth_coverage/science/windpower1 [<https://perma.cc/C26C-V6S9>].

moving over various mountain tops and ridgelines.¹⁵³ If not developed, forested ridgelines also may be the home to avian species.¹⁵⁴ Vulnerable species and the best wind energy sites are vying for similar geographic locations and features. The law must adjudicate the ongoing tension between species and power.

III. FEDERAL STATUTES PROTECTING BIRD SPECIES

The Migratory Bird Treaty Act (“MBTA”),¹⁵⁵ the Endangered Species Act (“ESA”)¹⁵⁶ and the Bald and Golden Eagle Protection Act (“BGEPA”)¹⁵⁷ are the three primary federal statutes that, taken together, protect virtually all bird species and many bat species in the United States. As a result of this expansive federal protection, these statutes potentially impact or create liability for many kinds of human activity and human-made development, including wind turbines.¹⁵⁸

A. *The Migratory Bird Treaty Act*

Of the three federal statutes prohibiting bird kills, the MBTA provides the most expansive protection of the three federal statutes. It covers over 1000 species of birds,¹⁵⁹ applying to nearly every bird indigenous to North America,¹⁶⁰ including nearly all common wild birds found in the United States with the exception of house sparrows, starlings, feral pigeons, and resident (non-migrating) game birds such as pheasant and quail.¹⁶¹ Importantly, the MBTA is not

153. *Wind Energy Resource Atlas of the United States: The Northeast Region*, NAT'L RENEWABLE ENERGY LAB., <http://rredc.nrel.gov/wind/pubs/atlas/chp3.html#region> [<https://perma.cc/8H2T-N7FU>].

154. See generally U.S. FISH & WILDLIFE SERV., AVIAN PROTECTION PLAN FOR BEECH RIDGE ENERGY LLC'S BEECH RIDGE WIND PROJECT (2013), https://www.fws.gov/westvirginiafieldoffice/PDF/beechnridgehpc/Appendix_B_august_2013.pdf [<https://perma.cc/S6BJ-5P44>] (discussing how wind power project will affect birds living near the ridgeline).

155. 16 U.S.C. §§ 703–712 (2012).

156. §§ 1531–1544.

157. §§ 668–668b.

158. See, e.g., § 668b(a) (liability under BGEPA), § 1540(e) (liability under ESA).

159. See *Migratory Bird Treaty Act Protected Species*, U.S. FISH & WILDLIFE SERV. (2013), <https://www.fws.gov/birds/management/managed-species/migratory-bird-treaty-act-protected-species.php> [<https://perma.cc/2ZZF-FMBW>].

160. *Mahler v. U.S. Forest Serv.*, 927 F. Supp. 1559, 1576 (S.D. Ind. 1996).

161. *Id.*; see also *Migratory Bird Treaty Act Protected Species*, *supra* note 159.

designed to protect just endangered bird species; the statute applies to many of the most numerous and least endangered species.¹⁶²

The MBTA is a federal criminal statute that was enacted in 1918.¹⁶³ As amended, it implements treaties and conventions between the United States and Great Britain (on behalf of Canada),¹⁶⁴ Mexico,¹⁶⁵ Japan,¹⁶⁶ and the former Soviet Union.¹⁶⁷ Each treaty was created for the protection of migratory birds. The conventions' avowed purposes included management, protection, and prevention of extinction.¹⁶⁸ The MBTA's legislative history underscores the importance of insectivorous birds to help decrease annual food losses caused by insects¹⁶⁹ and provide free pest control service.¹⁷⁰ Many states have enacted similar or identical provisions to the MBTA, and when state permits are required, the federal permit is not valid without the corresponding state permit.¹⁷¹

The statute provides, "[u]nless and except as permitted by regulations hereinafter provided . . . it shall be unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill,

162. *Id.*

163. 16 U.S.C. §§ 703–712 (listing offenses criminalized under the statute, which include killing, capturing, or participating in the trade of species covered the Act).

164. The Convention Between the United States and Great Britain for the Protection of Migratory Birds in the United States and Canada, U.K.-U.S., Aug. 16, 1916, 39 Stat. 1702.

165. The Convention Between the United States and Mexico for the Protection of Migratory Birds and Game Mammals, Mex.-U.S., Feb. 7, 1936, 50 Stat. 1311.

166. The Convention Between the Government of the United States of America and the Government of Japan for the Protection of Migratory Birds in Danger of Extinction, and their Environment, Japan-U.S., Mar. 4, 1972, 25 U.S.T. 3329 [hereinafter U.S.-Japan Migratory Bird Treaty].

167. The Convention Between the United States of America and the Union of Soviet Socialist Republics Concerning the Conservation of Migratory Birds and their Environment, U.S.-U.S.S.R., Nov. 19, 1976, 29 U.S.T. 4647.

168. *See, e.g.*, U.S.-Japan Migratory Bird Treaty, *supra* note 166, at 3331 (acknowledging that certain animals are susceptible to disturbance and protective measures should be taken).

169. 56 CONG. REC. 7360 (June 4, 1918) (statement of Rep. Anthony).

170. *Birds Eat 400 to 500 Million Tons of Insects Annually*, Sci. Daily (July 9, 2018), <https://www.sciencedaily.com/releases/2018/07/180709100850.htm> [<https://perma.cc/JWW2-GR39>].

171. *See, e.g.*, CAL. FISH & GAME CODE § 3513 (West 2019) (stating that "it is unlawful to take or possess any migratory nongame bird" as designated by the MBTA, except as provided under state regulations). This represents a double key system. FWS sets the general bag limits and seasons, and the states then modify their permit systems to work within those limits and seasons. New FWS regulations are promulgated each year controlling legal hunting. Migratory Bird Hunting, 83 Fed. Reg. 27,836 (proposed June 14, 2018) (to be codified at 50 C.F.R. pt. 20).

attempt to take, capture, or kill . . . any migratory bird”¹⁷² “Take” is the operative language, defined as “to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect.”¹⁷³ Its broad language thereby criminalizes an unauthorized “take” of any covered bird. A single dead bird is a violation.¹⁷⁴ In 1978, the U.S. Court of Appeals for the Ninth Circuit held that prosecution has the ability to enforce the MBTA for each act that results in a taking, rather than each dead bird.¹⁷⁵

While the statute is extremely strict, enforcement powers are not vested in concerned citizens or groups. As a criminal statute, the MBTA provides no private right of action. FWS is the bureau within the Department of the Interior (DOI) charged with the responsibility of protecting and managing migratory birds.¹⁷⁶ FWS is solely empowered to prosecute offenders utilizing the Department of Justice (DOJ) as its counsel.¹⁷⁷ While FWS officials can make an arrest (without a warrant) for violation of the MBTA and/or the BGEPA, only DOJ may prosecute the violation of these federal criminal statutes.¹⁷⁸ Traditionally, FWS does not issue “incidental” or accidental “take” permits under the MBTA, as allowed under the ESA;¹⁷⁹ however, the agency can issue a depredation permit allowing the destruction of migrating birds in extraordinary conditions where birds have deleterious effects on agriculture or another community interest.¹⁸⁰ Since the

172. 16 U.S.C. § 703(a) (2012).

173. 50 C.F.R. § 10.12 (2012).

174. *See* *United States v. Corbin Farm Serv.*, 578 F.2d 259, 260 (9th Cir. 1978) (per curiam) (stating that the death of birds from one shooting is a single crime).

175. *Id.*

176. *About Us*, U.S. FISH & WILDLIFE SERV., https://www.fws.gov/help/about_us.html [<https://perma.cc/D4BW-QVP8>].

177. *See id.* (stating that FWS enforces federal wildlife laws).

178. *See, e.g.*, U.S. FISH & WILDLIFE SERV., LAW ENFORCEMENT: PART 445 SEARCHES, SEIZURES, DETENTION, ARRESTS, AND EVIDENCE § 2.7 (July 28, 2006), <https://www.fws.gov/policy/445fw2.html> [<https://perma.cc/L6RH-EA5A>].

179. 16 U.S.C. § 703 (2012).

180. *Fund for Animals v. Norton*, 281 F. Supp. 2d 209, 235 (D.D.C. 2003). The issue in *Fund for Animals* was FWS’ issuance of a depredation permit allowing the State of Maryland to remove up to 1500 swans based on an environmental assessment’s conclusion that the swans were causing environmental damage by consuming up to eight pounds per day of underwater vegetation critical to the functioning of Chesapeake Bay and other watersheds. *Id.* at 215–16. The court issued an injunction prohibiting Maryland from acting on the permit for several reasons, including the state’s failure to show, pursuant to MBTA, the location where the activity is to be conducted, a description of the areas where depredations are

federal government never permits MBTA “takes,” and since any death of a covered bird is a violation, the prosecutorial discretion of FWS regarding enforcement is the lynchpin for application of the MBTA.

B. The Endangered Species Act

The Endangered Species Act is a second applicable, but less severe, statute regarding species kills. The ESA is a federal law that provides for criminal prosecution of those who kill, harm, or harass species listed by the U.S. government as endangered or threatened.¹⁸¹ The penalties include fines and/or imprisonment.¹⁸² There are also state law counterparts to the ESA in many states.

In the ESA, as in all of the bird protection statutes, definitions are critical. “Species” is defined as a species, subspecies, or geographically separate population including *any* creature dead or alive or its parts, products, offspring, or eggs.¹⁸³ In other words, very specialized, distinct branches of animals and plants are recognized for protection. Even though a species may have a healthy viable population in one area, it could be threatened with extinction in another locale.

“Endangered species” is defined as any species threatened with extinction in all or a significant part of its range.¹⁸⁴ “Threatened species” refers to a species that is likely to become endangered within the foreseeable future throughout all or a large part of its range or habitat.¹⁸⁵ By federal regulation, the same protections that shield endangered species apply, with a few exceptions, to threatened ones as well.¹⁸⁶

“Critical habitat” is an area necessary for species’ survival.¹⁸⁷ Unique food needs, shelter requirements, or breeding sites all delineate a critical habitat.¹⁸⁸ The scope of the habitat does not have to include the entire potential habitat.¹⁸⁹ The *potential* geographical habitat for a species does not determine the *critical* habitat, except in cases where

occurring, the nature of the interests being injured, and the extent of the injury. *Id.* at 236–38.

181. 16 U.S.C. § 1532 (1)–(21) (2012).

182. § 1540(b).

183. § 1532.

184. *Id.*

185. *Id.*

186. *See* 50 C.F.R. § 17.31(a) (2018).

187. 16 U.S.C. § 1532.

188. *See, e.g.*, Endangered and Threatened Wildlife and Plants, 84 Fed. Reg. 24,987, 24,992 (May 30, 2019) (outlining rules for designation of Pygmy Sunfish in terms of particular food and habitat requirements).

189. 16 U.S.C. § 1532(5)(C).

a limited area is the critical habitat.¹⁹⁰ Any physical or biological features essential to that species' survival or recovery can be designated for conservation based on a technical determination.¹⁹¹ A species does not have to *occupy* the habitat in question so long as the habitat satisfies fundamental behavioral needs.¹⁹² Critical habitat and the determination of an endangered or threatened species do not have to be established concurrently.¹⁹³

Section 9 of the ESA prohibits the "take" of any fish or wildlife species listed under the ESA.¹⁹⁴ Unlike the MBTA, the expanded scope of the ESA includes "takes" (harassing or harming animals) caused by habitat modification.¹⁹⁵ "Habitat modification" encompasses any activity that would significantly impair essential behavior patterns such as breeding, feeding, or sheltering.¹⁹⁶ "Take" means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."¹⁹⁷

The verb "harm" is one key in this string of definitions. The ESA regulations promulgated by DOI acknowledge that habitat modification can adversely affect behavioral patterns that are necessary to ensure species survival.¹⁹⁸ For this reason, the regulations' definition of "harm" includes habitat modifications that result in actual or imminent (as opposed to merely speculative) injury to wildlife.¹⁹⁹ Thus, the

190. In *Palila v. Hawaii Department of Land & Natural Resources*, a state agency maintained a gaming program in which the game destroyed critical habitat of the palila, which is an endangered bird. 852 F.2d 1106, 1107 (9th Cir. 1988). The court scrapped the program, since it would render the endangered bird extinct. *Id.* at 1110. The destruction of the bird's habitat by sheep was deemed to threaten its ability to rebound from its endangered status. *Id.* at 1109–10. The result was that the sheep had to be removed from the forest to protect destruction of the endangered birds' habitat. *Id.* at 1110.

191. 16 U.S.C. § 1532(5)(A).

192. *Id.*

193. See § 1533(b)(6)(C) (providing for circumstances where critical habitat can be established separately from determining if a species is endangered or threatened).

194. § 1538(a)(1)(B).

195. *Babbitt v. Sweet Home Chapter of Cmty. for a Great Or.*, 515 U.S. 687, 702 (1995) (using the *noscitur a sociis* doctrine of statutory interpretation to interpret the term "harm" distinctly from the separate term "take" in the ESA).

196. 16 U.S.C. § 1533(a)(1); 16 C.F.R. § 17.3 (2018).

197. 16 U.S.C. § 1532(19).

198. See 50 C.F.R. § 17.3.

199. See *id.*; see also *Babbitt*, 515 U.S. at 697–703 (upholding the ESA regulation that defines habitat modification resulting in actual harm to a protected species as a prohibited "take"); *Nat'l Wildlife Fed'n v. Burlington N. R.R.*, 23 F.3d 1508, 1512 n.8 (9th Cir. 1994), *aff'd*, 417 F.3d 1091 (9th Cir. 2005) (requiring "a definitive threat of

definition of “harm” is applied to protect and conserve listed species as well as their critical habitat. In addition to encompassing habitat modification in the definition of “harm,” the ESA regulations also define “harass” as “an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, sheltering.”²⁰⁰

As a result of the “harm” and “harass” definitions, modification of species’ habitat can invoke an ESA section 9 “taking.”²⁰¹ The “take” provision is the primary mechanism protecting listed species from the risks of development in the private sector. Most importantly, section 9 declares that the “taking” of an *individual* single member of a listed species is a prohibited act anywhere that federal jurisdiction applies.²⁰² It does not matter that the taking was unintentional. One single taking is illegal. Unlike sections 6 and 7,²⁰³ section 9 of the ESA focuses on the activities of *any* person, not just on federal actions by government agencies.²⁰⁴

The only exceptions to the section 9 take prohibitions are permits granted either by the so-called “God squad”²⁰⁵ or incidental takings under section 10.²⁰⁶ In the 1982 amendments to the ESA, Congress established a provision in section 10 that authorizes the Secretary to issue permits for incidental “takes” pursuant to “an otherwise lawful activity.”²⁰⁷ Incidental take permits are available to non-federal entities

future harm to protected species, not mere speculation,” in order to issue an injunction on potentially harmful activities); *San Carlos Apache Tribe v. United States*, 272 F. Supp. 2d 860, 873–74 (D. Ariz. 2003) (requiring “a reasonably certain threat of imminent harm to a protected species” in order to find harm, as defined by the ESA).

200. 50 C.F.R. § 17.3. “Harm” is defined in the same regulation as “an act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.” *Id.*

201. *See* 16 U.S.C. § 1538(a)(1)(B).

202. § 1538(a)(1).

203. *See* §§ 1535, 1536.

204. § 1538.

205. CONG. RESEARCH SERV., 7-5700, THE LEGAL FRAMEWORK OF THE ENDANGERED SPECIES ACT (ESA) (2019), <https://fas.org/sgp/crs/misc/IF11241.pdf> [<https://perma.cc/AK4E-8BD4>].

206. *See* § 1539(a).

207. *See* § 1539(a)(1)(B). The goal of the section is to balance development interests with conservation interests. Permits are available to private parties wishing to avoid Section 9 violations for incidental takes as long as the “taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.” *Id.* The

when they anticipate committing a take that will be “incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.”²⁰⁸ An incidental taking is a discrete event that does not jeopardize the species as a whole.²⁰⁹

To receive an incidental take permit, an applicant must submit a conservation plan that specifies, among other things, the impacts that are likely to result from the taking and the measures the permit applicant will undertake to minimize and mitigate such impacts.²¹⁰ The incidental take permit is valid for one year so as to account for undue economic hardship and to allow development of private land.²¹¹

There is no numeric limit for incidental takes. The applicant for such permits must have a contractual relationship that predates the notice of a candidate species’ initial listing in the Federal Register.²¹² FWS’s express authority to permit incidental takings plays an important role for wind developers because, unlike the MBTA, discretion exists if an endangered species is found at a potential wind development site.

Federal agencies are also bound by the take prohibitions of the ESA,²¹³ but section 7 provides for an exemption whereby a federal project that will jeopardize a listed species or its critical habitat may proceed.²¹⁴ Section 7 requires federal agencies to consult with appropriate DOI representatives to ensure that any projects they implement, authorize, or fund will not be likely to jeopardize the continued existence of a protected species or adversely affect its critical habitat.²¹⁵ If DOI denies the federal agency’s application in the

permit will issue after adequate assurances are made to the Secretary that the applicant will minimize and mitigate the effects of the taking and the required habitat conservation plan will be implemented. § 1539(a)(2)(A). A conservation plan must accompany the request for an incidental “take” permit. *See id.* The legislative goal behind the conservation plan is to retain enough of the habitat to encourage a listed species’ recovery. The plan, which is mandatory, examines the impact to the species and ways to minimize and mitigate that impact. *Id.* The conservation plan must meet the requirements for food, shelter, breeding sites, and the rearing of offspring, and it must specify how these steps will be funded. An applicant must document why alternatives are not feasible. *Id.*

208. § 1539(a)(1)(B).

209. *See* § 1539(a)(2)(B)(iv).

210. § 1539(a)(2)(A).

211. § 1539(b)(1)(A).

212. § 1539(d)(3).

213. *See* § 1536(a)(1) (directing cooperation between the Secretary and “all other Federal agencies” to further conservation).

214. § 1536(g).

215. § 1536(a)(2).

consultation process, the applicant may pursue the matter with a cabinet-level group, the Endangered Species Committee (colloquially known as the “God squad”).²¹⁶ This administrative route is rarely used because, to succeed, an applicant must first exhaust the consultation process and then demonstrate that the need for the proposed project meets a very demanding test. Specifically, five out of the seven members of the “God squad” must determine that:

- i. [T]here are no reasonable and prudent alternatives to the agency action;
- ii. the benefits of the action clearly outweigh the benefits of alternative courses of action consistent with conserving the species or its critical habitat, and such action is in the public interest;
- iii. the action is of regional or national significance; and
- iv. neither the Federal agency concerned nor the exemption applicant made any irreversible or irretrievable commitment of resources²¹⁷

The enforcement provisions in section 11 of the ESA create civil and criminal penalties and allow for citizens’ suits. A citizen may enjoin any person, including the United States, “who is alleged to be in violation of any provision of” the ESA.²¹⁸ Intent is irrelevant as to whether or not a violation has occurred. Injunctions, warrants, forfeiture, condemnation, rewards, fines, and some expenses are all court remedy options under section 11.²¹⁹

For standing, a citizen must show some *direct injury*.²²⁰ However, the Ninth Circuit held that imminent past, present, or future injury to a species is enough to satisfy the distinct injury to plaintiff requirements.²²¹ In the aftermath of the Supreme Court decisions construing the ESA, the lower federal courts have generally deferred to broad restrictions enacted by responsible agencies.²²²

216. § 1536(e); THE LEGAL FRAMEWORK OF THE ENDANGERED SPECIES ACT, *supra* note 205.

217. § 1536(h)(1)(A)(i)–(iv).

218. § 1540(g)(1)(A).

219. § 1540(g)(1).

220. *See Lujan v. Defs. of Wildlife*, 504 U.S. 555, 575 (1992) (quoting *Ex parte Levitt*, 302 U.S. 633, 634 (1937) (per curiam)).

221. *Forest Conservation Council v. Rosboro Lumber Co.*, 50 F.3d 781, 784 (9th Cir. 1995). The Ninth Circuit decision did not reach the issue of whether habitat modifications that merely retard a species’ recovery met the injury requirement to constitute a “taking.” *Id.*

222. *See Loggerhead Turtle v. Cty. Council*, 148 F.3d 1231, 1257–58 (11th Cir. 1998) (holding that the plaintiff’s claim that artificial beach lighting constitutes a taking of sea turtles was improperly dismissed); *Mausolf v. Babbitt*, 125 F.3d 661, 670 (8th Cir. 1997) (upholding restriction of snowmobiles to minimize harm to the

Despite its generality, the ESA is less restrictive by an order of magnitude regarding avian impact than the MBTA because the ESA applies just to a subset of listed endangered species, which includes less than fifty species of mainland U.S. birds, while the MBTA applies to most birds that fly, including more than 1000 species of birds.²²³ The ESA does contain more significant penalties; however, the ESA allows the agency to permit certain “takes” as a matter of agency discretion, whereas the MBTA does not. An even less comprehensive, yet applicable, additional avian protection statute is the BGEPA.

C. *The Bald and Golden Eagle Protection Act*

This statute, by its very title, is the most limited in scope of the three federal bird protection statutes. Adopted in 1940, the BGEPA protects the two named species of eagles from taking, killing, harming, and harassment.²²⁴ It provides for both civil and criminal penalties (fine and/or imprisonment) that are greater than those provided by the MBTA and similar to those provided by the ESA.²²⁵ The BGEPA civil penalties operate under strict liability, but the criminal penalties have a scienter requirement.²²⁶ It is possible under the statute, therefore, for a wind developer to be shown to have knowledge or wanton disregard and be subject to criminal penalties if a pre-construction review shows the presence of Bald or Golden Eagles in the area where turbines are to be sited.

There are some key precedents involving bird mortality. In *United States v. Moon Lake Electric Ass'n*,²²⁷ the U.S. District Court for the District of Colorado held that accidental electrocution of bald eagles on electric poles is a violation of prohibited activities under the MBTA

endangered gray wolf habitat); *United States v. Town of Plymouth*, 6 F. Supp. 2d 81, 91 (D. Mass. 1998) (enjoining the off-road vehicles on the beach which endangered the piping plover); *Bensman v. U.S. Forest Serv.*, 984 F. Supp. 1242, 1249 (W.D. Mo. 1997) (preserving hibernation and breeding areas during the hibernation season of the Indiana bat).

223. *The Endangered Species Act: Critical Lifeline*, AM. BIRD CONSERVANCY, <https://abcbirds.org/program/esa-and-public-lands/the-endangered-species-act> [<https://perma.cc/3N5F-AL2L>].

224. 16 U.S.C. § 668 (2012).

225. § 668(a)–(b).

226. *Id.* The relevant criminal provisions of the Act includes criminal provisions for any person who “knowingly, or with wanton disregard for the consequences of his act” takes, kills, harms, harasses, etc. any Bald Eagle or Golden Eagle. § 668(a).

227. 45 F. Supp. 2d 1070 (D. Colo. 1999).

and the BGEPA.²²⁸ Moon Lake was a “rural electricity distribution cooperative” that failed to install safety equipment on its electrical poles to prevent accidental bird kills.²²⁹ The case arose out of the death of thirty-eight birds of prey by electrocution from the unprotected electrical poles.²³⁰ Seventeen of the thirty-eight birds killed were protected under either the BGEPA and/or the MBTA.²³¹

Moon Lake contended that the deaths did not constitute violations of either the BGEPA or the MBTA because the deaths were unintentional.²³² Moon Lake filed an unsuccessful motion to dismiss, “arguing that the Acts do not apply to unintentional conduct that is not the sort of physical conduct normally exhibited by hunters and poachers.”²³³ The court disagreed with Moon Lake, rejecting its argument that “the BGEPA prohibit[s] only intentionally harmful conduct” and holding that whether “Moon Lake took or killed protected birds knowingly . . . is a question of fact for the jury’s determination.”²³⁴ The court relied on the legislative history of the BGEPA in arriving at this conclusion.²³⁵

In determining the BGEPA’s scope, the court examined the plain language of the statute and concluded that “[b]y prohibiting the act of ‘killing’ in addition to the acts of hunting, capturing, shooting, and trapping, the MBTA’s language and regulations suggest that Congress intended to prohibit conduct beyond that normally exhibited by hunters and poachers.”²³⁶ The court noted that Congress did not include any limiting language or any language suggesting it intended only to punish those who act with specific motives.²³⁷ Rather, the MBTA prohibits the taking and killing “by any means or in any manner,” and if the intention was to limit the prohibition to conduct associated with hunting or

228. *See id.* at 1072–74.

229. *Id.* at 1071.

230. *Id.*

231. *Id.*

232. *Id.*

233. *Id.*

234. *Id.* at 1074.

235. *Id.* at 1088. Eagle electrocution was discussed during the congressional hearings on the 1972 amendments to the BGEPA. *Id.* at 1086–88. A memorandum to the hearings stated that actors who have knowledge that their electrical poles pose a hazard to protected bird species and do not take reasonable precautions to prevent accidental electrocution of the protected bird species will be liable under the BGEPA. *Id.* at 1087–88.

236. *Id.* at 1074.

237. *Id.* at 1075.

poaching, then language indicative of that intent would have been included.²³⁸ Thus, the government would have to prove beyond a reasonable doubt that “there would have been a natural and continuous sequence of events, uninterrupted by any intervening cause, that would have resulted in the death of a bird, and without which the death would not have happened.”²³⁹ This conclusion is buttressed by presidential Executive Order 13,186, “Responsibilities of Federal Agencies to Protect Migratory Birds,” which declared that “take” includes both “intentional” and “unintentional” takings and clarified that an “unintentional tak[ing]” means “a tak[ing] that results from, but is not the purpose of, the activity in question.”²⁴⁰

Under the BGEPA, liability attaches to a wind turbine owner or operator only when a wind project actually kills one of these two species of eagles and when the raptor’s carcass is found and reported to FWS.²⁴¹ Applying to only two species of birds, the coverage of this statute is extremely limited and, in terms of number of species protected, is the least broad of the three federal avian protection laws. Yet, liability under the BGEPA could potentially be avoided by applying for and receiving a “take” permit from FWS, which permits some “takes” that occur “in the course of conducting other lawful activities.”²⁴²

Although the BGEPA is limited in scope of species, it is additive in that its definitions overlap with other statutes. If one violates the BGEPA by harming either of these two kinds of eagles, one has also violated the MBTA and/or the ESA. Therefore, while constituting additional legal violations, it would not add a unique concern for the wind project development. By bringing within its ambit more than 1000 species of birds as compared to the BGEPA, including birds common to every region where wind projects are developed, the MBTA has the far greater impact on wind projects than the BGEPA. The MBTA is the operative sword in terms of wind project avian exposure and liability risk.

238. *Id.*

239. Meredith Blaydes Lilley & Jeremy Firestone, *Wind Power, Wildlife, and the Migratory Bird Treaty Act: A Way Forward*, 38 ENVTL. L. 1167, 1185 (1998).

240. Exec. Order No. 13,186, 66 Fed. Reg. 3853 (Jan. 10, 2001).

241. See Lilley & Firestone, *supra* note 239, at 1180–81.

242. See 16 U.S.C. § 668(a) (2012); see also U.S. FISH & WILDLIFE SERV., DRAFT PROGRAMMATIC IMPACT STATEMENT FOR THE EAGLE RULE REVISION (2016), <https://www.fws.gov/migratorybirds/pdf/management/EagleRuleRevisions-DPEIS.pdf> [<https://perma.cc/2SK4-Y3WW>].

IV. AVIAN MORTALITY AND LEGAL RISKS FOR WIND POWER PRODUCERS

These three statutes provide the legal gauntlet that wind projects must navigate. Developers and owners of wind energy facilities must iteratively comply with the requirements of all three of these federal bird protections statutes, and avoiding MBTA violations is the most challenging of the three. As explained above, the MBTA, unlike the ESA and BGEPA,²⁴³ does not provide a permitting scheme that allows for legal takings of protected bird species. Rather, the MBTA prohibits any and all takings of more than 1000 different bird species. Under its broad rulemaking powers, DOI could, in theory, establish “safe-harbor” categories of activities excluded from prosecution. Yet, the agency has not, to date, done so.²⁴⁴ Thus, enforcement of the MBTA’s prohibitions is left to the wide discretion of DOI, exercising authority to determine when bird deaths will or will not be prosecuted under the MBTA.²⁴⁵

Although the statute does not permit any “takes,” the agency has the authority to determine which “takes” to prosecute and which to ignore. This is not equivalent to being able to permit incidental “takes” as provided under the ESA and BGEPA, where those latter statutes’ permitting schemes provide wind developers much greater certainty and control that they will not violate that statute. In this void, “FWS addresses the issue of incidental takes under the MBTA through a combination of enforcement discretion, voluntary guidelines for industries, and very narrow permitting categories that allow for incidental takes.”²⁴⁶ Nevertheless, discretion does not provide wind developers complete certainty, as agency enforcement policies and administrations change over time.

243. See 16 U.S.C. § 1539 (discussing exceptions warranting permits); 50 C.F.R. § 22.26 (2018).

244. FWS regulations are established under § 704(a) of the MBTA and permit certain otherwise punishable activities under § 703. See 50 C.F.R. § 13.1 (2018) (general permit procedures); see generally 50 C.F.R. §§ 21.1–21.61 (2018) (listing specific permits).

245. See 16 U.S.C. § 704(a) (outlining when and how migratory birds may be taken, killed, or possessed).

246. Christopher Brooks, *Will a New Approach Fly? The FWS Considers Implementing an Incidental Take Program Under the Migratory Bird Treaty Act*, AM. BAR ASS’N (Nov. 1, 2015), https://www.americanbar.org/groups/environment_energy_resources/publications/trends/2015-2016/november-december-2015/will_a_new_approach_fly_the_fws_considers_implementing_an_incidental_take_program_under_the_migratory_bird_treaty_act.html [https://perma.cc/URL5-CFJ6?type=image].

A. *Wind Energy: Sitting Duck for Federal Penalties?*

With no legally-binding regulations outlining how DOI chooses which MBTA violations to prosecute, some have characterized the agency's exercise of its enforcement discretion as unpredictable and unfair.²⁴⁷ Uncertainty regarding the extent of the MBTA's reach leaves some wind developers uneasy about their potential liability.²⁴⁸ Indeed, since FWS has not created any process for permissibly taking protected birds under the MBTA, that statute leaves potential legal liability and resultant project development delay for a host of businesses and property owners, not merely wind facilities.

Although wind developers continue to face the possibility of MBTA liability in the future, FWS created a MBTA "safe-harbor" for wind facilities by issuing voluntary guidelines for onshore wind energy projects.²⁴⁹ These guidelines are aimed at encouraging wind developers to design, locate, and operate wind turbines in a manner that lessens the likelihood of bird kills.²⁵⁰ The guidelines encourage wind developers to proactively consult with FWS to "incorporate appropriate wildlife conservation measures and monitoring" into their site plans and to avoid building in areas "where wildlife impacts are likely to be high."²⁵¹ Specifically, the guidelines provide wind developers with iterative steps to take, beginning with siting and continuing to post-construction, to identify, and to assimilate increasing amounts of information on bird species, whose migratory and other behavioral patterns, are likely to be affected by a wind turbine location.²⁵²

247. See generally Letter from U.S. Senators David Vitter and Lamar Alexander to Eric Holder, U.S. Attorney Gen. (Jan. 30, 2013), in *Vitter, Alexander Demand a Clear Migratory Bird Policy from Justice Department*, U.S. SENATE COMM. ON ENV'T & PUB. WORKS, <https://www.epw.senate.gov/public/index.cfm/2013/1/post-8c84134d-a36c-2155-a554-dc81eaded88a> [<https://perma.cc/Z6TZ-SNGM>]. Note that the copy of the original letter is misdated, stating that the letter was sent on January 30, 2012. An announcement on the Senate Committee on the Environment and Public Works' website makes clear that the letter was actually sent in 2013. See *Vitter, Alexander Demand a Clear Migratory Bird Policy*, *supra*.

248. See Lilley & Firestone, *supra* note 239, at 1199–200 (discussing concerns of the wind industry over avian impacts).

249. See U.S. FISH & WILDLIFE SERV., U.S. FISH AND WILDLIFE SERVICE LAND-BASED WIND ENERGY GUIDELINES (2012), https://www.fws.gov/ecological-services/es-library/pdfs/WEG_final.pdf [<https://perma.cc/9T8M-NP3B>] [hereinafter WIND ENERGY GUIDELINES].

250. See *id.*

251. *Id.* at vii.

252. *Id.* at 7–8.

In return for wind developers' collaboration and communication with FWS in a long-term, proactive pre- and post-construction partnership, FWS has stated that it will not prioritize its enforcement efforts against wind developers that follow its recommendations.²⁵³ The wind guidelines document explains that FWS Office of Law Enforcement will focus its efforts on violators "who take migratory birds without identifying and implementing reasonable and effective measures to avoid the take."²⁵⁴ While warning that it is not possible to and it will not totally absolve companies from MBTA liability, FWS states that it will deem compliance with the guidelines as such "reasonable and effective measures."²⁵⁵ FWS intends the interim guidance to be used for all utility-scale, land-based wind projects on public and private land.²⁵⁶

This "safe-harbor" for wind developers,²⁵⁷ which FWS has provided in an era of ongoing bird kills, led some to charge the federal government with engaging in unfair favoritism toward wind facilities while prosecuting fossil-fuel related facilities for fewer bird deaths.²⁵⁸ A ranking member of the Senate Environment and Public Works Committee and a member of the Senate Energy and Natural Resources Committee have demanded that DOJ and FWS explain²⁵⁹ why they have charged a handful of businesses involved in electricity production with MBTA violations²⁶⁰ when the government to that point had never similarly charged any wind developers whose projects had killed birds.²⁶¹ Moreover, bird conservationists have lamented

253. *Id.* at 6.

254. *Id.*

255. *Id.*

256. *Id.*

257. Samuel J. Panarella, *For the Birds: Wind Energy, Dead Eagles, and Unwelcome Surprises*, 20 HASTINGS W.-NW. J. ENVTL. L. & POL'Y 3, 15–19 (2014).

258. See *infra* note 261 and accompanying text.

259. See Vitter-Alexander Letter, *supra* note 247.

260. *United States v. Apollo Energies, Inc.*, 611 F.3d 679, 689–90 (10th Cir. 2010) (finding that bird deaths caused by birds falling into oil drilling equipment violated the MBTA); *United States v. Brigham Oil & Gas, L.P.*, 840 F. Supp. 2d 1202, 1203 (D.N.D. 2012) (charging three oil and gas production companies with violations of the MBTA after several birds died from exposure to toxins in pits located on companies' operations fields); *United States v. Moon Lake Elec. Ass'n*, 45 F. Supp. 2d 1070, 1074 (D. Colo. 1999) (holding that failure to take precautions to prevent bird deaths on electrical power lines could violate the MBTA).

261. See U.S. GOV'T ACCOUNTABILITY OFF., GAO-05-906, WIND POWER: IMPACTS ON WILDLIFE AND GOVERNMENT RESPONSIBILITIES FOR REGULATING DEVELOPMENT AND PROTECTING WILDLIFE 36 (2005). Note that the pending case against developers of

“that federal authorities have decided that the killing of birds—including bald and golden eagles—is a price they are willing to pay to lower the nation’s carbon footprint.”²⁶²

The Obama administration supported wind energy development with these guidelines.²⁶³ Seven years before FWS issued its guidelines to assist wind facilities avoid MBTA liability, it issued a similar guidance document for electric utility facilities.²⁶⁴ FWS has a broadly-applicable and well-publicized policy of “focus[ing] its resources on investigating and prosecuting individuals and companies that take migratory birds without identifying and implementing all reasonable, prudent and effective measures to avoid that take.”²⁶⁵ This enforcement policy applies not just to wind developments, but to all industrial-scale activities that might have an adverse impact on birds. In at least two of the three cases cited by two U.S. senators as proof that FWS and DOJ were persecuting traditional energy companies while turning a blind eye to wind developers’ bird kill violations, FWS gave the energy companies warnings about their practices that were leading to bird kills, educated the companies about what they could do to protect birds, and gave them time to take measures to decrease bird fatalities.²⁶⁶ The government did not initiate enforcement actions in

Altamont Pass Wind Development Area, mentioned at *infra* note 329, was brought by a private plaintiff, The Center for Biological Diversity.

262. Darryl Fears, *Wind Farms Under Fire for Bird Kills*, WASH. POST (Aug. 28, 2011), http://articles.washingtonpost.com/2011-08-28/national/35269438_1_wind-turbines-wind-farms-wind-power [<https://perma.cc/2G9T-89M3>].

263. See, e.g., Press Release, The White House: Office of the Press Secretary, We Can’t Wait: Obama Administration Announces Seven Major Renewable Energy Infrastructure Projects that Would Power 1.5 million Homes to be Expedited (Aug. 7, 2012), <http://www.whitehouse.gov/the-press-office/2012/08/07/we-can-t-wait-obama-administration-announces-seven-major-renewable-energy> [<https://perma.cc/LXE4-EFXG>].

264. See EDISON ELEC. INST. & U.S. FISH & WILDLIFE SERV., AVIAN PROTECTION PLAN (APP) GUIDELINES (2005), https://www.aplic.org/uploads/files/2634/APP_guidelines_final-draft_April2005.pdf [<https://perma.cc/2LM3-S7MQ>].

265. *Oil and Gas*, U.S. FISH & WILDLIFE SERV. N.D. FIELD OFFICE, https://www.fws.gov/northdakotafieldoffice/oil_gas.php [<https://perma.cc/MCQ6-W43W>].

266. See *United States v. Apollo Energies, Inc.*, 611 F.3d 679, 691 (10th Cir. 2010) (warning the violator via letter, which was ignored); *United States v. Moon Lake Elec. Ass’n*, 45 F. Supp. 2d 1070, 1072 (D. Colo. 1999) (stating that the use of reasonably plain terms is notice of congressional intent).

these cases until after the energy companies ignored the warnings and refused to enact safer practices.²⁶⁷

Furthermore, wind power proponents suggest that wind facilities are being unfairly singled out and criticized among the numerous human activities that kill birds, including driving automobiles and erecting buildings.²⁶⁸ Because birds will be killed as a result of many technologies in our modern civilization, rather than thwart every wind development with MBTA enforcement actions, FWS decided to focus on working with the industry to decrease the number of bird-kills.²⁶⁹

B. Applying Federal Bird and Bat Protections to Wind Energy Facilities

Under FWS's enforcement policy, wind power developers could be assessed large fines and could be held criminally liable for avian deaths caused by their wind turbines. Developer observance of FWS Wind Energy Guidelines and compliance with the ESA and BGEPA take permits decrease a wind facility's chances of being held liable under these statutes. Yet, these statutes impose criminal and/or civil liability without regard to the wind developers' good faith or lack of fault.

1. Criminal prosecution and mens rea

Like many other environmental statutes, federal laws protecting plant and animal species include criminal charges.²⁷⁰ The MBTA establishes a strict liability misdemeanor offense that penalizes certain violations whether they are committed negligently, unintentionally, or deliberately.²⁷¹ The penalties for a misdemeanor under the MBTA

267. See *Apollo Energies*, 611 F.3d at 682; *Moon Lake Elec. Ass'n*, 45 F. Supp. 2d at 1072.

268. Fears, *supra* note 262.

269. *Id.*

270. See, e.g., 16 U.S.C. § 707 (2012).

271. There is no scienter requirement as part of the MBTA's misdemeanor provision. See, e.g., *United States v. Corrow*, 119 F.3d 796, 805 (10th Cir. 1997) (holding that the MBTA is a "strict liability" statute); *United States v. Boynton*, 63 F.3d 337, 343 (4th Cir. 1995) (finding intent is immaterial under the MBTA because it is a strict liability crime); *United States v. Smith*, 29 F.3d 270, 273 (7th Cir. 1994) (holding that strict liability in the MBTA does not offend due process); *United States v. Engler*, 806 F.2d 425, 431 (3d Cir. 1986) (holding that strict liability under the MBTA's felony provision would be impermissible judicial legislation); *United States v. Manning*, 787 F.2d 431, 435 n.4 (8th Cir. 1986) (finding it is unnecessary to prove the MBTA was violated with specific intent or guilty knowledge); *United States v. Catlett*, 747 F.2d 1102, 1105 (6th Cir. 1984) (*per curiam*) (holding that a minimum scienter was required but not actual guilty knowledge); *United States v. Wood*, 437

extend to up to six months imprisonment and a \$15,000 fine for each violation.²⁷² The MBTA also establishes a felony violation, which requires a “knowing” violation and imposes a penalty of up to two years imprisonment and a \$250,000 fine.²⁷³ Under the MBTA, all equipment used in taking or killing of a migratory bird in violation of the Act with the intent to sell or barter must be forfeited to the United States and may be seized and held pending prosecution of the violator.²⁷⁴ Although wind turbine bird kills are not related to sale or bartering of the species, the wind turbine itself is considered “equipment” when turbines kill a bird.²⁷⁵ The statute provides the ability to arrest a violator without a warrant.²⁷⁶ The MBTA applies to acts on both public and private lands, and in 1920, it survived a Tenth Amendment challenge in the United States Supreme Court.²⁷⁷

To compare, penalties under the BGEPA are up to two years imprisonment and \$10,000 in fines, with sanctions doubled if the violator is an organization or company.²⁷⁸ The ESA also establishes criminal sanctions, although that statute carries no felony charges,²⁷⁹ unlike the MBTA. Criminal sanctions under the ESA rise only to the misdemeanor level and, again unlike the MBTA, an ESA misdemeanor charge requires a knowing violation.²⁸⁰

In 2013, the first case ever was brought against a wind company for violating the MBTA: *United States v. Duke Energy Renewables, Inc.*²⁸¹ On November 22, 2013, Duke Energy Renewables pled guilty to violating the MBTA after two wind turbine sites killed fourteen golden eagles and 149 other protected birds between 2009 and 2013.²⁸² In the

F.2d 91, 92 (9th Cir. 1971) (per curiam) (holding an inference of a scienter is permitted).

272. 16 U.S.C. § 707(a).

273. § 707(b); 18 U.S.C. § 3571(b).

274. 16 U.S.C. § 707(d).

275. *See id.*

276. § 706.

277. *See Missouri v. Holland*, 252 U.S. 416, 435 (1920) (holding that reliance on the States to protect birds is insufficient because birds do not have a permanent habitat within each state; they are only transitory, and thus the treaty and statute must be upheld to protect the national interest of bird preservation).

278. 16 U.S.C. § 668(a); *Federal Laws that Protect Bald Eagles*, *supra* note 9.

279. 16 U.S.C. § 1540(b)(1).

280. *Id.*

281. Plea Agreement, *United States v. Duke Energy Renewables Inc.*, No. 2:13-CR-00268 (D. Wyo. Nov. 22, 2013).

282. Press Release, U.S. Dep’t of Justice, Utility Company Sentenced in Wyoming for Killing Protected Birds at Wind Projects (Nov. 22, 2013), <http://www.justice.gov/>

agreement, Duke agreed to pay \$1 million in fines, provide restitution, and perform community service.²⁸³ As part of the agreement, Duke was placed in a probationary period of five years, during which it had to develop a migratory bird compliance plan and apply it to minimize the number of bird deaths at its other wind energy sites in Wyoming.²⁸⁴ To implement the plan, it was “estimated to cost Duke about \$600,000 per year, and Duke had to apply for eagle take permits for its other wind sites.”²⁸⁵

Although *United States v. Duke Energy Renewables, Inc.* was the first case to prosecute a wind energy company, the settlement illustrates the weaknesses of the voluntary guidelines. First, Duke was prosecuted because it “failed to make all reasonable efforts to build the projects in a way that would avoid risk of avian deaths by the collision with turbine blades, despite prior warnings about this issue from FWS.”²⁸⁶ Duke knew about the voluntary guidelines when constructing its wind turbines and chose to ignore them. Because of the voluntary nature of the guidelines, companies are not forced to comply and often choose not to.²⁸⁷

Not too long after the *Duke* case, a second wind company was held responsible for its actions when it violated the MBTA. In *United States v. PacifiCorp*,²⁸⁸ PacifiCorp, like Duke, pled guilty and entered into a plea agreement on December 9, 2014 for violating the MBTA when thirty-eight golden eagles and 336 other protected birds were found dead at two of its wind project sites in Wyoming between 2009 and 2014.²⁸⁹ Under the agreement, PacifiCorp was ordered to pay \$2.5 million for fines and restitution as well as perform community service.²⁹⁰ Like Duke, PacifiCorp had to implement a migratory bird compliance

opa/pr/utility-company-sentenced-wyoming-killing-protected-birds-wind-projects [https://perma.cc/TH6Z-DCX6].

283. *Id.*

284. *Id.*

285. *Id.*

286. *Id.*

287. *See id.* (describing how Duke Energy in particular failed to comply with the guidelines).

288. Plea Agreement, *United States v. PacifiCorp Energy*, No. 2:14-CR-00301 (D. Wyo. Dec. 19, 2014).

289. Press Release, U.S. Dep’t of Justice, Utility Company Sentenced in Wyoming for Killing Protected Birds at Wind Projects (Dec. 19, 2014), <https://www.justice.gov/opa/pr/utility-company-sentenced-wyoming-killing-protected-birds-wind-projects> [https://perma.cc/7PVL-ZZ8Z].

290. *Id.*

plan at a price of about \$600,000 a year and apply for eagle take permits for the wind projects that were involved.²⁹¹ Also like Duke, “PacifiCorp Energy built two of its Wyoming wind projects in a manner it would know would likely result in the death of eagles and other protected birds.”²⁹² These wind companies were not forced to shut down the wind turbines that were causing the bird deaths: they paid a fine and carried on operations with an approved mitigation plan.

In 2016, AES Laurel Mountain Wind Energy Company lost a judgment for violating the MBTA.²⁹³ With sixty-one GE 1.6 MW turbines (97.6 Mw total) and a 32 MW Battery Energy Storage System, migrating songbirds became trapped in the light of the battery complex when there was fog and a low cloud ceiling—resulting in 483 birds being destroyed as a result of colliding with the battery system and wires.²⁹⁴ AES Laurel Mountain LLC was ordered to pay \$30,000 in fines after pleading guilty to two federal charges under the MBTA related to the deaths.²⁹⁵

In species protection cases, appellate courts have been willing to infer the mens rea and scienter requirements for criminal prosecution even where the defendants claim no knowledge of the protected status of the species or the limitations in their operating permits.²⁹⁶ Defendants have imputed knowledge of the law and of what permits are required thereunder. Thus, it is irrelevant whether the person committing an environmental crime knew the act was illegal.²⁹⁷ The prevailing rule is

291. *Id.*

292. *Id.* (quoting Sam Hirsch, the Acting Assistant Attorney General for the Justice Department’s Environment and Natural Resources Division).

293. Plea Agreement, *United States v. AES Laurel Mountain, LLC*, No. 2:15-CR-00023 (N.D. W. Va. Jan. 29, 2015).

294. *United States v. AES Laurel Mountain Wind LLC*, WINDACTION (June 3, 2019), <http://www.windaction.org/posts/44434-us-v-aes-laurel-mountain-wind-llc> [<https://perma.cc/CB4P-YXAS>].

295. Amended Judgment in a Criminal Case, *United States v. AES Laurel Mountain LLC*, 2:15-CR-00023 (N.D.W. Va. Feb. 23, 2016).

296. *See, e.g.*, *United States v. Hopkins*, 53 F.3d 533, 538–39 (2d Cir. 1995) (applying to the defendant a “presumption of awareness” of the parameters of the Clean Water Act); *United States v. Weitzenhoff*, 35 F.3d 1275, 1283–86 (9th Cir. 1994) (determining from legislative history that a defendant need only knowingly commit an act that violates the CWA, rather than knowingly violate the CWA).

297. *United States v. Int’l Minerals & Chem. Corp.*, 402 U.S. 558, 563 (1971) (holding that “ignorance of the law is no defense” to violations of federal hazardous material regulations); *see also* DANIEL A. FARBER & ROGER W. FINDLEY, *ENVIRONMENTAL LAW IN A NUTSHELL* 255–57 (9th ed. 2014) (discussing knowledge requirements for corporate officers).

that the government need only prove that an act that violated an environmental law was done knowingly rather than inadvertently, and it is not necessary to prove motivation or an evil or conspiratorial purpose.²⁹⁸ Further, it is not necessary that significant harm resulted to the environment be proven by the government, and it is difficult to defend based on selective government prosecution.²⁹⁹

Wind developers are unlikely to evade federal liability under these statutes by forming a corporation to own and develop the wind power facilities. Although establishing corporate liability in non-environmental contexts can be significantly challenging, some environmental laws can ignore the protective wall between a corporation and its officers and directors. In the traditional corporate context, officers and directors, when acting in a corporate capacity, are not personally liable within the corporate veil, nor are they normally liable for actions taken by others in the corporation without their knowledge, consent, or authorization.³⁰⁰ If, however, a director or officer of a corporation directly participates in an unlawful act, particularly if that act is tortious, he or she may incur personal liability.³⁰¹ Short of such direct action, in the non-environmental context, the corporate shield usually protects an officer or director from liability.

Federal environmental statutes, however, hold corporate officers environmentally liable even where they do not directly involve themselves in critical decisions.³⁰² Corporate officials, in their positions of general authority and control, can be deemed to bear ultimate responsibility for environmental transgressions.³⁰³ An

298. See, e.g., *Hopkins*, 53 F.3d at 538–39 (applying to the defendant a “presumption of awareness” of the parameters of the CWA); *Weitzenhoff*, 35 F.3d at 1299 (“The harsh penalty for this serious crime must be reserved for those who know they are, in fact, violating permit limitations.”).

299. See *United States v. Pozsgai*, 999 F.2d 719, 736 (3d Cir. 1993) (stating that enforcement action under the CWA is proper where there has been a violation of the law, despite whether the degree of environmental harm was small); *United States v. Mills*, 817 F. Supp. 1546, 1550 (N.D. Fla. 1993), *aff’d*, 36 F.3d 1052 (11th Cir. 1994) (determining that movants could not show selective prosecution and stating that they could not even demonstrate that prosecutions for filling wetlands were not normal in their circumstances).

300. JAMES D. COX & THOMAS LEE HAZEN, *BUSINESS ORGANIZATIONS LAW* 156–58 (4th ed. 2016).

301. *Id.*

302. See FERREY, *supra* note 25, §§ 6:161–6:177.

303. In *United States v. Northeastern Pharmaceutical & Chemical Co.*, 810 F.2d 726 (8th Cir. 1986), Edwin Michaels, the major shareholder and president of the company, was found liable under section 7003(a) of RCRA for contributing to the disposal of hazardous substances presenting an imminent and substantial endangerment to

individual in a responsible position in a corporation can be charged with imputed scienter, even if he or she possesses no actual knowledge of the law or the violations.³⁰⁴

2. *Court dicta on whether the MBTA should apply to wind developments*

The MBTA is a criminal statute to protect migratory birds from various perceived human dangers. When originally enacted in 1918, it was aimed at poachers and traffickers in bird species.³⁰⁵ There is no indication that it was directed in any way at industrial factories and processes, power plants, or residences posing threats to birds.³⁰⁶ As there were no modern wind turbines at the time of its enactment, it does not specifically address wind projects.

public health. *Id.* at 729, 745–46. Michaels did not have any involvement in day-to-day corporate hazardous waste disposal activities but was found liable for his ultimate control over the corporation. *Id.* at 729–30, 745–46. This occurred even without any evidence produced at trial that he directly participated in the alleged disposal activities. *See id.* at 745 (describing Michaels as a “contributor”). In *Kelley v. Arco Industry*, 721 F. Supp. 873 (W.D. Mich. 1989), the state of Michigan sought to impose liability under CERCLA against the controlling stockholder and president of the Board of Directors of the defendant company for general environmental contamination. *Id.* at 875–76, 878. This case survived a motion to dismiss and allowed for the imposition of liability under CERCLA even though the individual defendants did not have day-to-day control over the polluting activities. *Id.* at 876. In relatively small or closely held corporations, civil liability may be imposed on corporate officers and stockholders without their direct participation in the alleged wrongful activities. *Id.* at 875–76, 878.

304. *See, e.g.*, *United States v. Iverson*, 162 F.3d 1015, 1022–23 (9th Cir. 1998) (holding that a responsible corporate officer is criminally liable if he has authority to exercise control over the corporation and the activity that is causing the discharge).

305. *See Citizens Interested in Bull Run, Inc. v. Edrington*, 781 F. Supp. 1502, 1510 (D. Ore. 1990) (explaining that the MBTA “was intended to apply to individual hunters and poachers”); *see also Mahler v. U.S. Forest Serv.*, 927 F. Supp. 1559, 1579, 1583 (S.D. Ind. 1996) (explaining that “[t]he prohibitions apply only to activity that is intended to kill or capture birds or to traffic in their bodies and parts” and “to activities that are intended to harm birds or to exploit harm to birds, such as hunting and trapping, and trafficking in birds and bird parts. The MBTA does not apply to other activities that result in unintended deaths of migratory birds”).

306. *See, e.g.*, *United States v. Brigham Oil & Gas, L.P.*, 840 F. Supp. 2d 1202, 1212 (D.N.D. 2012) (interpreting the MBTA to not apply to an “[otherwise] lawful action that may result in the death of a bird”).

a. Who may bring suit under the MBTA?

DOI and DOJ have authority to enforce the MBTA by bringing criminal charges and assessing civil penalties against violators.³⁰⁷ In the absence of government prosecution, the MBTA lacks language that expressly grants standing to private citizens to bring an action to compel the government's performance of its nondiscretionary duties under the MBTA. This is in contrast to many other environmental statutes, such as the ESA,³⁰⁸ which do contain such affirmative citizen suit authorizations. An individual or group theoretically could bring a mandamus action against DOI to compel it to carry out its nondiscretionary MBTA duties. To date, however, there are no reported mandamus actions pursuant to the MBTA.³⁰⁹

b. Is a bird collision within the statute?

There are no reported court decisions imposing criminal liability under the MBTA on wind development projects.³¹⁰ Further, there are no decisions in which a court ruled that an MBTA "take" had occurred via a collision with any type of structure, such as a building owned or operated by a defendant.³¹¹ The two actions by DOJ against wind project owners were resolved by settlements rather than judicial decisions.³¹² Yet, several court decisions have found liability under the MBTA in situations somewhat analogous to wind developments.³¹³ Although some courts have held that the MBTA's proscription against killing birds is not limited to intentionally harmful conduct, such as that typically exhibited by hunters or poachers,³¹⁴ with few exceptions, the

307. See 16 U.S.C. § 704 (2012).

308. See 16 U.S.C. § 1540(g)(1)(A)–(C) (stating a citizen may bring a suit against a person or governmental agency, instrumentality, or the Secretary for violating the statute, or to compel the Secretary to apply prohibitions against takings of endangered species).

309. This statement based on personal Westlaw research by the author.

310. This statement based on personal Westlaw research by the author.

311. This statement is based on personal Westlaw research by the author.

312. See *supra* notes 281 & 288 and accompanying text.

313. See *supra* notes 296–99 and accompanying text.

314. See, e.g., *United States v. Apollo Energies, Inc.*, 611 F.3d 679, 682, 690–91 (10th Cir. 2010) (finding that bird deaths caused by birds' falling into oil drilling equipment violated the MBTA even though the defendant operators did not intend to impact birds, because criminal prosecution under the MBTA only requires that a defendant proximately cause the violation); *United States v. Moon Lake Elec. Ass'n*, 45 F. Supp. 2d 1070, 1074, 1083 (D. Colo. 1999) (finding that the MBTA extends to "conduct beyond that normally exhibited by hunters and poachers" and holding that

reported cases primarily involve defendants who engaged in hunting, poaching, possessing or selling protected birds.³¹⁵ Among the exceptions are three cases involving deaths via pesticide ingestion.³¹⁶

In *United States v. Moon Lake Electric Ass'n*, criminal charges were lodged against a rural, electric cooperative after its failure to install equipment on its electricity poles that would have prevented the electrocution of birds, which resulted in the alleged death or injury of thirty-eight birds of prey.³¹⁷ This case established precedent, albeit only in Colorado, that structures or moving objects which are probably not going to result in dead birds are not subject to the strict liability misdemeanor provisions of the MBTA.³¹⁸ Nonetheless, the defendant's motion to dismiss was still denied, and the court determined that the penalties under 18 U.S.C. § 3571(b), which

failure to take precautions to prevent bird deaths on electrical power lines could violate the MBTA).

315. See, e.g., *United States v. Adams*, 174 F.3d 571, 579 (5th Cir. 1999) (finding that subjective good faith and objective compliance of common norms meant that the MBTA was not violated); *United States v. Boynton*, 63 F.3d 337, 344–45 (4th Cir. 1995) (holding that the MBTA should be read to mean that “hunting over grain scattered as the result of any one of the number of possible methods accepted in the community for performing an agricultural operation is legal” and hunting over grain that is scattered by a method “not accepted as an agricultural method in the community is not”); *United States v. Traxler*, 847 F. Supp. 492, 495 (S.D. Miss. 1994), *aff'd*, 41 F.3d 662 (5th Cir. 1994) (finding that hunting doves is allowed over some prepared fields, even though the crops were not from an agricultural operation).

316. *United States v. FMC Corp.*, 572 F.2d 902, 903, 908 (2d Cir. 1978) (upholding MBTA criminal fines assessed against a pesticide manufacturer for dumping wastewater into a pond, thereby causing the death of several species of birds); *United States v. Rollins*, 706 F. Supp. 742, 743, 745 (D. Idaho 1989) (dismissing charges that the defendant violated the MBTA by using pesticides that killed geese on his alfalfa farm); *United States v. Corbin Farm Serv.*, 444 F. Supp. 510, 532–33, 536 (E.D. Cal. 1978) (reasoning that the MBTA's broad language prohibits actions other than those committed during hunting and concluding “that the MBTA can constitutionally be applied to impose criminal penalties on those who did not intend to kill migratory birds” such as by releasing poison into the environment), *aff'd on other grounds*, 578 F.2d 259 (9th Cir. 1978).

317. 45 F. Supp. 2d at 1088. The court relied on the fundamental requirement that the government must show proximate cause even in strict liability cases. *Id.* at 1085. The court held that “(b)ecause the death of a protected bird is generally not a probable consequence of driving an automobile, piloting an airplane, . . . or living in a residential dwelling with a picture window, such activities would not normally result in liability under § 707(a) [misdemeanor], even if such activities would cause the death of protected birds.” *Id.*

318. *Id.*

include a possible \$5000 fine and up to six months imprisonment, may apply to the defendant's actions.³¹⁹

Are wind turbines analogous to power lines? They are both structures and both operate with electric current; large wind turbines require electric power lines for their operations, and both may be attractive to bird species.³²⁰ However, the factual similarities obscure key differences. In *Moon Lake*, for instance, there were not only inexpensive technologies to make the offending power poles safer, but FWS had also repeatedly asked the utility to take action, and it had not done so.³²¹ In contrast, while wind turbine avian risk may be able to be mitigated in certain circumstances, the risk posed by a moving turbine blade, necessary to produce wind power, cannot easily be altered, screened, or blocked without significantly diminishing the productivity of the turbine. The differences between wind turbines and power poles are sufficient enough to distinguish the two and makes application of cases involving power poles inapplicable to wind turbines.

In another matter involving energy facilities, three MBTA cases in the 1970s involved birds dying after becoming trapped in oil companies' sump pits.³²² In one case, the defendant was charged with fourteen counts for the deaths of fourteen ducks, pled guilty, and was fined \$7000.³²³ In another case, the defendant pled "no contest" to seventeen counts for the death of twenty-three birds.³²⁴ In the wake of the 1989 Exxon Valdez oil spill in Prince William Sound, Alaska, Exxon Corporation and Exxon Shipping, each pled guilty to one count of violating the MBTA and were jointly fined.³²⁵ Three district courts

319. *Id.*

320. See Lilley & Firestone, *supra* note 239, at 1184.

321. *United States v. Moon Lake Elec. Ass'n*, 45 F. Supp. 2d 1070, 1071 (D. Colo. 1999).

322. *United States v. Equity Corp.*, Cr. 75-51 (D. Utah, Dec. 8, 1975); *United States v. Union Tex. Petroleum*, 73-CR-127 (D. Colo., July 11, 1973) (prosecution for failure to maintain oil sump pit, disposition unknown); see also *Moon Lake*, 45 F. Supp. 2d at 1083 (discussing *United States v. Stuarco Oil Co.*, 73-CR-129 (D. Colo., Aug. 17, 1973)).

323. *Moon Lake*, 45 F. Supp. 2d at 1083 (discussing *United States v. Equity Corp.*, Cr. 75-51 (D. Utah, Dec. 8, 1975)).

324. *Id.* (discussing *United States v. Stuarco Oil Co.*, 73-CR-129 (D. Colo., Aug 17, 1973)).

325. *In re The Exxon Valdez*, 296 F. Supp. 2d 1071, 1079 (D. Alaska 2004), *vacated*, 472 F.3d 600 (9th Cir. 2006). As a result of the two companies' guilty pleadings with reference to the MBTA, the Clean Water Act, and the Refuse Act, Exxon was fined a net amount of \$25 million, and ordered to pay restitution in the amount of \$100 million. *Id.*

found that mine operators were exposed to criminal liability when cyanide leached from their mining operations and killed migratory birds.³²⁶ Individuals, as well as businesses, are liable for killing birds by poisoning.³²⁷ Some courts have refused to extend the MBTA to individuals or operations which are not designed to kill wildlife, but result only in incidental ancillary bird deaths.³²⁸

The MBTA case law provides contradictory guidance in determining whether MBTA liability could attach in the absence of evidence of an actual bird kill. Protected species' habitat modification or habitat destruction appears insufficient for MBTA liability, compared to liability for habitat harm pursuant to other species statutes under existing precedent.³²⁹ While there is no case considering the effect a wind development has on habitat, in several cases addressing the effects of logging activities, the federal courts have refused to

326. See Robert S. Anderson & Jill Birchell, *Prosecuting Industrial Takings of Protected Avian Wildlife*, 59 ENVTL. CRIMES 65, 71 (2011).

327. See *United States v. Van Fossan*, 899 F.2d 636, 639 (7th Cir. 1990) (upholding conviction of homeowner under the MBTA for inadvertently poisoning with strychnine two grackles and two doves); cf. *United States v. Rollins*, 706 F. Supp. 742, 744 (D. Idaho 1989) (due process requirements of fair advance notice prevented finding defendant farmer acting in good faith liable under the MBTA).

328. See *Newton Cty. Wildlife Ass'n v. U. S. Forest Serv.*, 113 F.3d 110, 115–16 (8th Cir. 1997) (finding that timber harvesting that indirectly resulted in bird deaths was not within the scope of activity covered by the MBTA); *Seattle Audubon Soc'y v. Evans*, 952 F.2d 297, 303 (9th Cir. 1991) (finding significance in the fact that the definition of prohibited "takes" under the MBTA differs from that in the Endangered Species Act, which includes "harass" and "harm" (citing 16 U.S.C. § 1532(19) (2012)); *United States v. Brigham Oil & Gas, L.P.*, 840 F. Supp. 2d 1202, 1210 (D.N.D. 2012) (holding that activities that are "unrelated to hunting or poaching and not directed at birds does not constitute a crime" under the MBTA); see also *Babbitt v. Sweet Home Chapter of Cmty. for a Great Or.*, 515 U.S. 687, 691 (1995) (discussing regulations that allow the Secretary of the Interior to issue permits where the taking is incidental to "an otherwise unlawful activity" (quoting 16 U.S.C. § 1539(a)(1)(B) (2012))).

329. See *Sierra Club v. Martin*, 933 F. Supp. 1559, 1564 (N.D. Ga. 1996) (holding that habitat destruction alone, without killing any birds, does not violate the MBTA), *rev'd on other grounds* 110 F.3d 1551 (11th Cir. 1997) (asserting that the MBTA does not apply to the federal government including the Forest Service); *Mahler v. U.S. Forest Serv.*, 927 F. Supp. 1559, 1573 (S.D. Ind. 1996) (ruling that habitat destruction does not qualify as a "taking" of migratory birds within the purview of the MBTA); *Citizens Interested in Bull Run, Inc. v. Edrington*, 781 F. Supp. 1502, 1510 (D. Or. 1991) (finding "that a 'taking' under the MBTA does not include habitat modification resulting from [the U.S. Forest Service's sale of trees for timber]"); see also *Seattle Audubon Soc'y*, 952 F.2d at 303 (ruling that "habitat destruction leading indirectly to bird deaths" does not constitute a taking under the MBTA).

recognize habitat modification or destruction as a prohibited “taking” under the MBTA.³³⁰ Even logging a forest during the nesting season of migratory birds has been found not to be an MBTA violation.³³¹ However, there is some contrary dicta in precedent.³³² By analogy, wind projects would appear to be less detrimental to bird habitat preservation than forest logging operations.

C. Congressional Intent; Agency Discretion

An argument could be made that an FWS policy to hold wind facilities liable for bird kills under the MBTA would be inconsistent with Congress’s intent in promulgating the statute. Under principles of equal protection, prosecution pursuant to the MBTA must be applied consistently: If wind power bird kills are prosecuted, other structures and machines that kill birds through collision should be similarly prosecuted. However, no court has adjudicated such a case, with the only two prosecutions of wind turbines to date both being settled before trial with no criminal penalties. To put wind turbine bird kills in context, FWS states that the estimated annual avian mortality from anthropogenic sources includes:³³³

- 89–340 million killed by collisions with vehicles
- 365–988 million from collisions with buildings and windows
- 8–57.3 million from strikes with power lines
- Tens of thousands–hundreds of thousands or more from electrocutions
- 6.6 million from communication towers
- 140,000–327,000 thousand from wind turbines
- 1.4 and 4.0 billion from domestic cats

In terms of magnitude of risk and cumulative impact, wind turbines are not a significant factor in bird mortality. Hunting and domestic cats are estimated each to kill at least 100 million birds per

330. See, e.g., *Curry v. U.S. Forest Serv.*, 988 F. Supp. 541, 549 (W.D. Pa. 1997) (“[T]he loss of migratory birds as a result of timber sales . . . do not constitute a ‘taking’ or ‘killing’ within the meaning of the MBTA.”).

331. *Mahler*, 927 F. Supp. at 1583.

332. See, e.g., *Sierra Club v. Martin*, 933 F. Supp. at 1564–65 (noting that although logging by itself does not violate the MBTA, logging during the nesting season is likely to result in killing birds, which would violate the MBTA) (citing *Sierra Club v. USDA*, No. 94-CV-4061-JPG (S.D. Ill. Sept. 25, 1995) (finding the Forest Service allowed logging during the nesting season)).

333. *Threats to Birds*, *supra* note 2.

year.³³⁴ The relative risk of avian mortality from wind turbines is de minimis when compared to other background and environmental factors. In sum, the magnitude of avian mortality resulting from the moderate number of wind turbines pales in comparison to that of other structures, windows, and vehicles.³³⁵ Although the number of wind turbines now could increase one-thousand percent if its costs do not increase or continue to decline.

On the question of whether the MBTA should apply to all man-made causes of bird deaths, one district court, adjudicating an energy-related matter but not a wind turbine case, found that

[b]ecause the death of a protected bird is generally not a probable consequence of driving an automobile, piloting an airplane, maintaining an office building, or living in a residential dwelling with a picture window, such activities would not normally result in liability under § 707(a), even if such activities would cause the death of protected birds. Proper application of the law to an MBTA prosecution, therefore, should not lead to absurd results.³³⁶

A circuit court found that it “would offend reason and common sense” to hold individuals liable under the MBTA for all bird deaths resulting from collisions with buildings, automobiles, airplanes, and other man-made structures.³³⁷

The Supreme Court has yet to comment on the prudential limits of MBTA application, and no court has addressed renewable energy projects under the statute. It has been well known for years that birds are killed by airplane propellers and other moving blades. However, if planes, trains, and automobiles are not prosecuted for bird deaths, then wind turbine owners should logically not be prosecuted either. If cat owners are not prosecuted, why are turbine developers?

While much larger in its modern iteration, wind technology has been used in the United States since long before the founding of the

334. ERICKSON, *supra* note 126, at 4 (explaining that the National Audubon Society estimates that there are 100 million plus bird deaths due to house cats); see Kerlinger, *Avian Issues and Potential Impacts Associated With Wind Power Development in the Nearshore Waters of Long Island*, *New York* 425 (Oct. 2001) (citing FWS estimates that 100 million plus killed by legal hunting per year).

335. See Scott R. Loss et al., *Direct Mortality of Birds from Anthropological Causes*, 46 ANN. REV. ECOLOGY, EVOLUTION, SYSTEMATICS 99, 102 (2015), <https://www.annualreviews.org/doi/pdf/10.1146/annurev-ecolsys-112414-054133> [<https://perma.cc/S8LN-JVM6>].

336. *United States v. Moon Lake Elec. Ass'n*, 45 F. Supp. 2d 1079, 1085 (D. Colo. 1999).

337. *United States v. FMC Corp.*, 572 F.2d 902, 905 (2d Cir. 1978).

Republic.³³⁸ There were quite a few rural windmills in existence and use at the time Congress a century ago enacted the MBTA.³³⁹ There is no indication that Congress intended the MBTA to apply, and there is no evidence that FWS ever did apply it to such early wind machines used for mechanical power, which, like their modern counterparts, also had the potential to harm birds. Both traditional and modern wind machines employ turning blades to harness energy.³⁴⁰

When the MBTA was amended on several occasions during the past ninety years, nothing in the legislative history indicates that Congress either sought any amendments to include wind generators or was dissatisfied with the practice to date of not applying the statute to wind or other power generation technologies.³⁴¹ In fact, there is no indication that Congress intended to do more than implement the MBTA treaty obligations it had with several other nations in the context of domestic law to prevent the trafficking in birds.³⁴² These treaties clearly did not intend to criminalize the work of architects, building owners, automobile drivers, or others who are unable to avoid unintentionally killing birds with their structures or vehicles.

Although in the past, wind turbines were not so large, so plentiful, or so concentrated in given high-wind areas, for FWS to begin now to enforce the MBTA aggressively against wind turbine owners would be a departure from historic agency practice. Agencies interpreting their own non-rulemaking policies still enjoy an initial presumption of deference from courts, but less deference than in a rulemaking.³⁴³ This recently has been expanded by the Supreme Court not only to include substantive decisions, but also procedural decisions about an

338. See *Wind Explained: History of Wind Power*, U.S. Energy Info. Admin., <https://www.eia.gov/energyexplained> [<https://perma.cc/Y3N7-LR8U>] (stating that American colonists used wind power to pump water and cut wood).

339. See *History of U.S. Wind Energy*, U.S. DEP'T OF ENERGY, <https://www.energy.gov/eere/wind/history-us-wind-energy> [<https://perma.cc/276N-9ML9>].

340. See *supra* notes 102–12 and accompanying text.

341. Pub. L. No. 105–312, 112 Stat. 2956 (1998); Pub. L. No. 99–645, 100 Stat. 3590 (1986); Pub. L. No. 95–616, 92 Stat. 3111 (1978); Pub. L. No. 93–300, 88 Stat. 190 (1974); Pub. L. No. 91–135, 83 Stat. 282 (1969); Pub. L. No. 90–578, 82 Stat. 1118 (1968); Pub. L. No. 86–732, 74 Stat. 866 (1960); Pub. L. No. 74–728, 49 Stat. 1556 (1936); Migratory Bird Treaty Act, Pub. L. No. 65–186, 40 Stat. 755 (1918); see also S. Rep. No. 99–445 (1986). This same Congressional intention was echoed in the recent 1998 amendments as well. S. Rep. No. 105–366 (1998).

342. See *supra* note 341.

343. See *United States v. Mead Corp.*, 533 U.S. 218, 234–35 (2001), *remanded to* 283 F.3d 1342 (Fed. Cir. 2002); *Christensen v. Harris*, 529 U.S. 576, 587 (2000); *Skidmore v. Swift & Co.*, 323 U.S. 134, 140 (1944).

agency's own subject matter jurisdiction. The Supreme Court in *EPSCA* acknowledged that the Court in *Chevron U.S.A. Inc. v. Natural Resources Defense Council, Inc.*,³⁴⁴ recognized that Congress can be found to have implicitly delegated discretionary authority to an administrative agency.³⁴⁵ In *Arlington v. FCC*,³⁴⁶ the majority held that *Chevron* deference applies to an agency's interpretation of the scope of its own statutory jurisdiction: "[s]tatutory ambiguities will be resolved, within the bounds of reasonable interpretation, not by the courts but by the administering agency."³⁴⁷ There is no difference between deference afforded to the agency by an agency's "jurisdictional" or "non-jurisdictional" interpretations.³⁴⁸ The Court held that "[i]f 'the agency's answer is based on a permissible construction of the statute,' that is the end of the matter."³⁴⁹

However, when an agency makes a sudden turn in its long-standing administrative construction, it is subjected to more scrutiny by a reviewing court, without deference to the agency.³⁵⁰ An agency decision will be upheld if it is supported by a rational basis, but the courts will conduct a "probing, in depth review" of the agency's decision-making process.³⁵¹ The agency would need to establish that

344. 467 U.S. 837 (1984).

345. See *FERC v. Elec. Power Supply Ass'n*, 136 S. Ct. 760, 773 & n.5 (2016); see also *Mead Corp.*, 533 U.S. at 228–29 (2001).

346. 569 U.S. 290 (2013), *remanded to* 307 F.3d 1317 (11th Cir. 2002).

347. *Id.* at 296 (citing *T&T Corp. v. Iowa Utils. Bd.*, 525 U.S. 366, 397 (1999)); see also *Chevron v. Nat. Res. Def. Council*, 467 U.S. 837, 842–43 (1984), *remanded to* 766 F.2d 969 (6th Cir. 1985) (establishing a test where the Court must first ask whether Congress directly spoke to the precise question at issue; if so, the Court must give effect to Congress's unambiguously expressed intent, and if "the statute is silent or ambiguous," the court must defer to the administering agency's construction of the statute so long as it is permissible).

348. There is no exception that exists to the normal deferential standard of review for jurisdictional and legal questions. *NLRB v. City Disposal Sys. Inc.*, 465 U.S. 822, 830 n.7 (1984); see *Arlington*, 569 U.S. at 298 ("[T]here is no principled basis for carving out some arbitrary subset of such claims as 'jurisdictional.'"); see, e.g., *Nat'l Cable & Telecomms. Ass'n v. Gulf Power Co.*, 534 U.S. 327, 333, 339 (2002) (finding a statutory term unambiguous, but stating that agencies get to reasonably interpret statutes when they are ambiguous).

349. *Arlington*, 569 U.S. at 307 (quoting *Chevron*, 467 U.S. at 843); see also, e.g., *United States v. Eurodif S.A.*, 555 U.S. 305, 316 & n.7 (2008), *remanded to* 333 F. App'x 521 (Fed. Cir. 2009).

350. See *Int'l Bhd. of Teamsters, Chaffeurs, Warehousemen & Helpers of America v. Daniel*, 439 U.S. 551, 566 & n.20 (1979); *Morton v. Ruiz*, 415 U.S. 199, 237 (1974); *Espinoza v. Farrah Mfg. Co.*, 414 U.S. 86, 93–94 (1973).

351. *Citizens to Pres. Overton Park, Inc. v. Volpe*, 401 U.S. 402, 415 (1971).

there was new altering information or technology.³⁵² While now much more refined, there has been no fundamental change for a thousand years in using a mounted spinning blade to harness wind power, and therefore no rational reason now to apply the MBTA to wind projects.

Even as new information reveals that moving blades are a hazard to migratory birds, logically, one would have to consider whether all such moving blades, none of which are specifically identified in the statutes, should be regulated or prosecuted. This would include dry cooling units at power plants which have massive fan units to dissipate heat into the air,³⁵³ emission stacks of such plants which may attract birds,³⁵⁴ commercial and recreational prop airplanes, and other such appliances.

D. Does the MBTA Extend to Federalized Developments?

Another key consideration, even if the statute applies to wind turbines, is whether it applies to the federal government. U.S. courts presently are split on the issue of whether the MBTA applies at all to government agencies. In 1997, the Eleventh Circuit³⁵⁵ and the Eighth Circuit³⁵⁶ held that the MBTA does not apply to the federal government; claims against the United States under the MBTA were denied.³⁵⁷ The Eighth Circuit's rationale was that the MBTA sanctions apply only to "any person, association, partnership, or corporation,"³⁵⁸ and in common usage the term "person" does not include the sovereign.³⁵⁹ However, in 2000, the D.C. Circuit held that the MBTA

352. *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 42 (1983) ("[A]n agency changing its course by rescinding a rule is obligated to supply a reasoned analysis for the change beyond that which may be required when an agency does not act in the first instance.").

353. See FERREY, *supra* note 25, § 2:4 (discussing cooling tower technologies).

354. See *id.* § 6:129 (discussing dimensional and height controls).

355. *Sierra Club v. Martin*, 110 F.3d 1551, 1555 (11th Cir. 1997) (interpreting the "plain language" of the MBTA to not apply to the federal government).

356. *Newton Cty. Wildlife Ass'n v. U.S. Forest Serv.*, 113 F.3d 110, 115 (8th Cir. 1997) (explaining that "the ambiguous terms 'take' and 'kill' in 16 U.S.C. § 703 mean 'physical conduct of the sort engaged in by hunters and poachers,'" not the federal government (quoting *Seattle Audubon Soc'y v. United States Forest Serv.*, 952 F.2d 297, 302 (9th Cir. 1991))).

357. See *Curry v. U.S. Forest Serv.*, 988 F. Supp 541, 548–49 (W.D. Pa. 1997) (citing *Martin*, 110 F.3d at 1554–56) (adopting the Eleventh Circuit's reasoning that the MBTA cannot be a predicate statute for a violation of the APA by the federal government because the MBTA does not apply to the federal government).

358. 16 U.S.C. § 707(a) (2012).

359. *Newton City Wildlife Ass'n*, 113 F.3d at 115.

is applicable to the federal government.³⁶⁰ Under this precedent, private plaintiffs could seek to enforce the MBTA by arguing that the issuance of federal permits is not in accordance with the MBTA when it insulates violators from liability for a “take.”

In another line of attack, concerned citizens may approach FWS or DOI, even if the government is not subject to the Act, and request that it take action against a private wind development. Notably, in the pre-construction stage, there would be no bird “takes” on which to impose criminal charges; a plaintiff’s strategy would be to persuade the government that heavy flight patterns of birds covered by the MBTA over the proposed development area presage likely future avian mortality.

In 2003, a host of groups, including the Defenders of Wildlife, took this tack. Subsequently, FWS joined the U.S. Geological Survey to undertake a years-long study into the migration patterns of birds and bats over the Central Appalachian Mountains,³⁶¹ to create a map quantifying the level of risk for bird and bat species that wind developments would pose on various mountain ridges.³⁶² It is unclear what, if any, effect this study has had on the development of wind power in Appalachia.³⁶³

E. Wind Developers’ Potential Defenses to MBTA Charges

As explained in more detail below, where a wind project developer is charged with a violation of the MBTA, as some senators have suggested, the developer’s strict adherence to FWS voluntary guidelines could serve as a legal shield and defense by demonstrating

360. *Humane Soc. of the U.S. v. Glickman*, 217 F.3d 882, 886–88 (D.C. Cir. 2000) (enjoining the United States Department of Agriculture, under the MBTA, from carrying out its plan to decrease the Canada goose population in Virginia in the absence of a FWS depredation permit); *accord* *Am. Bird Conservancy, Inc. v. FCC*, 516 F.3d 1027, 1031 (D.C. Cir. 2008) (per curiam).

361. See DAWN DAWSON & TIM JONES, U.S. FISH AND WILDLIFE SERV. & U.S. GEOLOGICAL SURV., BIRD AND BAT MIGRATION OVER APPALACHIAN RIDGES PROGRESS REPORT 1–2 (2006), <https://tethys.pnnl.gov/sites/default/files/publications/Dawson-2006.pdf> [<https://perma.cc/7W28-ESQY>].

362. *Id.* at 7.

363. Some Appalachian states recently had no installed wind projects, whereas others have some of the highest installed capacity in the nation. See AWEA *State Wind Energy Facts*, AM. WIND ENERGY ASS’N, <https://www.awea.org/resources/fact-sheets/state-facts-sheets> [<https://perma.cc/CDE5-EXN0>].

For example, Kentucky has no wind power, but Pennsylvania has 1369 megawatts installed, and New York has 1987 megawatts installed. *Id.*

due care, and, under a strict liability statute, lack of intent.³⁶⁴ The defendant's due care in a 1989 case was the essential factor that led to a "not guilty" finding.³⁶⁵ The defendant had followed government-approved instructions regarding use of the element that killed birds.³⁶⁶ Likewise, if wind developers make a good faith effort to abide by the FWS Wind Energy Guidelines, courts may excuse these wind developers from MBTA liability. Although this is a strict liability statute without an intent requirement, courts are reading intent into their interpretations of the MBTA. This radically changes the liability posture of developers related to incidental wind turbine "takes" of protected species if the siting and construction conform to FWS recommendations.

Contrast this outcome with other MBTA pesticide cases in which each defendant failed to act with due care, and convictions were affirmed.³⁶⁷ FMC Corporation manufactured pesticides at its plant in New York, and the byproduct wastes were chemically treated to break down the hazardous chemicals before they were stored in a ten-acre pond at the site.³⁶⁸ Waterfowl were drawn to the pond during migration, and dead birds were discovered around the property.³⁶⁹ Although FMC took precautionary measures, such as using styrofoam floats and loud cannons to try to scare away the birds, birds continued to be found dead, and an analysis of the pond water

364. See WIND ENERGY GUIDELINES, *supra* note 249, at 6.

365. *United States v. Rollins*, 706 F. Supp. 742, 744-45 (D. Idaho 1989). The defendant, Rollins, was charged with violating the MBTA for applying a pesticide to a field; subsequently, a flock of geese landed and then died from ingestion of the pesticides. *Id.* at 743. The court found that the defendant's pesticide use was an innocent act and that he had acted with due care because he applied it according to "recommended quantities at the appropriate time," and the pesticide had been used in the community without "major incident." *Id.* The court dismissed the charges since Rollins was unable to conform his conduct to MBTA requirements due to the law's failure to give fair notice as to what constituted illegal conduct. *Id.* at 745.

366. *Id.* at 743.

367. See *United States v. FMC Corp.*, 572 F.2d 902, 908 (2d Cir. 1978) (affirming pesticide manufacturer's conviction under MBTA for failure to prevent pesticides from reaching pond, resulting in death of ninety two migratory birds); *United States v. Corbin Farm Serv.*, 444 F. Supp. 510, 540 (E.D. Cal. 1978) (upholding defendant's conviction under MBTA for misapplication of pesticide to field, resulting in a number of birds deaths), *aff'd*, 578 F.2d 259 (9th Cir. 1978).

368. *FMC*, 572 F.2d at 904.

369. *Id.* at 905.

indicated that the chemical carbofuran's³⁷⁰ being dumped directly into the pond caused the birds' death.³⁷¹

FMC Corporation was convicted in a jury trial for violating the MBTA by killing ninety-two migratory birds.³⁷² FMC appealed its conviction, asserting that the court needed to determine whether the statute required the violation to be intentional.³⁷³ At the conclusion of the initial jury trial, the court instructed the jury that to find FMC guilty of violating the MBTA, it did not need to find any intent and that the remedial steps taken by FMC to avoid the casualties were "under the Law . . . not a defense."³⁷⁴ The Second Circuit noted that "[c]ertainly construction that would bring every killing within the statute such as deaths caused by automobiles, airplanes, plate glass modern office buildings or picture windows in residential dwellings into which birds fly, would offend reason and common sense."³⁷⁵ The court analogized the facts to prosecution involving bird hunting as a crime, concluding that cases "have consistently held that . . . 'it is not necessary that the government prove that a defendant violated [MBTA] provisions with guilty knowledge or specific intent to commit the violation.'"³⁷⁶

The court conceded that although the term "act" is ambiguous, "a person failing to act when he has a duty to do so may be held to be criminally liable just as one who has acted improperly."³⁷⁷ The Second Circuit concluded that FMC did affirmatively act when it knowingly manufactured a toxic pesticide and failed to prevent it from entering the local ecosystem.³⁷⁸ The court applied tort strict liability and concluded that "[w]hen one enters into a business or

370. Carbofuran is an insecticide sprayed directly onto soil and plants just after emergence to control beetles, nematodes and rootworm. Carbofuran may cause health problems if present in public or private water supplies in amounts greater than the drinking water standard set by EPA. See ENVTL. PROT. AGENCY, EPA 811-F095-003, NATIONAL PRIMARY DRINKING WATER REGULATIONS (1995), <https://nepis.epa.gov/Exe/ZyPDF.cgi/91022ZHX.PDF?Dockey=91022ZHX.PDF> [<https://perma.cc/LUS3-8MUW>].

371. *FMC*, 572 F.2d at 905.

372. *See id.* at 903.

373. *See id.* at 904.

374. *Id.* The court instructed the jury that if it found that the birds were killed by FMC products, it must return a guilty verdict. Jurors were instructed not to consider FMC's lack of intent. *Id.*

375. *Id.* at 905.

376. *Id.* at 906. (quoting *Rogers v. United States*, 367 F.2d 998, 1001 (8th Cir. 1966)).

377. *Id.*

378. *Id.* at 907.

activity for his own benefit, and that benefit results in harm to others, the party should bear the responsibility for that harm.”³⁷⁹ The Second Circuit affirmed the lower court’s conviction, and FMC was found guilty of violating the MBTA because it was aware of the danger of the chemicals it was using and thus was held responsible for the ensuing damages, even though it was unaware that the chemicals were endangering and killing birds.³⁸⁰

The Eighth Circuit came to the same conclusion on the MBTA where a defendant baited Canadian geese with corn to attract a large number of geese for hunters to shoot at a commercial goose-hunting club in South Dakota.³⁸¹ During open season, birds may be taken by any means under the MBTA besides those prohibited by 50 C.F.R. § 20.11, which expressly forbids baiting.³⁸² Defendant’s actions did not fall within the exceptions under section 20.21(i)(1) of the regulations.³⁸³ The Eighth Circuit affirmed the lower court’s conviction of the defendant’s violation of the MBTA.³⁸⁴

A wind developer that is in compliance with FWS’s guidelines could analogize its situation to following pesticide label instructions in these precedents to argue that due care should shield one from any penalty: “an innocent technical violation . . . can be taken care of by . . .

379. *Id.*

380. *See id.* at 908.

381. *See* United States v. Manning, 787 F.2d 431, 433–34, 438 (8th Cir. 1986).

382. As defined by 50 C.F.R. § 20.11 (2018), the term “baiting” shall mean the “placing, exposing, depositing, distributing, or scattering of salt, grain, or other feed that could serve as a lure or attraction for migratory game birds to, on, or over any areas where hunters are attempting to take them.” Manning argued that the scattering of corn was a bona fide agricultural operation and that the corn had been placed there to feed livestock and not in an attempt to attract Canadian geese. *Manning*, 787 F.2d at 436.

383. 50 C.F.R. § 20.21(i)(1) states in pertinent part:

(i) . . . However, nothing in this paragraph prohibits: (1) the taking of any migratory game bird, including waterfowl, coots, and cranes, on or over the following lands or areas that are not otherwise baited areas . . . or lands or areas where seeds or grains have been scattered solely as the result of a normal agricultural planting, harvesting, post-harvest manipulation or normal soil stabilization practice . . .

Manning, 787 F.2d at 436 (finding that the grain was not scattered by defendant “solely as the result of normal agricultural *planting or harvesting*,” but was scattered in order to feed livestock). Manning was not exempted from liability under Section 20.21(i)(2) since “subsection (2), by its own terms, excludes waterfowl from the scope of the exception, and Canadian Geese are waterfowl as that term is used in the baiting regulation.” *Id.*

384. *Id.* at 438.

imposi[ng] . . . a small or nominal fine,”³⁸⁵ which is capped at \$15,000 per non-intentional violation. Even if a small penalty were imposed, wind project lenders and developers could internalize the cost of a set, calculable penalty per bird mortality. Developers cannot finance projects with unspecified risks of criminal penalties or forced shut-downs of operating projects because of ongoing bird mortality.

There is a timing variable in play regarding violations. Courts have held that the MBTA does not warrant immobilization of activity based on the mere possibility that it may result in a taking in the future “unless danger to the protected species is sufficiently imminent or certain.”³⁸⁶ Proof is lacking in most instances regarding whether danger to migratory birds is imminent or certain. Review of existing studies by the Bonneville Power Administration (“BPA”) on avian mortality from wind turbines found low avian mortality at new wind projects.³⁸⁷ The National Wind Coordinating Committee,³⁸⁸ as well as another study,³⁸⁹ documents that bird fatalities are much lower outside California and that no *endangered* species fatalities outside California have been reported.

The MBTA is the most potent weapon among the three bird protection and endangered species protection statutes in the legal arsenal of the federal government for the protection of a large variety of birds against accidental death from contact with wind turbines. FWS has issued guidelines for wind energy siting and facility operations which state that the agency will not prioritize its enforcement efforts on wind developers that follow the agency’s action plan for reducing avian impacts.³⁹⁰ Thus, although wind developers have no absolute “safe harbor” from MBTA liability, FWS has created a roadmap in its

385. *United States v. FMC Corp.*, 572 F.2d 902, 905 (2d Cir. 1978) (quoting *United States v. Schultze*, 28 F. Supp. 234, 236 (W.D. Ky. 1939)). *But see* *Mahler v. U.S. Forest Serv.*, 927 F. Supp. 1559, 1582–83 (S.D. Ind. 1996) (disagreeing with the proposition that a flawed statute can be cured by depending on prosecutors to only seek small penalties).

386. *N. Slope Borough v. Andrus*, 486 F. Supp. 332, 362 (D.D.C. 1980), *aff’d in part, rev’d in part on other grounds*, 642 F.2d 589 (D.C. Cir. 1980). While the facts of this case may be distinguishable (it was the federal government, the Department of Interior, that was defending an injunction against its proposed sale of oil exploration leaseholds off the Alaskan coast, and the court issued an injunction on grounds other than the MBTA), this case did address injunctions pursuant to MBTA in the pre-construction stage.

387. *See* ERICKSON, *supra* note 149, at 46.

388. ERICKSON, *supra* note 126, at 2.

389. ANDREA KINGSLEY & BECKY WHITTAM, WIND TURBINES AND BIRDS: A GUIDANCE DOCUMENT FOR ENVIRONMENTAL ASSESSMENT 1, 8 (3d ed. draft 2003).

390. *See* WIND ENERGY GUIDELINES, *supra* note 249, at 6.

guidelines that will most likely allow wind developers to avoid prosecution and fines. As noted by one observer, to date, prosecutions under the MBTA have not stopped even the prosecuted projects under eventual settlements:

Duke now faces mandatory compliance with a FWS mitigation plan as part of its plea agreement . . . The Duke case illustrates the problem with the FWS's voluntary compliance program . . . yet FWS had no ability to force Duke to re-site its turbines. Duke built its wind farm and paid its fine, and the turbines continue to spin.³⁹¹

CONCLUSION

It is a criminal felony with multiple year jail sentences and fines up to one-quarter million dollars per bird killed, for even unintentionally killing any one of more than 1000 species of protected birds, pursuant to three statutes and a treaty. The world is at the “tipping point” of irreversible climate change and warming. Wind power annually is now the most-installed new energy source in the United States each year. However, wind power now kills an estimated several hundred thousand of these federally-protected birds every year. This number will increase as wind power in the United States dramatically expands each year from its current 3% share of installed power generation and as the United States moves to make renewable energy a keystone of its mobilization against climate change.

It is not unusual that technological change causes environmental injury. The three bird species statutes and treaty described in this Article were enacted to create a legal “firewall” limiting harm to bird species. It is clear that taking or killing some species of birds violate the express terms of these statutes. At issue with these statutes is whether their enforcement should adapt and yield to a pressing need for new, renewable kinetic wind power generation technologies that also unintentionally violate the prohibitions of the statutes. Or should the federal executive branch enforce the statutes as written until the first branch of government, the legislature, amends such statutes?

There is no court decision construing prosecution of, or criminal penalties applied to, any wind turbine operation that kills protected bird species, often on an ongoing operational basis. Notwithstanding this void, sustainable energy law supporting wind turbine generation now will confront this existing criminal law, making the killing of birds a

391. Robyn Rose, *A Special Purpose: The Migratory Bird Treaty Act and Wind Energy*, 55 NAT. RES. J. 205, 222 (2015).

felony, as a case of legal first impression. All of this is being debated within the micro-level context of accusations of selective enforcement of these statutes only against certain technologies' bird kills, but not against others. In the larger world context, the MBTA, the most comprehensive and extensive of these three bird protection statutes, is an international treaty that binds several major world nations to protect against any bird mortality by wind energy turbines.

Wind turbines indisputably are one of the premier technologies providing the world a chance to mitigate global climate change before irreversible, dire effects impact the world's environment, including bird mortality. This truly is a difficult conflict in existing laws amid changing technologies and new global issues. Interest groups on all sides have staked out policy perspectives. And the law, ultimately interpreted by courts, a branch of government that does not weigh or balance such policy choices, may be the body ultimately to decide how these statutes affect our national and international climate change response.