

Animal, Vegetable, Mineral—Wind? The Severed Wind Power Rights Conundrum

K.K. DuVivier*

I. INTRODUCTION

The United States's reliance on fossil fuel sources of energy has put our country in a bind. Our heavy dependence on oil has subjected us to price gouging by unfriendly suppliers¹ and has compromised our national security.² While some have argued that the United States should “drill itself out” of the crisis,³ most experts agree that this solution is unworkable. Domestic reserves could not begin to meet our current demand,⁴ and the world oil supply is projected to peak and decline within two to seventeen years.⁵

The solution lies in aggressively developing a combination of alternatives to oil.⁶ While the United States is blessed with abundant reserves of coal,⁷ this solution is problematic, primarily because of the sig-

* Associate Professor and Director of the Environmental & Natural Resources Law Program, University of Denver Sturm College of Law. I would like to thank Fred Cheever, Bruce Kramer, John Lacy, Phillip Lear, Sara C. Bronin, and Jacqueline Weaver for their substantive contributions to this article. I would also like to thank Adam Duerr, Courtney Radtke, Katie Stevens, and Diane Burkhardt for their invaluable research help.

1. See, e.g., Steven Mufson, *As Gas Prices Rise Again, Democrats Blame Big Oil*, WASH. POST, May 11, 2007, at D1 (describing frustration over rising gas prices and the need for legislation penalizing price gouging).

2. See, e.g., *Rising Oil Prices, Declining National Security?: Hearing Before the H. Comm. on Foreign Affairs*, 110th Cong. 50 (2008) (statement of Rep. Joe Wilson, Member, H. Comm. on Foreign Affairs) (stressing that our national security is tied to our energy resources).

3. See, e.g., Clifford Krauss, *Parties Split on How to Expand Offshore Drilling*, N.Y. TIMES, June 26, 2008, at C1 (discussing the different strategies for improving domestic oil supplies to help lower gas prices).

4. See, e.g., *Drilling for Answers: Oil Company Profits, Runaway Prices and the Pursuit of Alternatives: Hearing Before Select Comm. on Energy Independence and Global Warming*, 110th Cong. (2008) (opening statement of Rep. Edward J. Markey, Chairman, Select Comm. on Energy Independence and Global Warming); see also *Oil Shock – Potential for Crisis: Hearing Before Select Comm. on Energy Independence and Global Warming*, 110th Cong. (2007) (opening statement of Rep. Edward J. Markey, Chairman, Select Comm. on Energy Independence and Global Warming) (noting that the United States contains less than 3% of the world's oil reserves, but is itself the world's largest oil consumer and importer).

5. See, e.g., Robert L. Hirsch, *The Inevitable Peaking of World Oil Production*, 16 ATLANTIC COUNCIL BULL. No. 3, at 9 (Oct. 2005) (suggesting that world oil production will likely peak and decline between 2010 and 2025).

6. See, e.g., ADVISORY COMM. ON GLOBAL OIL & NATURAL GAS, SEC'Y OF ENERGY, *HARD TRUTHS: FACING THE HARD TRUTHS ABOUT ENERGY* 242-43 (Nat'l Petroleum Council ed., 2007) (recommending that the United States diversify long-term energy production in order to prepare for the worldwide energy crisis).

7. U.S. Evtl. Prot. Agency, *Coal*, <http://www.epa.gov/cleanenergy/energy-and-you/affect/coal.html> (last visited Oct. 12, 2009) (reporting that “coal consumption in 2003 was just over 1.1 billion

nificant air pollution from burning coal.⁸ Methane, or natural gas, is also somewhat promising, but it emits carbon dioxide and is a limited and depletable resource.⁹ Likewise, the turn to biofuels, especially corn ethanol, as a renewable solution creates new problems because processing it produces significant amounts of water pollution,¹⁰ burning it still results in carbon dioxide emissions,¹¹ and using corn for fuel instead of food may be contributing to a world grain shortage.¹²

Driven not only by the current energy crisis,¹³ but also by prescient citizen initiatives and legislatures that have mandated alternative energy sources through renewable energy portfolio standard(s) (RPS),¹⁴ many utilities are now turning to “clean” fuel sources. But leaping to alternative energy sources can also cause unanticipated consequences. For example, the expansion of nuclear fission as a clean alternative energy source may be delayed by public fear of anything “radioactive” and the immutable problems of waste disposal.¹⁵

One alternative energy source—wind power—seems to have all of the advantages. Although it is intermittent, it is renewable. It uses little water and does not produce any waste.¹⁶ Unlike some fuels—specifically oil, methane, coal, and ethanol—wind does not emit any carbon dioxide in producing electricity. With these advantages, plus the availability of cost-effective technology¹⁷ and significant “reserves” of

tons[.]” with reserves standing at 268 billion tons).

8. *Id.* (reporting that burning coal results in the emission of carbon dioxide, sulfur dioxide, nitrogen oxide, and mercury compounds).

9. New techniques have increased global supplies of natural gas significantly. *See, e.g.*, Clifford Krauss, *New Way to Tap Gas May Expand Global Supplies*, N.Y. TIMES, Oct. 10, 2009, at A1, available at http://www.nytimes.com/2009/10/10/business/energy-environment/10gas.html?_r=1&th=. While natural gas may emit fewer greenhouse gases than oil or coal, it still emits CO₂ and is at best a “bridge fuel” while renewable energy sources are developed.

10. *See, e.g.*, THE NAT’L RESEARCH COUNCIL OF THE NAT’L ACADS., REPORT IN BRIEF: WATER IMPLICATIONS OF BIOFUELS PRODUCTION IN THE UNITED STATES 3 (2008) (discussing how shifting agricultural practices to incorporate more biofuel crops will result in water pollution).

11. *See, e.g.*, Timothy Searchinger et al., *Use of U.S. Croplands for Biofuels Increases Greenhouse Gases Through Emissions from Land-Use Change*, 319 SCI. 1238, 1238-40 (2008) (finding that corn-based ethanol may nearly double greenhouse gas emissions over 30 years).

12. *See, e.g.*, C. Ford Runge & Benjamin Senauer, *How Biofuels Could Starve the Poor*, 86 FOREIGN AFF. 41, 42-43 (2007) (arguing that biofuels could have devastating implications for global poverty and food security); Christine Spolar, *Fuel a Factor at UN Food Talks; As World’s Leaders Tackle Crisis, U.S. Ethanol Policy Hit*, CHI. TRIB., June 4, 2008, at C15 (discussing the debate over diverting grains to produce biofuels in the world’s most developed countries).

13. Former Vice President Al Gore has called for the generation of all U.S. electricity by renewable sources within 10 years. Al Gore, Address at Constitution Hall in Washington on Behalf of WeCanSolveIt.org: A Generational Challenge to Repower America (July 17, 2008), available at http://www.wecansolveit.org/pages/al_gore_a_generational_challenge_to_repower_america/.

14. *See, e.g.*, Peter Slevin, *Renewable Power’s Growth in Colorado Presages National Debate*, WASH. POST, Aug. 18, 2008, at A01.

15. *See, e.g.*, Joseph P. Tomain, *Nuclear Futures*, 15 DUKE ENVTL. L. & POL’Y F. 221, 230-32 (2005) (stating that the disposal of nuclear waste is a contemporary concern with regard to nuclear energy); *see also* GWYNETH CRAVENS, POWER TO SAVE THE WORLD: THE TRUTH ABOUT NUCLEAR ENERGY (2008) (exploring the history of nuclear issues).

16. *See, e.g.*, Ronald H. Rosenberg, *Diversifying America’s Energy Future: The Future of Renewable Wind Power*, 26 VA. ENVTL. L. J. 505, 524 (2008).

17. U.S. Dep’t. of Energy, Distributed Energy Program: Wind Power, http://www.eere.energy.gov/de/wind_power.html (last visited Oct. 12, 2009) (stating that wind power produces no emissions

wind in the United States,¹⁸ it is not surprising that wind power is one of the fastest growing renewable energy sources.¹⁹

Animal, vegetable, mineral? Under the traditional classification, wind would most logically fall into the category of mineral. But why does the status of wind rights matter? The rapid growth of wind power has created unanticipated legal problems. Attorneys and landowners have assumed that the mineral model—deeding wind rights separately from the surface estate just like other mineral substances—is the most appropriate.

Commentators and courts have applied the mineral severance concept to the wind context, recognizing the practice of some landowners to grant or reserve wind rights separate from the surface estate.²⁰ This practice could be viewed as a logical extension of the legal practices found in comparable mineral development—wind power has become a marketable commodity much like oil, gas, water, or hard minerals. Yet, how the wind right is categorized will have significant impacts on relations between wind-rights owners and surface owners for centuries to come.

This article begins with a brief history of wind as a power source. Part III addresses the evolution of the severed-estates concept to provide a background for Part IV, which explores the only two cases in the country that have classified wind power as comparable to mineral rights

and is affordable technology).

18. T. Boone Pickens says the “United States is the Saudi Arabia of wind power.” PickensPlan.com, *The Plan*, http://www.pickensplan.com/pdf/ThePlan_0710_01.pdf (last visited Oct. 12, 2009).

19. U.S. Dep’t of Energy, *supra* note 17 (stating that wind power is the fastest growing source of energy in the world since 1990).

20. See, e.g., Lisa Chavarria, *The Severance of Wind Rights in Texas*, University of Texas School of Law’s Wind Energy Institute, 2 (January 2009) [hereinafter *Severance*]; Lisa Chavarria, *Undertaking the Severance of Wind Rights*, STATE BAR OF TEXAS: OIL, GAS AND ENERGY RES. L. SEC. REP., VOL. 32 NO. 2, Dec. 2007, at 1-5 [hereinafter *Undertaking*]; Lisa Chavarria, *Wind Power: Prospective Issues*, 68 TEX. B. J. 832, 834-35 (Oct. 2005) [hereinafter *Wind Power*] (stating that Chavarria does not support or oppose the practice of severance but recognizes that it is common among Texas landowners); Terry E. Hogwood, *Against the Wind*, STATE BAR OF TEX.: OIL, GAS AND ENERGY RES. L. SEC. REP., Vol. 26 No. 2, Dec. 2004, at 6-8; Ernest Smith, *Wind Energy: Siting Controversies and Rights in Wind*, 1 ENVTL & ENERGY L. & POL’Y 281, 301 (2007) (“Wind does not share the physical characteristics of solid minerals or of water. It can hardly be deemed part of the fee simple or owned ‘in place’ by a landowner.”). Although Smith does not cite the *ad coelum* doctrine, he does cite Hogwood to say wind ownership may be comparable to the “capture” theory used for wild animals or the law of percolating water and *Contra Costa* for noting that states may alternatively “look to oil and gas law for an analogy.” *Id.* at 300-03 nn.116, 117, 131-32; Joseph O. Wilson, *The Answer, My Friends, Is in the Wind Rights Contract Act: Proposed Legislation Governing Wind Rights Contracts*, 89 IOWA L. REV. 1775, 1784 (2004). For other valuable articles addressing wind rights, without as much emphasis on the categorization of the right, see Helle Tegner Anker, Birgitte Egelund Olsen, & Anita Ronne, *Wind Energy and the Law: A Comparative Analysis*, 27 J. ENERGY & NAT. RESOURCES L. 145 (2009); Elizabeth Burleson, *Wind Power, National Security, and Sound Energy Policy*, 17 PENN ST. ENVTL. L. REV. 137 (2009); Bent Ole & Gram Mortenson, *International Experiences of Wind Energy*, 2 ENVTL & ENERGY L. & POL’Y J. 179 (2008); K. Shawn Smallwood, *Wind Power Company Compliance with Mitigation Plans in the Altamont Pass Wind Resource Area*, 2 ENVTL & ENERGY L. & POL’Y J. 229 (2008); Roderick E. Wetsel & H. Alan Carmichael, *Current Issues in Wind Energy Law 2009*, U. Tx. Wind Energy Inst. (Jan. 21-22, 2009).

and the problems raised by these classifications.

II. THE HISTORY OF WIND POWER DEVELOPMENT

The use of wind as a power source has ancient origins. As early as 3,000 B.C.E., humans harnessed the wind to sail boats up the Nile River.²¹ Recognizing the potential of wind power, the Chinese are credited as being the first to erect land-based windmills to pump water around 200 B.C.E.²² Next, the Persians automated the task of grinding grain with vertical-axis windmills between 500 and 900 A.D.²³ Historians believe that merchants and Crusaders brought the concept from the Middle East to Europe where windmills became widely accepted.²⁴ The Dutch are credited with refining the tower windmill in the sixteenth and seventeenth centuries and using it to drain lakes, marshes, and even the sea.²⁵

Windmills were “the ‘electrical motor’ of pre-industrial Europe.”²⁶ Yet, wind power is not constant, so during the Industrial Revolution the steam engine, and then electricity, were introduced as more reliable energy alternatives.²⁷ Wind turbines remained prevalent on farms and ranches in rural portions of the United States until the 1950s when these areas were connected to the electric power grid through efforts of the Rural Electrification Administration and its successor agencies.²⁸

As electricity became the currency for power in most non-transportation engines in the United States,²⁹ scientists explored the use

21. ROBERT W. RIGHTER, *WIND ENERGY IN AMERICA: A HISTORY* 6 (1996).

22. Michael C. Barnas, *The Answer My Friend, Is Blowing In the Wind: Wind Power—The Renewable Energy*, 50 ROCKY MTN. MIN. L. INST. 5-1, 5-5 (2004); U.S. Dep’t of Energy, History of Wind Energy, http://www.eere.energy.gov/windandhydro/wind_history.html (last visited Oct. 12, 2009). Some dispute that the Chinese first invented the windmill more than 2000 years ago, claiming the earliest documentation of a Chinese windmill was only about 800 years ago in 1219 A.D. See Darrell M. Dodge, *Illustrated History of Wind Power Development*, <http://www.telosnet.com/wind> (last visited Oct. 12, 2009).

23. U.S. Dep’t of Energy, *supra* note 22; see also RIGHTER, *supra* note 21, at 7.

24. U.S. Dep’t of Energy, *supra* note 22.

25. See *id.*; see also Fact Sheet on the Netherlands, <http://home-l2.tiscali.nl/~sparhawk/facts.htm> (last visited Oct. 12, 2009).

26. Dodge, *supra* note 22.

27. See *id.*

28. See Rural Electrification Act of 1936, 7 U.S.C. §§ 901-950b (2006) (setting forth the agency’s mandate). Farms and ranches beyond the reach of the power grid were not connected until the 1950s when the Rural Electrification Administration (REA) and its successor agencies spread the grid and brought inexpensive electric power to most rural areas in the United States. RIGHTER, *supra* note 21, at 105; see Dodge, *supra* note 22 (“Between 1850 and 1970, over six million mostly small (1 horsepower or less) mechanical output wind machines were installed in the U.S. alone. The primary use was water pumping and the main applications were stock watering and farm home water needs.”); see also RIGHTER, *supra* note 21, at 28 (noting that many estimations conclude six million small private windmills operated during the years 1880 and 1930 in the Great Plains and American West).

29. See ENERGY INFO. ADMIN., U.S. DEP’T OF ENERGY, PETROLEUM NAVIGATOR, http://tonto.eia.doe.gov/dnav/pet/pet_cons_psup_dc_nus_mbbldpd_a.htm (last visited Oct. 12, 2009) (providing statistics relating to the United States consumption of petroleum products). In 2008, petroleum products remain the primary currency of power for engines in automobiles, buses, and aircraft. *Id.* The United States consumed 20,680 barrels of crude oil and petroleum products per day to fuel its

of wind turbines to generate electricity, starting as early as the 1880s.³⁰ Yet, the popularity of using wind to generate electricity “has always fluctuated with the price of fossil fuels.”³¹ When fossil fuel prices have been low, wind power has not been able to compete. However, at times when the United States has been faced with oil embargoes and calls for energy independence from foreign oil, the interest in wind power has gained support and wind generation technologies have made significant progress.³² Nevertheless, a lack of steady research and development funding from the U.S. government³³ and a lack of consistent tax treatment by Congress have, until recently, put U.S. wind generators competitively behind their European counterparts.³⁴

Record high oil prices in the summer of 2008³⁵ highlighted the dan-

transportation needs in 2007. *Id.*

30. See Dodge, *supra* note 22. One of the first systems, which produced 12 kilowatts, was built by Charles F. Brush in Cleveland, Ohio, in 1888 and operated for 20 years. *Id.* One of the largest wind turbines to be created in the 1940s, producing 1.25 megawatts (MW) of power in winds of about 30 mph, operated at Grandpa’s Knob in Vermont for several months during World War II. U.S. Dep’t of Energy, *supra* note 22. Additional progress on reliable wind turbines was made in the 1920s when energy was in short supply. RIGHTER, *supra* note 21, at 82-84.

31. U.S. Dep’t of Energy, *supra* note 22.

32. *Id.*

The wind turbine technology R&D that followed the oil embargoes of the 1970s refined old ideas and introduced new ways of converting wind energy into useful power. Many of these approaches have been demonstrated in “wind farms” or wind power plants—groups of turbines that feed electricity into the utility grid—in the United States and Europe.

Id.

33. Barnas, *supra* note 22, at 5-7 to 5-8.

The 1970s brought a fuel crisis, which led to calls for energy independence from foreign oil. The federal government, which had effectively stopped the development of wind technology by encouraging the completion of the electric grid two decades before, now encouraged the development of wind turbine technology through research grants. Wind energy became public policy. Encouraged by significant funding from the federal Department of Energy, American researchers once again explored wind technology . . . [u]nfortunately for American entrepreneurs, the federal support had come somewhat late. European manufacturers, often with the support of their governments, continue to develop increasingly larger and more reliable wind turbines. Meanwhile, Americans, who had been denied effective support through most of the 1980s, focused on smaller, residential-size turbines . . . [w]hen the modern era dawned in the 1990s, the European suppliers were ready. Danish machines quickly proved to be the product of choice in North America. Although the American wind energy industry has expanded considerably, even today, only one manufacturer of large wind turbines has permanent assembly facilities in the United States.

Id.

34. See JEFFREY LOGAN & STAN MARK KAPLAN, CRS REPORT FOR CONGRESS: WIND POWER IN THE UNITED STATES: TECHNOLOGY, ECONOMIC, AND POLICY ISSUES 2-3 (2008), available at <http://www.fas.org/sgp/crs/misc/RL34546.pdf>.

From the mid-1980s to the late 1990s the U.S. wind energy stagnated due to low energy prices and the technology’s reputation for high cost and low reliability. . . . New federal and state incentives encourage developers to focus on the production of electricity at wind plants (also known as wind farms) and not just installing the equipment. In 1999, the U.S. industry began a period of rapid expansion, slowed occasionally by expiring federal incentives. Strong growth continues to this day, but whether that growth will continue if federal tax incentives expire at the end of 2008, as currently scheduled, is unclear.

Id. “Large companies and investment banks now drive most wind power activity compared to the early days of collaborating scientists, inventors, and entrepreneurs.” *Id.* (citing U.S. DEP’T OF ENERGY, ANNUAL REPORT ON U.S. WIND POWER INSTALLATION, COST AND PERFORMANCE TRENDS: 2007 14 (2008)), available at <http://www1.eere.energy.gov/windandhydro/pdfs/43025.pdf>.

35. InflationData.com, Historical Crude Oil Prices (Table), http://www.inflationdata.com/inflation/Inflation_Rate/Historical_Oil_Prices_Table.asp (last visited Oct. 12, 2009) (stating that in

ger of the United States's "addiction to oil."³⁶ This habit not only threatens our economy, but also our national security because the United States depends heavily on hostile foreign powers for a significant part of its energy needs.³⁷ But even before that latest oil crisis, a number of groups pushed for alternative energy sources. In 2004, Coloradans passed the first citizen initiative requiring the state's public utilities to comply with an RPS which mandates that 10% of their electricity be generated from renewable sources by the year 2015.³⁸ Other states followed suit, and currently, more than half³⁹ have goals or mandates to encourage utilities to use renewable energy sources.⁴⁰

Increased evidence of climate change impacts from burning fossil fuels has also added new urgency to the need to develop alternative fuels that do not emit carbon dioxide.⁴¹ Former Vice President Al Gore, who highlighted this issue in the movie "An Inconvenient Truth,"⁴² has now called for the generation of all U.S. electricity by renewable sources

June and July of 2008, oil prices reached a record high of over \$125 per barrel).

36. George W. Bush, Address Before Joint Session of the Congress on the State of the Union, 42 Weekly Comp. Presidential Docs. 57, 59 (Jan. 23, 2007); see Mike Allen, *Bush: 'America is Addicted to Oil'*, TIME, January 31, 2006, available at <http://www.time.com/time/nation/article/0,8599,1154992,00.html>.

37. The U.S. wars in Iraq and Afghanistan have increased tensions with the entire Middle East region, which is the number one supplier of U.S. oil. Matthew L. Wald, *War and Cheap Oil: A Second Look*, N.Y. TIMES, Jan. 7, 2007, available at <http://www.nytimes.com/2007/01/07/weekinreview/07basic.html>. In September 2008, Venezuela, the fourth largest supplier of oil to the United States, expelled the U.S. ambassador claiming the U.S. government was plotting to overthrow its government. Rory Carroll, *Venezuela: Hugo Chavez Expels US Ambassador Amid Claims of Coup Plot*, GUARDIAN.CO.UK, Sept. 12, 2008, available at <http://guardian.co.uk/world/2008/sep/12/venezuela.usa>. Russia occupied portions of Georgia and has threatened to control other former members of the Soviet Union in regions that contain critical oil pipelines supplying 20% of European oil. Jim Heintz, *Russia, Ukraine Trade Blame in EU Gas Crisis*, DENVER POST, Jan. 14, 2009, at 14A, available at http://www.denverpost.com/nationworld/ci_11446493.

38. Jesse Broehl, *Colorado Voters Pass Renewable Energy Standard*, RENEWABLEENERGYWORLD.COM, Nov. 3, 2004, <http://www.renewableenergyworld.com/rea/news/article/2004/11/colorado-voters-pass-renewable-energy-standard-17736>. Colorado citizens passed the Renewable Portfolio Standard(s) (RPS) through Amendment 37 in November 2004. *Id.* Colorado was "the first state to mandate renewable-energy use at the ballot box," Xcel Energy opposed the initiative and then met the standard 8 years ahead of schedule. Slevin, *supra* note 14. Because of the initiative's success, the Colorado Legislature increased the goals (20% by 2020) through Colorado House Bill 1281, which passed in March of 2007. Colorado News: Doubling of Colorado's RPS, <http://tomkonrad.wordpress.com/2007/03/17/colorado-rps/> (Mar. 17, 2007, 21:32 MST).

39. See U.S. Dep't of Energy, States with Renewable Portfolio Standards, http://apps1.eere.energy.gov/states/maps/renewable_portfolio_states.cfm (last visited Oct. 12, 2009).

40. See American Wind Energy Ass'n, The Mechanics of a Renewables Portfolio Standard Applied at the Federal Level, <http://www.awea.org/policy/rpsmechfed.html> (last visited Oct. 12, 2009). In some states, the RPS will not result in significant renewable energy development. For example, the wealth of biomass in Maine means few alternatives will need to be developed in order to implement its 30% RPS. See RYAN WISER & OLE LANGNISS, THE RENEWABLES PORTFOLIO STANDARD IN TEXAS: AN EARLY ASSESSMENT 16 (2001), available at <http://eetd.lbl.gov/ea/ems/reports/49107.pdf>. However, the RPS in Texas has resulted in significant development since it was established in 1999. See *id.* at 7.

41. CLIMATE CHANGE 2007: SYNTHESIS REPORT 5, 15 (R.K. Pachauri & A. Reisinger eds., 2007), available at http://www.ipcc.ch/publications_and_data/publications_ipcc_fourth_assessment_report_synthesis_report.htm.

42. AN INCONVENIENT TRUTH (Paramount Pictures 2006). *An Inconvenient Truth* is a 2006 documentary produced by former Vice President Al Gore which emphasized the problems of global warming and the urgency of slowing consumption of fossil fuels.

within ten years.⁴³

Although wind power continues to suffer some setbacks,⁴⁴ among renewable power sources, wind is a favorite. As a result, it is “the fastest growing source of new power generation in the United States.”⁴⁵ Although it accounts for less than 1% of the total electricity generation in the United States,⁴⁶ wind power provides over 6% of the electricity generated in at least four states.⁴⁷

The U.S. wind industry saw a record year in 2008, increasing its capacity 50% by constructing an additional 8,500 megawatts (MW) of new wind power generation facilities.⁴⁸ The new total capacity of over 25,300 MW has allowed the United States to surpass Germany as the world’s leader in installed wind capacity.⁴⁹

Within the United States, Texas’s generating capacity of 7,118 MW accounts for approximately one-quarter of the United States’s total installed wind power capacity.⁵⁰ Iowa and California are the next highest wind power states with 2,791 and 2,517 MW of capacity respectively.⁵¹ Minnesota, Washington, Colorado, and Oregon follow in that order, each with a wind power capacity of over 1,000 MW in 2008.⁵²

III. THE EVOLUTION OF SEVERED RIGHTS—SLICING PROPERTY INTO SEPARATE ESTATES TO DEVELOP MINERAL RESOURCES

From the perspective of a celestial being or an alien spaceship, a property right in the United States consists of more than a flat postage

43. Gore, *supra* note 13.

44. See LOGAN & KAPLAN, *supra* note 34, at 4.

In some regions, a lack of transmission capacity is already beginning to constrain further growth in the wind power sector. And in states like Iowa, Texas, and Minnesota, where wind power has achieved a higher share of total electricity generation, there are concerns that additional wind power could lead to higher prices or threaten grid security. Finally, there is currently a shortage of wind turbine components and a backlog in scheduling transmission interconnection, leading to delays and rising costs.

Id.

45. *Id.* at 3.

46. LOGAN & KAPLAN, *supra* note 34, at 4 n.12 (“Wind farms in the United States generated approximately 32 billion kilowatt-hours in 2007 compared to total power sector generation of 4,160 billion kilowatt-hours. . . . The American Wind Energy Association forecasts that the U.S. wind industry will generate 48 billion kilowatt-hours of electricity in 2008.”).

47. U.S. DEP’T OF ENERGY: ANNUAL REPORT ON U.S. WIND POWER INSTALLATION, COST AND PERFORMANCE TRENDS: 2007 7 (2008). Minnesota, Iowa, Colorado, and South Dakota are the four states that generate at least 6% of their energy from wind power. *Id.* The DOE report also notes that because wind provides such a large percentage of some states’ electricity needs, it is losing its status as an “alternative” source. See *id.* at 7-10.

48. AMERICAN WIND ENERGY ASS’N., ANNUAL WIND INDUSTRY REPORT FOR YEAR ENDING 2008 2, available at <http://www.awea.org/publications/reports/AWEA-Annual-Wind-Report-2009.pdf>.

49. *Id.* at 2.

50. *Id.* at 9 Figure 9-10.

51. *Id.*

52. *Id.* The top 11 states with installed capacity are Texas (7,118 MW), Iowa (2,791 MW), California (2,517 MW), Minnesota (1,754 MW), Washington (1,447 MW), Colorado (1,068 MW), Oregon (1,067 MW), Illinois (915 MW), New York (832 MW), Oklahoma (831 MW), and Kansas (815 MW). *Id.*

stamp on the surface of the earth. A property owner has a three-dimensional right, which when pivoted to a cross-section view, reveals that private ownership extends above and below the line at the earth's surface. This vision of property ownership is labeled the *ad coelum* or “unified fee” doctrine.⁵³ Under this doctrine, the owner of the soil, or surface, also has ownership rights in everything from the center of the earth to the skies.⁵⁴ Commentators cite the *ad coelum* or unified fee doctrine as justification for wind rights severance.⁵⁵

Borrowing from early English law, the courts “of practically every state” in the United States have at one point adopted the *ad coelum* maxim.⁵⁶ Although it has been modified or rejected in some jurisdictions,⁵⁷ the concept of property ownership as three dimensional—a pillar or cone from the center of the earth to the heavens—is frequently the starting point for the severed-estate analysis.

Early commentators viewed division of the unified fee estate as a “derogat[ion] from the general rights of property.”⁵⁸ The following, subsection A, explores the evolution of mineral severance and the justifications for it, including the belief that severance facilitates development of the subsurface for the public good and that use of the subsurface estate could occur with minimal disturbance to the surface. Subsection B shows how these severance rationales do not support its application in the context of wind rights. Instead of facilitating development, severance of both the wind and the mineral estates creates new obstacles for a party attempting to create a wind farm. Also, the per-

53. See *Wind Power*, *supra* note 20, at 834. *Ad coelum* is short for *cujus est solum, ejus est usque ad coelum* which means “he who owns the soil likewise owns all the way to the heavens” (translation by the author). Some authorities have suggested that the full language of the maxim is “*cujus est solum, ejus est usque ad coelum et ad inferos*,” meaning “[t]o whomever the soil belongs, he owns also the sky and the depths.” See, e.g., ANDERSON ET AL., *HEMINGWAY OIL AND GAS LAW AND TAXATION* 31 n.15 (4th ed. 2004). However, the additional language—“the sky and the depths”—was not in the original version. Blackstone cites *Williams on Real Property* for the concept of possession “upwards as well as downwards, to an indefinite extent.” 2 WILLIAM BLACKSTONE, *COMMENTARIES ON THE LAW OF ENGLAND* 18, n.19 (Lewis ed. 1915) (citation omitted). Blackstone also notes that the concept of “land” including everything under it, or over it, is qualified because “[i]n the case of mines, custom has in many places made an exception to this rule.” *Id.* at 18 n.21; see also *Getty Oil Co. v. Jones*, 470 S.W.2d 618, 621 (Tex. 1971) (“It has long been recognized that ownership of real property includes not only the surface but also that which lies beneath and above the surface. The use of land extends to the use of the adjacent air.”).

54. Actually, Lord Coke focused on the value of soil (*solum*) and land (*flēth*) arising from the fact that “it is for the habitation of man . . . [f]or as the heavens are the habitation of Almighty God, so the earth hath he appointed as the suburbs of heaven to be the habitation of man . . . [as it] doth furnish man with many other necessities for his use.” EDWARD COKE, *COMMENTARY UPON LITTLETON*, L.1, C.1, Sec. 1 (1832).

55. See sources cited *supra* note 20.

56. *Swetland v. Curtiss Airports Corp.*, 55 F.2d 201, 202 (6th Cir. 1932); see *United States v. Causby*, 328 U.S. 256, 260-61, n.5 (1946) (noting that the *ad coelum* doctrine is an ancient common law doctrine); see also *Swetland*, 55 F.2d at 202 (stating that: “We are told that this maxim was imported into the English law by Lord Coke . . . and that it has been approved in *Baten’s Case*”).

57. See, e.g., *Coastal Oil & Gas v. Garza Energy Trust*, 268 S.W.3d 1, 4-5 (Tex. 2008).

58. ROSSITER W. RAYMOND, *RELATIONS OF GOVERNMENTS TO MINING*, H.R. DOC. NO. 40-54, at 210 (1869).

petual footprint of wind turbines and the accompanying spider web of transmission, collection, and distribution lines interfere with many concurrent uses of the surface.

A. The Evolution of Mineral Severance

The primary rationale for severing wind estates from surface estates is drawn from the analogy that mineral estates can be severed from the surface. Therefore, this section starts by analyzing the origins of, and rationale for, severed minerals.⁵⁹ However, I preface this section with one caveat: Systems of mining law do not fit neatly into distinct types, and those who have attempted in the past to “logically arrange [it] for the purpose of treatment” have found the task “almost insurmountable.”⁶⁰ Consequently, this treatment is only a broad overview.

How did the concept of separate ownership of minerals first arise? It appears that one of the rationales for severance was the wondrous and divine nature of metals. The word “royalty” means not only a person of royal rank, but also a right or prerogative of the sovereign to receive a percentage of mining proceeds.⁶¹ In the first period of Greek mining, many believed that a royalty was owed to the gods.⁶² For example, Greek miners sent one tenth of the production from the mines of Siphnos to the shrine of the god Apollo at Delphi.⁶³ Later, when payment was stopped and the mines were flooded by the sea, “this disaster was ascribed to the wrath of Apollo at being deprived of his divine royalty!”⁶⁴ In England, the rationale was that “gold and silver are the most excellent things which the soil contains [so] the law has appointed them, as in reason it ought to, to the person most excellent, and that is the king.”⁶⁵

Aside from the beauty of metals, conquering sovereigns claimed right to them for pragmatic reasons as well—they were necessary for warfare.⁶⁶ Pliny called iron “the most deadly fruit of human ingenuity”

59. Other models have relied on the theories for ownership of wild animals or ownership of percolating waters. See, e.g., Hogwood, *supra* note 20, at 8-11; see discussion *infra* Part IV.B.2. (discussing the comparison of wind rights to groundwater rights).

60. JOHN D. LESHY, *THE MINING LAW: A STUDY IN PERPETUAL MOTION* 8 (1987) (citing CURTIS H. LINDLEY, *1 A TREATISE ON THE AMERICAN LAW RELATING TO MINES AND MINERAL LANDS* 125 (3d ed., Bancroft-Whitney 1914)).

61. BLACK’S LAW DICTIONARY 1445 (9th ed. 2009).

62. See RAYMOND, *supra* note 58, at 184.

63. *Id.*

64. *Id.*

65. *Id.* at 206 (quoting Pettus, Fodinae, and Regales).

66. *Id.* at 182.

[T]he first period in the history of mining closes with the overthrow of the Persian Empire by Alexander, and the transfer of the treasure and resources of the Orient into European hands. . . . The immense quantities of gold and silver employed by governments, and their use in constant wars, also confirm our conjecture that the mines of Asia and Africa were the property of the rulers, and that they were worked by slaves.

Id.

because it was forged to create weapons of war.⁶⁷ Historians argue that empires have been founded based on the advantages some conquerors enjoyed from using superior metals as opposed to those available to the vanquished civilizations.⁶⁸

Sovereigns could force prisoners or slaves to perform the dangerous work of mining, but they often found that this was not the best way to develop their mineral resources.⁶⁹ Generally, prisoners and slaves were unskilled laborers who “wasted”⁷⁰ the mines by using practices such as “high grading”—mining that targets extraction of the highest grade ore for a quick profit, but ultimately prevents development of the deposit’s full potential, such as removing support columns and allowing an underground mine to collapse or flood.⁷¹

Eventually, sovereigns recognized that their mines could best be developed by luring those who were especially skilled in prospecting and producing the minerals.⁷² The Greeks were some of the first to encourage private prospecting.⁷³ At the Laurion Mines in Attica, the Athenian state encouraged prospecting by granting leases.⁷⁴ Although the lessee was required to pay a premium and a royalty to the citizens of Athens, the lessee could keep the remainder of the extracted minerals produced.⁷⁵ Essentially, the sovereign owned the real property of the

67. GEORGIUS AGRICOLA, *DE RE METALLICA* 11 (translated by Herbert Clark Hoover & Lou Henry Hoover trans., Dover Publications 1950) (1556) (quoting Pliny, *SSSIV*, 39).

68. See, e.g., James D. Muhly, *Metalworking/Mining in the Levant*, in *NEAR EASTERN ARCHAEOLOGY* 174-83 (2003) (describing the now-contested theory that the Hittites of Anatolia in Asia Minor, now part of the Republic of Turkey, had a monopoly on ironworking that allowed them to establish an empire during the Late Bronze Age); see also JARED DIAMOND, *GUNS, GERMS, AND STEEL* (1999).

69. John C. Lacy, *Going with the Current: The Genesis of the Mineral Laws of the United States*, 41 *ROCKY MTN. MIN. L. INST* 10-1, 10-3 (1995).

Historically, the legal structure governing the right to exploit minerals has been a function of how a nation has acquired a mineral resource. If the resource was acquired by conquest, as was the case with the pre-modern era efforts of the Persians, Assyrians, Egyptians, Greeks, Romans, and Carthaginians (and continue during the initial Spanish colonial effort in the New World), the conqueror would force the subjugated people to work the existing mines within the newly acquired territory. . . . The primary focus of laws related to these mines was therefore concerned with ensuring that the monarchy got its dues from production and that the mine operators did not unnecessarily deplete the slave population that was required to win the captured wealth.

Id. at 10-3.

70. In legal terminology, “waste” means “[s]poil or destruction, done or permitted, to lands . . . by the tenant thereof, to the prejudice of the heir.” *Kimbrough v. Reed*, 943 P.3d 1232, 1234 (Idaho 1997). Cf. *BLACK’S LAW DICTIONARY*, *supra* note 61, at 1727 (defining “waste” as “[p]ermanent harm to real property committed by a tenant (for life or for years) to the prejudice of the heir, the reversioner, or the remainderman”).

71. See, e.g., VII *THE OXFORD ENGLISH DICTIONARY* 227 (J.A. Simpson & E.S.C. Weiner eds., 2nd ed. 1989).

72. See 2 T.A. RICKARD, *MAN AND METALS* 576 (1932) (“During the long dark ages during which the miner was shackled the technique of mining languished; not until he gained his freedom did the winning of the metals become an art.”).

73. Lacy, *supra* note 69, at 10-5.

74. See *id.* at 10-5 n.9

75. *Id.* at 10-5 (stating that although production started earlier, the major workings occurred between 600 and 200 B.C.E.); see also CHARLES HOWARD SHINN, *MINING CAMPS: A STUDY IN AMERICAN FRONTIER GOVERNMENT* 15-16 (1884) (stating that production from these mines was

minerals in the ground, but the prospectors acquired a personal property interest in the minerals themselves once they extracted them.

Roman emperors also addressed the problem of “leasing [mines] to unscrupulous speculators,” and the resulting waste, by granting prospectors a share of the minerals once mined.⁷⁶ For example, Valentinian I granted permission to prospect for metals upon payment of a royalty.⁷⁷ But this system was instituted too late to avoid premature exhaustion of many of the Roman mines: “mining . . . declined rapidly after the third century; and after the fifth century, when the barbarian hordes overwhelmed with successive invasions . . . it ceased entirely.”⁷⁸

While the Greek and Roman systems allowed prospectors to retain a portion of the fruits of their efforts, the concept of granting an entirely separate estate below the surface seems to have originated in Western Europe in the area that now encompasses modern Germany.⁷⁹ Reasoning that the subterranean art of mining was “carried on neither within the same boundaries nor by the same persons as agriculture,” it is not surprising that these peoples created the fable of the mining dwarf and established separate mining laws “not dependent upon the ordinary laws of property.”⁸⁰ Thus arose the principle of *Bergbaufreiheit* or “free mining,”⁸¹ which recognized the “existence of an estate in minerals, entirely independent of the estate in soil.”⁸² In contrast to serfs who were tied to the land of a particular lord, free miners were permitted unrestricted exploration on the government’s or others’ lands and, because of their special talents, were allowed to participate in creating the rules

first recorded in 800 B.C.E. with royalties paid to the citizens of Athens).

76. RAYMOND, *supra* note 58, at 187-88.

77. *Id.* at 188.

78. *Id.*

79. Lacy, *supra* note 69, at 10-10.

80. RAYMOND, *supra* note 58, at 189-90.

Mining is the only industry which extends its activity into the earth's interior. . . . Mining was therefore even in the pre-historic times already separated, as an independent industry, from other exploitations of the soil. It is carried on neither within the same boundaries nor by the same persons as agriculture. Under the influence of this distinction peculiar legal relations were established in Germany at a very early day, probably at the commencement of systematic mining, which have for their subject the subterranean deposits, and are not dependent upon the ordinary laws of property . . . in all the original centres of German mining, the principle of mining freedom (*Bergbaufreiheit*) established itself, permitting all persons to search for useful minerals, and granting to the discoverer of such a deposit the rights of property within certain limits. . . . In this existence of an estate in minerals, entirely independent of the estate in soil, lies the distinctive character of German mining law. It is eminently a special law, not subordinate to the civil law, but co-ordinate with it. . . . Where the mining freedom of which we have spoken does not exist, where the owner of the soil possesses, as in England, the exclusive right to the minerals contained in it, there can be no such thing as a distinct mining law.

The Roman law gave, as a rule, the mineral right to the landowner; but the opposite principle seems to have sprung up spontaneously in Germany.

Id. at 189-90.

81. See ANTHONY SCOTT, *THE EVOLUTION OF RESOURCE PROPERTY RIGHTS* 208-46 (2008) (discussing “Free Mining from Medieval Europe to the Gold Rushes”).

82. RAYMOND, *supra* note 58, at 189.

that controlled how they extracted the minerals they found.⁸³ Eventually, the German government entirely surrendered its claim to rights in the minerals within its borders, instead placing itself on the same footing as private citizens with respect to ownership.⁸⁴

Other countries did not widely embrace the German concept of mineral severance. Spanish law, which is the source of the mining law in Mexico and most South American countries, retained ownership of mineral rights in the sovereign.⁸⁵ In France, the monarch owned the mineral rights until that country no longer had a monarch.⁸⁶ In 1791, the law changed to make mineral deposits in France the property of the nation, and the government granted concessions for them.⁸⁷ Later, under Napoleon's law of 1810, ownership of minerals went to the owner of the land's surface.⁸⁸ However, the French Government retained the right to grant a separate mineral right, even in perpetuity, to someone other than the surface owner, so long as the grantee paid tribute to the State.⁸⁹

As English law developed in a common law system, mining law was "complicated with many local regulations and 'immemorial customs.'"⁹⁰ Generally, precious metals and, in some cases, copper and tin belonged to the crown.⁹¹ Aside from these claims by the crown, the fee owner of the land enjoyed a prima facie holding of the mineral rights to the land.⁹²

Later attempts to charge free miners with trespassing failed after British courts determined that free miners had the legal basis for claiming their own rights in mining fields.⁹³ The courts then, and now, have struggled with the nature of the mineral right. Some characterized it as simply a right to dig and a property right in the minerals themselves once separated from the soil.⁹⁴ The alternative created a property inter-

83. SCOTT, *supra* note 81, at 208.

84. See RAYMOND, *supra* note 58, at 199 (noting the German government did retain a right to a royalty).

85. *Id.* at 196.

86. *Id.* at 204.

87. *Id.*

88. *Id.*

89. *Id.* at 205 (noting this made the interest secure and taxable to protect capitalist investment).

90. *Id.* at 206.

91. *Id.* "[The crown] attempted to [exercise] the royal prerogative [over] copper and tin." *Id.* at 207.

92. *Id.* at 207; see also Lacy, *supra* note 69, at 10-18 (describing how the British system evolved from two distinct bodies of law with Celtic and Roman influences).

93. SCOTT, *supra* note 81, at 217.

94. The right is called a *profit a prendre*. See *Costa Mesa Union Sch. Dist. of Orange County v. Sec. First Nat'l Bank*, 62 Cal. Rptr. 113, 118 (Cal. Ct. App. 1967).

A right of *profit a prendre* is a right to make some use of the soil of another, such as a right to mine metals; the underlying principle is that it carries the right of entry and the right to remove and take from the land the designated products or profit; in addition, it includes the right to use such of the surface as is necessary and convenient for the exercise of the profit.

Id.

Also termed right of common: "A profit a prendre has been described as a 'right to take something off another person's land.'" BLACK'S LAW DICTIONARY, *supra* note 61, at 1330 (citation omitted).

est in the minerals in place, a separate and enduring real estate interest that coexisted with the surface estate.⁹⁵

Significantly, British cases that permitted severance noted that allowing a separate mineral estate was an abrogation of the common law concept of absolute ownership by the surface owner.⁹⁶ Consequently, the right to sever an estate out of the surface owner's right is often strictly construed.⁹⁷

This "derog[ation] from the general rights of property" seems to be justified by two concepts.⁹⁸ First, the severed minerals are so far below the surface that the surface owner normally would not want, or be skilled enough, to exploit them.⁹⁹ For example, even under the German

The key distinction is that a *profit a prendre* is not ownership in the underlying property, but a right to exploit that property.

95. The property right of minerals in place is a corporeal hereditament. RAYMOND, *supra* note 58, at 207.

In the case of alienation there is an important distinction between such a conveyance as confers an estate and such as merely confers a right to dig, without property in the minerals until severed from the soil. A conveyance of the former class is binding forever, whether the owner of the minerals continues to work for them or not. This distinction of law between an estate in minerals and the right to mine is an important one; it describes exactly the step which the United States government takes in the mining law of 1866, by which a perpetual estate is granted to those who had up to that time only been able to enjoy a possessory title, conferring the right to mine.

Id. at 207.

96. *Id.* at 210-11 (citing English cases).

Upon the ownership of the land, giving a *prima facie* title to minerals, the custom of bounding has been in engrafted. In substance it is this: the mine is parcel of the soil; the ownership is in the owner of the soil, but it is a parcel which, to discover and bring to the surface, may ordinarily require capital, skill, enterprise, and combination; which, while in the bowels of the earth, is wholly useless to the owner as well as to the public: and the bringing of which into the market is eminently for the benefit of the public. If, therefore, the owner of the soil cannot, or will not, do this for himself, he shall not be allowed to lock it up from the public . . . [and] any man employing himself in tin mining, may secure for to himself the right to dig the mines under the lands, rendering a certain portion of the produce to the owner of the soil.

. . . .

Customs, especially where they derogate from the general rights of property, must be construed strictly; and above all things, they must be reasonable. Bounding is a direct interference with the common law rights of property: it takes from the owner of the land, who is unable or unwilling at a particular moment to dig for tin under his waste land, the right to do so, it may be forever, and it vests in a stranger, making only the customary render in return; it empowers the stranger not only to extract the mineral from beneath the surface, but to enter on the surface, and cumber with machinery, buildings, and refuse stuff, which the operations below occasion, and all of this without the least regard to the convenience or interests of the owner. The only things which make this reasonable are the render of the toll-tin to the owner, and the benefit to the public secured thereby in the extraction of the mineral from the bowels of the earth. . . . If it be said that the public good is best served by that regulated supply which best serves the private interests of the bounder, that wherever it is for the interest of the public that the mine should be worked

Id.

97. *Id.*

98. *Id.* at 210.

99. *Id.*

[T]he ownership is in the owner of the soil, but it is a parcel which, to discover and bring to the surface, may ordinarily require capital, skill, enterprise, and combination; which, while in the bowels of the earth, is wholly useless to the owner as well as to the public

Id. at 210.

code, surface deposits are left to the surface owner.¹⁰⁰ Likewise, in Saxony—where the brown coal, or lignite, is often less than 150 feet below the surface and mined by surface methods, such as “opencast” or open pit mining—coal belongs to the surface owner.¹⁰¹ Thus, only the deeper minerals are severed—with the expectation that they could be exploited with minimal disturbance to the surface.¹⁰² The well-recognized mining law concepts of subjacent support and compensation for the surface owner¹⁰³ further reinforce that a system endorsing severance does not anticipate significant conflicts between mineral and surface estate owners.¹⁰⁴

The second justification for abrogating the common law and allowing severance of minerals as a separate estate is the “benefit to the public secured thereby in the extraction of the mineral from the bowels of the earth.”¹⁰⁵ Not only did the public benefit from the availability of more minerals as a resource, but the royalties also provided an “advantage . . . to the coffers of the state.”¹⁰⁶

So, how did the law of mineral severance come to the United States, and what were its justifications? Its implementation was haphazard rather than reasoned—a “post hoc rationalization of a fait accompli.”¹⁰⁷

First, we were unprepared.¹⁰⁸ Gold was discovered near Coloma,

100. *Id.* at 199.

101. *Id.* A similar rule has developed in the United States, where at least one court has held that “near surface” coal deposits belong to the owner of the surface estate as a matter of law if it is shown that reasonable extraction methods would completely destroy or deplete the surface. *See Reed v. Wylie*, 597 S.W.2d 743, 747 (Tex. 1980).

102. *See AGRICOLA*, *supra* note 67, at 11.

[T]he miners dig almost exclusively in mountains otherwise unproductive, and in valleys invested in gloom, they do either slight damage to the fields or none at all. Lastly, where woods and glades are cut down, they may be sown with grain after they have been cleared from the roots of shrubs and trees.

Id.

103. *E.g.*, RAYMOND, *supra* note 58, at 194. (“This freedom of prospecting was, however, limited so far that the foundations of buildings must not be injured, and all damages done to the surface or to agriculture must be paid.”).

104. The fallacy of this assumption and the long history of conflict are discussed below. *See* discussion *infra* Part III.B.

105. RAYMOND, *supra* note 58, at 210-11.

106. *Id.* at 194.

107. A. DAN TARLOCK, LAW OF WATER RIGHTS & RESOURCES § 5:4 (2009); *see also* SAMUEL C. WIEL, WATER RIGHTS IN THE WESTERN STATES (1905).

[Early settlers] dug for gold; excavated mineral rock; constructed ditches, flumes and canals for conducting water; built mills for sawing lumber and grinding corn; established farms for cultivating the earth; made settlements for the grazing of cattle; laid off towns and villages; felled trees; diverted watercourses. . . . All of these are open and notorious facts

. . . .

If they have acquired rights, these rights rest upon doctrine of presumption of a grant of right, arising either from the tacit assent of the sovereign, or from expression of her will in the course of her general legislation, and, indeed, from both.

Id. at 14-15.

108. *See* SCOTT, *supra* note 81, at 219 (“In 1848 miners discovered gold in California, which Mexico had only recently transferred into American possession. The successful prospectors found themselves in a legal vacuum regarding the rights to their finds”).

California, in January of 1848.¹⁰⁹ This was about two weeks before the U.S. government acquired the new territory from Mexico by the Treaty of Guadalupe Hidalgo.¹¹⁰ Although the Supreme Court had previously ruled that the United States held title to all minerals found on the public domain,¹¹¹ the military governor in what was to be California, Colonel Richard B. Mason, refused to assert any sovereign claim to the minerals.¹¹² Instead, he declared the miners free from official control.¹¹³ Colonel Mason had little choice: Unruly prospectors eager to exploit their finds outnumbered Mason's soldiers by 1,000 to 1.¹¹⁴

Almost twenty years after Colonel Mason's declaration, Congress's wrestling over the issue of how to treat mineral rights in the United States resulted in the enactment of the Lode Mining Act of 1866¹¹⁵ and the Placer Act of 1870.¹¹⁶ Both Acts accepted much of the status quo by declaring mineral lands open to exploration. Congress abandoned attempts to charge a tax or royalty and instead hoped to generate revenue for the national government through charging for patents.¹¹⁷ Because these initial Acts did not "create a fully developed disposal system" for minerals,¹¹⁸ Congress enacted the General Mining Act of 1872.¹¹⁹ As the nation expanded westward, each of these mining laws reflected the federal "policy of public land management [during that period] to convey lands into private ownership as quickly as possible."¹²⁰ The disposal philosophy was based on an assumption that most public lands were non-mineral in character, so mineral production on some lands and the increased demand for patents to public lands as a spinoff would "indirectly pay [off the post-Civil War] national debt."¹²¹

Although the governmental report that led to the 1872 Mining Law

109. GREGORY YALE, *LEGAL TITLES TO MINING CLAIMS AND WATER RIGHTS, IN CALIFORNIA, UNDER THE MINING LAW OF CONGRESS, OF JULY, 1866* 14 (1867).

110. *Id.* at 17. Because communications at the time were poor, Colonel Mason and other military officers in California did not know the treaty had been signed in Mexico. *Id.*

111. *United States v. Gratiot*, 39 U.S. (14 Pet.) 526, 538 (1840).

112. YALE, *supra* note 109, at 17.

113. *Id.* (stating that Colonel Mason declared the Mexican laws abolished and "public use was continued by the virtual removal of restrictions").

114. Lacy, *supra* note 69, at 10-35.

It was a matter of serious reflection with me how I could secure to the Government certain rents or fees for the privilege of procuring this gold; but upon considering the large extent of country, and the character of the people engaged, and the small scattered force at my command. I resolved not to interfere, but to permit all to work freely.

Id. at 10-35.

115. Act of July 26, 1866, ch. 262, § 1, 14 Stat. 251 (1866) (current version at 30 U.S.C. § 22 (2006)).

116. Act of July 9, 1870, ch. 235, § 12, 16 Stat. 217 (1870) (current version at 30 U.S.C. § 22 (2006)).

117. LOREN L. MALL, *PUBLIC LAND AND MINING LAW* 155-56 (2d ed. 1981).

118. *Id.* at 157.

119. Act of May 10, 1872, ch. 152, §§ 1-6, 17 Stat. 91-93 (1872) (current version at 30 U.S.C. § 22 (2006)).

120. Lacy, *supra* note 69, at 10-41.

121. MALL, *supra* note 117, at 155.

reflected the wisdom of the day “that mining flourishes best when the property in minerals is distinguished from the ownership of the soil,” it ultimately did not recommend mineral severance.¹²² Instead, the report concluded that miners should be granted patents, or fee ownership, to the entire surface and mineral estates combined.¹²³ One reason for clear title was security of investment capital for miners and their stakeholders.¹²⁴ Also, the U.S. government had concluded that it did not have the resources to extract royalties from the miners.¹²⁵ As mineral “rushes” had become the driving force for much of the economic development and settlement of the Western United States at that time, the federal government simply hoped to reap the only financial benefit it could.¹²⁶ It did so by selling patents in what seemed to be otherwise unsettled, and presumably unproductive, portions of the western territories of the United States.¹²⁷

Granting fee simple patents avoided conflicts between mineral and surface estates, but this consideration does not seem to be the basis for the 1872 Mining Law’s policy. The potential for conflict between the mineral and surface estates was not discussed in the governmental report.

Patentees under the 1872 Mining Law may have received unified fee simple estates, but the government did not continue with this practice. After 1900, Congress severed coal and other minerals in patents issued for many surface uses such as agricultural entry, stock-raising homesteads, and grazing lands.¹²⁸

However, in the many situations where the surface owner did not also receive the patent or a unified fee simple in both the surface and mineral estate, the concept of severance has created significant problems for split estates throughout the United States. The long history of conflict between mineral and surface estate owners has proved the fallacy of any assumption that severed minerals are so far below ground

122. RAYMOND, *supra* note 58, at 218.

123. *Id.* at 218-19.

124. *Id.* at 222.

125. *Id.* at 216.

126. *See id.* at 218.

127. *See id.*

Although history abundantly shows that mining flourishes best when the property in minerals is distinguished from the ownership of the soil, it seems to me good policy for the United States, in selling the mines, to sell also the surface. In most cases the land will never be taken up for agricultural purposes, and if the miner does not buy it no one will. I do not mean that the ownership of minerals should go invariably with the soil, but that, where the United States has both for sale, both should be sold to the same party, who may afterwards dispose of either as he likes.

Id.

128. It is beyond the scope of this article to address Congress’s continued struggle after enacting the 1872 Mining Law to create some balance between its desire to encourage the settlement and patenting of public lands for agricultural, ranching, and settlement purposes and its desire to develop mineral resources. *See, e.g.*, JAN G. LAITOS ET AL., NATURAL RESOURCES LAW 1040-45 (2006); MALL, *supra* note 117, 74-82.

that they can be exploited with minimal surface disturbance.¹²⁹ Furthermore, in many instances, complications due to split estates have been a disincentive, rather than an incentive, to the development of resources.

B. Problems Applying Traditional Mineral Severance Rationales to Wind

As property law has evolved, it has created increased flexibility for landowners to divide their estates.¹³⁰ Consequently, landowners appear not only to have authority over the wind that flows across their surface estates, but also authority to sever the wind rights from those surface estates.¹³¹ Despite this authority, the question remains not whether wind can be severed, but whether it is in society's best interest to allow wind severance.

Traditional mineral severance rationales of minimal surface disturbance and encouraging development of resources seem to support non-severance in the wind context. First, wind power development requires more extensive use of the surface than most mineral development. Much mineral development is through underground mining, *in situ* leaching, or extraction drilling, all of which have a fairly small surface footprint in comparison to wind. In contrast, wind ties up much of the surface for roads, substations, operations and maintenance facilities, and laydown yards.¹³² While some surface uses, such as grazing or farming, may coexist with wind development, spider webs of subsurface and overhead transmission, collection, and distribution lines can interfere with many other uses of the land.¹³³

Furthermore, even if mineral development is through strip or open-

129. For valuable coverage of this topic see Bruce M. Kramer, *The Legal Framework for Analyzing Multiple Surface Use Issues*, in SEVERED MINERALS, SPLIT ESTATES, RIGHTS OF ACCESS, AND SURFACE USE IN MINERAL EXTRACTION OPERATIONS (Rocky Mt. Min. L. Fdn. 2005); see also Donald Zillman, *The Common Law of Access and Surface Use in Oil, Gas, and Mining*, in SEVERED MINERALS, *supra*.

130. See Kenneth J. Vandavelde, *The New Property of the Nineteenth Century: The Development of the Modern Concept of Property*, 29 BUFF. L. REV. 325, 328-30 (1980) ("As the nineteenth century progressed, increased exceptions to both the physicalist and the absolutist elements of Blackstone's conception of property were incorporated into law. . . . The protection of value rather than things—the depysicalization of property—greatly broadened the purview of property law."); see also Thomas C. Grey, *The Disintegration of Property*, in NOMOS XXII, PROPERTY 69 (J. Roland Pennock & John W. Chapman eds., 1980) ("[T]he theory of property rights held by the modern specialist tends both to dissolve the notion of ownership and to eliminate any necessary connection between property rights and things."); Joseph William Singer, *The Reliance Interest in Property*, 40 STAN. L. REV. 611, 614 (1988) (stating that under a relational approach "[r]ights are not limited to the initial allocation of property entitlements or the agreement of the parties, but emerge and change over the course of the relationship").

131. See, e.g., *Severance*, *supra* note 20, at 1-4.

132. See K.K. DuVivier & Roderick E. Wetsel, *Jousting at Wind Mills: When Wind Power Development Collides with Oil, Gas, and Mineral Development*, 55 ROCKY MTN. MIN. L. INST. PAPER No. 9, 9-4 (forthcoming 2009).

133. *Id.*

pit mining, which requires removal of the entire surface, the use is temporary, and the surface is reclaimed after the mineral is extracted. In contrast, wind power is renewable and never depleted, thus, wind generation facilities might require perpetual surface use.¹³⁴

The second traditional justification for allowing severance of minerals is that mineral extraction and exploitation benefits the public by encouraging skilled workers to develop the resource, thus, making more minerals available for public consumption.¹³⁵ Yet, instead of encouraging wind development, severing wind rights impedes it for at least three reasons.

First, separating wind rights from the surface estate removes the surface owner from the negotiating table. Because wind development requires extensive, long-term surface use, the surface owners are the parties most impacted. Taking them out of the equation seriously complicates surface access and damages negotiations.

Second, landowners who retain control over both the mineral and wind rights can serve important roles as mediators in disputes between competing developer interests. Landowners who receive royalties from both mineral and wind development have a financial incentive to see both enterprises coexist. This incentive is eliminated when mineral and wind rights are severed and the owners of these separate estates seek only to maximize their own distinct interests.

Finally, the first two points above create such serious surface rights issues that many commercial-scale wind investors are hesitant to work with landowners who have severed their wind rights.¹³⁶ Alternatively, these investors hold up financing until they are provided with surface use agreements from all interested parties, which can sometimes be an insurmountable prerequisite.¹³⁷

In summary, while property law may permit the severance of wind rights, the traditional rationales for mineral severance do not support severance as the most effective method for encouraging the development of wind power. The next section addresses specific case precedents that have effectively classified wind as comparable to two specific minerals—oil and water—and will illustrate why these specific regimes are no better than the general mineral regime as an appropriate model for the best treatment of wind rights.

134. However, global climate change may be decreasing winds and result in a decline of generating capacity for wind turbines. See Seth Borenstein, *Global Warming Killing Wind? Researchers, Kite Enthusiasts Worry*, HUFFINGTON POST, June 10, 2009, http://www.huffingtonpost.com/2009/06/10/global-warming-killing-wi_n_213610.html.

135. See RAYMOND, *supra* note 58, at 211 (“If it be said that the public good is best served by that regulated supply . . . for of interest of the public that the mine should be worked.”).

136. *Severance*, *supra* note 20, at 5.

137. DuVivier & Wetsel, *supra* note 132, at 9-7.

IV. SEVERANCE AND THE STATUS OF WIND RIGHTS IN THE UNITED STATES

A handful of authors have published articles specifically addressing the status of wind rights.¹³⁸ Three of these authors are from Texas and one from Iowa.¹³⁹ Each cites what was, until March 2009, the sole case that had examined the issue: a case out of California's Court of Appeals, *Contra Costa Water District v. Vaquero Farms, Inc.*¹⁴⁰ Each of these authors used *Contra Costa* to illustrate that "wind is arguably a 'resource,' similar to oil," and, therefore, it is capable of being severed and deeded apart from the surface estate in the same way as oil.¹⁴¹

The most recent case addressing wind rights severance is *Romero v. Bernell*.¹⁴² In *Romero*, the federal district court in New Mexico concluded that a property with a "principal value . . . for wind farm development" could be partitioned, likening wind not to oil, but to a different mineral—water.¹⁴³ The following two subsections examine the logic of each of these two cases and illustrate why neither an oil regime nor a water regime is the best paradigm for wind development.

A. The Oil Regime

Contra Costa is the first case to address the property status of wind power rights. Although *Contra Costa* framed the issue in the context of condemnation, commentators have cited it as authority for likening wind power rights to oil and applying a similar severance model to them.¹⁴⁴ Subsection 1 describes the *Contra Costa* case, and subsection 2 illustrates the waste resulting from an oil model, suggesting that the same path would be detrimental to wind development.

1. *Contra Costa*

As the site of the first wind farm in the United States in 1980, California has a long history of wind power development.¹⁴⁵ Vaquero Farms participated in this early wind development by leasing over 2,100 acres of its ranch for wind power and permitting the installation of about 260 wind turbines.¹⁴⁶ Approximately ten years later, the local Water District

138. See sources cited *supra* note 20.

139. Lisa Chavarria, Terry Hogwood, and Ernest Smith are from Texas. Joseph O. Wilson is from Iowa.

140. 68 Cal. Rptr. 2d 272 (Cal. Ct. App. 1997).

141. See *Undertaking*, *supra* note 20, at 3-4; Hogwood, *supra* note 20, at 7-8; Smith, *supra* note 20, at 302-03; Wilson, *supra* note 20, at 1784.

142. 603 F. Supp. 2d 1333 (D.N.M. 2009).

143. *Id.* at 1335 (stating "the most analogous natural resource" is water). The "mineral" label references the discussion *infra* footnotes 192-195.

144. See sources cited *supra* note 141.

145. See *Wind Power*, *supra* note 20, at 835.

146. *Contra Costa*, 68 Cal. Rptr. 2d at 274. The original Vaquero wind leases were executed in

sought to condemn portions of Vaquero's property for a reservoir.¹⁴⁷ In compensating Vaquero for the portions of its property condemned, the Water District adopted a money-saving tactic—the Water District claimed it only acquired the fee interest for the surface.¹⁴⁸ The final deed reserved the wind rights and related leases to Vaquero, so the Water District would not have to pay compensation for them.¹⁴⁹

The *Contra Costa* court stated the issue of the case in narrow terms. “The question before us may be stated as follows: When a public entity *acquires property through eminent domain*, are the wind power rights capable of segregation or are they so affixed to the underlying land that they *must be acquired by the condemning authority?*”¹⁵⁰ Ultimately, the court concluded that the Water District could “as a matter of law, reserve wind power rights from a condemnation of property . . . [because] *a condemnation of property for public use need not be unqualified, total, and unconditional.*”¹⁵¹

In reaching this conclusion, the *Contra Costa* court used broad language that seemed to apply a premise that wind is a resource similar to oil as justification for severing a wind right in the same way as oil:

It is well settled that subsurface minerals, gas and oil are distinct property rights which may be conveyed separately from the fee. . . . We agree with the Water District's assertion that “[t]he right to generate electricity from windmills harnessing the wind, and the right to sell the power so generated, is no different, either in law or common sense, from the right to pump and sell subsurface oil, or subsurface natural gas by means of wells and pumps.” The Water District persuasively points out, “the argument that harvesting windpower somehow requires greater usage of the surface than harvesting oil and gas resources defies common sense to anyone who has seen a field of oil derricks.”¹⁵²

However, the issue before the *Contra Costa* court was not property rights in general, but compensation in a condemnation setting. The court's language in other portions of the opinion reflects this narrower focus on only an “interest in property”:

The interests susceptible to condemnation under the statute, embrace any right, title, or estate in property. . . . Intangible personal property, in addition to tangible property, may be taken—therefore, even a professional sports franchise is susceptible to a condemnation action.¹⁵³

California's statute allows condemnation of any “substantial right” capable of being bought and sold in the marketplace.¹⁵⁴ There are many

1984. *Id.*

147. *Id.*

148. *Id.* at 275.

149. *Id.*

150. *Id.* at 276 (emphasis added).

151. *Id.* at 278 (emphasis added).

152. *Id.*

153. *Id.* at 276 (internal quotations omitted).

154. *Id.* at 277.

rights related to property that fit this description that do not constitute separate estates or severable rights. The sports franchise example in the quote above is not a fee property interest. Similarly, a lease to property is capable of being bought and sold, but leases are not considered severable fee interests.¹⁵⁵

Wind rights are capable of being bought and sold. Furthermore, the *Contra Costa* court's inverse logic—that if such an interest qualifies as a right that can be separately condemned, it also can be severed from a condemned interest—may be supportable. However, neither of these rationales supports the conclusion that all wind rights *should* be separate interests severed from a fee. While the commentators above have cited *Contra Costa* as support for that conclusion, no other court in the country has chosen to cite it as authority for the severance of wind rights.

2. Problems Applying an Oil Regime to Wind

It is beyond the scope of this article to fully describe and evaluate the law of ownership rights to oil. There are countless articles and treatises on that topic.¹⁵⁶ However, the lessons learned from oil development demonstrate that it should serve as a cautionary tale rather than as a model for efficient and equitable wind production.

Unlike minerals in place, the “fugacious minerals”—oil, gas, and water—flow from one property to another through pore spaces in the ground.¹⁵⁷ To define ownership rights in fugacious minerals, courts

155. A lease is more often considered a contractual right permitting “free customization of the rights and duties of the respective parties” in contrast to a property right that “requires the parties adopt one of a limited number of standard forms that define the legal dimensions of their relationship.” Thomas W. Merrill & Henry E. Smith, *The Property/Contract Interface*, 101 COLUM. L. REV. 773, 776 (2001). However, the line between contract and property rights is often blurred. *See id.* at 777.

156. *See, e.g.*, 1 KUNTZ, LAW OF OIL AND GAS § 2.1 (2007); LAWRENCE MILLS & J.C. WILLINGHAM, THE LAW OF OIL AND GAS (1926); Leslie Moses, *The Evolution and Development of the Oil and Gas Lease*, in PROCEEDINGS OF THE SECOND ANNUAL INSTITUTE OF OIL AND GAS LAW AND TAXATION AS IT AFFECTS THE OIL AND GAS INDUSTRY 1-42 (1951); 1A W.L. SUMMERS, THE LAW OF OIL AND GAS 1-120 (3d ed. 2004); Robert E. Hardwicke, *The Rule of Capture and Its Implications as Applied to Oil and Gas*, 13 TEX. L. REV. 391 (1935); Bruce M. Kramer & Owen L. Anderson, *The Rule of Capture—An Oil and Gas Perspective*, 35 ENVTL. L. 899 (2005); James W. Simonton, *The Nature of the Interest of the Grantee Under an Oil and Gas Lease*, 25 W. VA. L. Q. 295 (1918); James A. Veasey, *The Law of Oil and Gas*, 19 MICH. L. REV. 161 (1920); James A. Veasey, *The Law of Oil and Gas*, 18 MICH. L. REV. 749 (1920); James A. Veasey, *The Law of Oil and Gas*, 18 MICH. L. REV. 652 (1920); James A. Veasey, *The Law of Oil and Gas*, 18 MICH. L. REV. 445 (1920).

157. *See* FRED BOSSELMAN ET AL., ENERGY, ECONOMICS AND THE ENVIRONMENT 291-98 (2d ed. 2006); *see also* Dabney-Johnson Oil Corp. v. Walden, 52 P.2d 237 (Cal. 1935).

The use of ‘oil and gas in place’ terminology which describes an unlimited grant of oil rights as a present transfer of a fee in definite corporeal real property is anomalous. It fails to take into account the fugacious and vagrant nature of oil and other hydrocarbon substances. Oil actually brought to the surface to which the grantee's right attaches may be not only the oil and gas in place beneath the surface of the assignor's land at the time of the assignment, but also oil drawn from beneath the surface of other lands. In our decision in Callahan v. Martin, we reject the oil and gas in place doctrine, as have many other courts, including the Supreme Court of the United States, *Ohio Oil Co. v. Indiana*, 177 U.S. 190, 20

analogized them as “minerals *ferae naturae*” having more in common with wild animals than with other minerals because “they have the power and the tendency to escape without the volition of the owner.”¹⁵⁸

The *ad coelum* model, granting ownership from the heavens to the center of the earth, does not work well to explain the ownership of fugacious minerals. For instance, fugacious minerals might physically lie below a particular surface owner’s defined property boundaries, yet adjacent owners are allowed to invade that space to extract and “capture” these minerals, thus, modifying the *ad coelum* ownership concept.¹⁵⁹ The “rule of capture” for oil—which vests title of fugacious minerals in the first landowner to extract them—arose through the analogy of capturing a wild fox.¹⁶⁰ Eventually, all oil producing states have adopted the rule of capture in some form.¹⁶¹

Under the rule of capture, the only way to prevent your neighbor from sucking the oil under your property through a well on your neighbor’s adjacent property is to erect your own oil well and extract as

S.Ct. 576, 44 L.Ed. 729, but we find that nevertheless oil rights may be recognized and transferred as interests in real property on other theories which give due recognition to the fugacious character of the substances involved.

The owner of the land has exclusive right on his plan to drill for produced oil. This right inhering in the owner by virtue of his title to the land is a valuable right which you may transfer. The right when granted is a profit à prendre, a right to remove a part of the substance of the land. A profit à prendre is an interest in real property in the nature of an incorporeal hereditament.

Id. at 242-43.

158. *Westmoreland & Cambria Natural Gas Co. v. De Witt*, 18 A. 724, 725 (Pa. 1889). In *Westmoreland*, the court wrote:

Water and oil, and still more strongly gas, may be classified by themselves, if the analogy be not too fanciful, as minerals *ferae naturae*. In common with animals, and unlike other minerals, they have the power and the tendency to escape without the volition of the owner. Their “fugitive and wandering existence within the limits of a particular tract was uncertain. . . .” *They belong to the owner of the land, and are part of it, so long as they are on it or in it, and are subject to his control; but when they escape, and go into other lands . . . the title of the former owner is gone. Possession of the land, therefore is not necessarily possession of the gas.*

Id. (emphasis added). For an excellent summary of how different states treat oil rights and how this right might apply to the wind rights concept see Smith, *supra* note 20, at 243-50 nn.115-50.

159. *See R.R. Comm’n v. Manziel*, 361 S.W.2d 560, 568-69 (Tex. 1962). In *Manziel*, the court stated:

The orthodox rules and principles applied by the courts as regards surface invasions of land may not be appropriately applied to subsurface invasions as arise out of the secondary recovery of natural resources. . . . Certainly, it is relevant to consider and weigh the interests of society and the oil and gas industry as a whole against the interests of the individual operator who is damaged; and if the authorized activities in an adjoining secondary recovery unit are found to be based on some substantial, justifying occasion, then this court would sustain their validity.

. . . .

We conclude that if, in the valid exercise of its authority to prevent waste, protect correlative rights, or in the exercise of other powers within its jurisdiction, the Commission authorizes secondary recovery projects, a trespass does not occur when the injected, secondary recovery forces move across lease lines, and the operations are not subject to an injunction on that basis. The technical rules of trespass have no place in the consideration of the validity of the orders of the Commission.

Id.; *see also Kramer & Anderson, supra* note 156, at 900-11.

160. *See Pierson v. Post*, 3 Cai. 175 (N.Y. Sup. Ct. 1805).

161. *BOSELMAN, supra* note 157, at 293 n.2.

much as you can before your neighbor does.¹⁶² This approach resulted in dueling derricks standing off along property lines, requiring far more extraction wells than necessary.¹⁶³ Excessive extraction rates also ultimately reduced extraction yields for entire oil fields.¹⁶⁴ Thus, “[t]he rule of capture resulted in pell-mell development that wasted large amounts of petroleum both above and below ground.”¹⁶⁵

After more than a half century of “chaotic, dangerous, and wasteful” development under the judicially-created rule of capture, some states finally addressed the problem through legislation.¹⁶⁶ Gradually, oil recovery improved as legislators experimented with various techniques to avoid waste such as controlling the spacing of extraction wells,¹⁶⁷ mandating pooling of small tracks into an acreage sufficiently large to secure a well permit,¹⁶⁸ recognizing correlative rights between owners,¹⁶⁹ and ultimately, in some instances, mandating unitization.¹⁷⁰

“Unitization is the joint, coordinated operation of all, or a substan-

162. See *Wronski v. Sun Oil Co.*, 279 N.W.2d 564, 569 (Mich. Ct. App. 1979) (noting the only remedy for a landowner injured by the rule of capture is “that of self-help go and do likewise”).

163. See, e.g., Jared C. Bennett, *Ownership of Transmigratory Minerals, Utah and Zebras: Proof that Oil and Gas Ownership Law Needs Reform*, 21 J. LAND RESOURCES & ENVTL. L. 349, 357-58 (2001); Northcutt Ely, *The Conservation of Oil*, 51 HARV. L. REV. 1209, 1220-21 (1938); Dean Lueck, *The Rule of First Possession and the Design of the Law*, 38 J.L. & ECON. 393, 394-95 (1995); J. Howard Marshall & Norman L. Meyers, *Legal Planning of Petroleum Production*, 41 YALE L. J. 33, 42-43, 48-49 (1931).

164. See, e.g., Ely, *supra* note 163.

An oil pool is an engine; it represents an equilibrium of rock pressure, gas pressure and underlying water pressure. Pierced by a well, these forces propel oil or gas or water, or all three, to the surface. . . . Under ideal conditions, those natural underground forces, *i.e.*, “water drive,” gas pressure, and so on, may be so harnessed and controlled as to lift to the surface 90-95 percent of the oil contained in the reservoir, by flowing, over a long period of years. But when oil is produced without restriction, the engine figuratively races itself to pieces. . . .

Id. at 1219-20 (footnotes omitted).

165. BOSSELMAN, *supra* note 157, at 298.

166. See *id.* at 298.

The doctrine holds that each owner of a common source of supply has both legal rights and legal duties toward the other owners. The strongest right continues to be the rule of capture if exercised properly under common law tort principles and in compliance with a broad range of state conservation laws which were enacted after 1900.

Id. at 299-300. Conservation statutes attempt to ensure that a reservoir will be produced at its Maximum Efficient Rate of Recovery (MER). See JOHN S. LOWE ET AL., *CASES AND MATERIALS ON OIL AND GAS LAW* 159 (5th ed. 2008). The common law also made attempts to mitigate detrimental effects of the rule of capture through such concepts as correlative rights. See, e.g., *Ohio Oil Co. v. Indiana*, 177 U.S. 190, 211-12 (1900).

167. BOSSELMAN, *supra* note 157, at 300.

The excessive well drilling and wasteful production engendered by the rule of capture were difficult to ignore. States began to enact conservation legislation like that in *Ohio Oil*, and created regulatory agencies to implement the new laws. Many states enacted well spacing rules which provided that no well could be drilled on less than a certain number of acres or closer than so many feet from an existing well. . . . [However,] well spacing alone did not address the most important factor affecting the ultimate percentage of oil recovered from a field: the field’s production rate.

Id.

168. See, e.g., Hardwicke, *supra* note 156, at 420-22; BOSSELMAN, *supra* note 157, at 306.

169. See, e.g., 1 W.L. SUMMERS, *THE LAW OF OIL AND GAS* 139-44 (3d ed. 2004) (recognizing correlative rights as the legal privilege to take oil and gas limited by a duty not to injure the source of supply and not to take an undue proportion).

170. See, e.g., *Gilmore v. Oil & Gas Conservation Comm’n*, 642 P.2d 773 (Wyo. 1982).

tial part, of a reservoir as a single unit by all the different operators holding leases in the field.”¹⁷¹ Unitization substitutes the competitive rule of capture with cooperative development that is more productive and less wasteful.¹⁷² Unitization statutes force interest holders into a single unit that increases the total recovery from an oil field. These statutes are necessary due to the second problem created by severance: fractionalization.

Fractionalization occurs when oil interests are separated from the surface estate and then subdivided, especially when transferred from one generation to another through either wills or intestacy statutes. The result is an oil interest owned by multiple cotenants.¹⁷³ These mineral estates often become smaller and smaller over time causing severe problems for a party seeking to develop a property. It becomes nearly impossible to obtain complete agreement among all the mineral owners, and all it takes is one holdout to prevent development.¹⁷⁴

One author summarized the consequences of the early development of oil law in the United States this way:

The rule of capture and the absence of pooling and unitization statutes in the early decades of the oil and gas development in the U.S., coupled with private ownership of small tracts of land, have left an enduring legacy. We are a nation of marginal wells, many of which have become idle and orphaned.¹⁷⁵

171. BOSSELMAN, *supra* note 157, at 315.

[Unitization] is distinguished from “pooling” which is the process of combining small tracts of land into acreage large enough to secure a drilling permit to meet the spacing rules of the conservation commission. Pooling prevents the drilling of unnecessary wells and protects the correlative rights of all the owners being drained by the one well on the spacing unit and usually occurs during primary production. Unitization combines many spacing units into a fieldwide unit, usually to conduct secondary recovery operations.

Id.

172. See BOSSELMAN, *supra* note 157, at 315 (“Most states have compulsory unitization statutes . . . which allow the conservation agency to force holdouts into a unit that is expected to increase the total recovery from the field. Texas, the largest oil-producing state, does not.”); see also *id.* at 315-16 (“Compulsory unitization was castigated by the Texas independent producers for years as a ‘substitution of force for persuasion . . . another fetter on the step of Freedom, another move down the road towards confiscation, tyranny, and unmorality’ whose advocates were ‘socialist, bureaucrats, self-seeking politicians [and] fuzzy thinkers of the left.’”) (quoting L. Proctor Thomas, Comment, *Prospects for Compulsory Fieldwide Unitization in Texas*, 44 TEX. L. REV. 510, 524 (1966)). The Texas Railroad Commission responded by “arm twist[ing] the operators to unitize ‘voluntarily’ by shutting in the fields or prorating them severely under the agency’s broad authority to prevent waste.” *Id.* at 316 (quoting Jacqueline L. Weaver, *Unitization of Oil and Gas Fields*, in TEXAS: A STUDY OF LEGISLATIVE, ADMINISTRATIVE AND JUDICIAL POLICIES 137-66 (1986)).

173. *Id.* at 318-19.

174. See, e.g., *Law v. Heck Oil Co.*, 145 S.E. 601 (W. Va. 1928) (illustrating that an owner of an undivided 1/768 oil and gas interest can prevent development of the entire tract); see also BOSSELMAN, *supra* note 157, at 319 n.6 (“Few wells produce [enough] revenue in one month, so thousands of royalty owners are due only a few pennies. The administrative costs to lessees of accounting to so many owners for their rightful shares of a well’s revenues are very high.”) (citing Owen L. Anderson & Ernest E. Smith, III, *The Use of Law to Promote Domestic Exploration and Production*, 50 INST. OF OIL & GAS L. & TAX’N. 2-1, 2-6 (1999)). “This fractionated ownership is one reason that oil companies have sought to explore in areas where large tracts of land are available owned by a single lessor—the government.” BOSSELMAN, *supra* note 157, at 319 n.6.

175. BOSSELMAN, *supra* note 157, at 318 n.5.

Of the 550,000 producing oil wells in the U.S. in 1998, some 419,000 (or 76%) produced an

Must wind suffer the same fate by blind analogy to the early law of oil development?

Commentators have suggested that the rule of capture is appropriate for wind rights.¹⁷⁶ Like oil, wind is fugacious in that it flows across multiple properties and is not valuable until reduced to possession.¹⁷⁷ To make it economically feasible, wind is best developed through wind farms that combine acreage and space turbines in patterns that maximize electricity output and minimize obstructions. However, as in the oil context, this cooperative development may not be easily achieved on a voluntary basis. Consequently, legislation mandating unitization of wind farms may avoid the necessity of multiple competing turbines attempting to capture the wind. Such legislation could encourage the most efficient location of wind farms and the most effective development of an area's wind resources.

In addition, when wind rights are severed, they are also subject to fractionalization into multiple sub-ownerships.¹⁷⁸ As with oil development, fractionalization can complicate the work of the wind developer in putting together a sufficient number of properties to make the wind farm economically feasible. Also, fractionalization increases the possibility that one holdout may seriously impede or prevent wind development.

B. The Water Regime

In March 2009, a federal district court judge addressed the status of wind rights in *Romero v. Bernell*.¹⁷⁹ In contrast to *Contra Costa, Romero* likened wind power rights not to oil, but to water. Subsection 1 describes the *Romero* case; subsection 2 shows how New Mexico's prior appropriation water regime would also be problematic as a model for wind power development.

1. *Romero*

In *Romero*, tenants in common of property located in Taos County, New Mexico, petitioned the court for partition of their prop-

average of two barrels per well per day. An astounding number of additional wells, about 343,000, were idle—not producing at all. Of these, only about half are idle with state approval. At least 57,000 orphaned wells existed—idle wells with no known operator and which had not been properly plugged and sealed under state conservation laws.

Id. at 318 n.5 (citing Jacqueline Lang Weaver, *The Federal Government as a Useful Enemy: Perspectives on the Bush Energy/Environmental Agenda from the Texas Oilfields*, 19 PACE ENVTL. L. REV. 1 (2001)).

176. *E.g.*, Hogwood, *supra* note 20.

177. *See, e.g.*, *Wind Power*, *supra* note 20, at 834-35; Hogwood, *supra* note 20, at 6; *see also* *Romero v. Bernell*, 603 F. Supp. 2d 1333, 1335 n.2 (D.N.M. 2009) (noting that in contrast unharnessed wind is a “destructive force which diminishes the value of the land”).

178. *See supra* text accompanying notes 173-174.

179. 603 F. Supp. 2d 1333 (D.N.M. 2009).

erty.¹⁸⁰ The parties opposing the partition argued that “the property cannot equitably be partitioned because the principal value of the property appears to be for a wind farm development.”¹⁸¹

The rationale used by the parties opposing partition hinged on the treatment of wind rights as comparable to mineral rights. In New Mexico, “minerals in place are considered real estate” and “are not capable of being partitioned.”¹⁸² However, the *Romero* court rejected the “premise that wind is analogous to minerals *in situ*.”¹⁸³ The court went on to note:

While New Mexico has no relevant statutory or case law on the subject, it does not appear minerals in the ground are the appropriate commodity to create a legal paradigm to analyze wind power. . . . Wind is never embedded in the real estate; rather, it is more like water or wild animals which traverse the surface and which do not belong to the fee owner until reduced to possession.¹⁸⁴

The *Romero* court referenced *Contra Costa* for the following proposition:

The right to “harvest” wind energy is, then, an inchoate interest in the land which does not become “vested” until reduced to “possession” by employing it for a useful purpose. Only after it is reduced to actual wind power can wind energy then be severed and/or quantified.¹⁸⁵

Based on this reasoning, the *Romero* court concluded that “the most analogous natural resource” to wind is water.¹⁸⁶

The precedential value of *Romero* for defining the status of wind rights is yet to be tested; it is so recent that no other cases or commentators have cited it. However, it is interesting to note that *Romero* is the first case to cite *Contra Costa* for the purpose of discussing the status of wind rights. Yet, *Romero* does not cite *Contra Costa* for the holding that most commentators have ascribed to it—that wind rights are analogous to oil rights.¹⁸⁷ In fact, *Romero* explicitly seems to reject this characterization.¹⁸⁸

Also, the value of *Romero* as precedent for analogizing wind rights to water rights may be qualified because the district court found alternative grounds for its result, stating:

180. *Id.* at 1334.

181. *Id.*

182. *Id.* at 1334, 1335.

183. *Id.* at 1336 (footnote omitted).

184. *Id.* at 1335.

185. *Id.* (citing *Contra Costa Water Dist. v. Vaquero Farms*, 68 Cal. Rptr. 2d 272 (Cal. Ct. App. 1997)).

186. *Id.*

187. *See id.* (“The right to ‘harvest’ wind energy is, then, an inchoate interest in the land which does not become ‘vested’ until reduced to ‘possession’ by employing it for a useful purpose. Only after it is reduced to actual wind power can wind energy then be severed and/or quantified.”) (footnote omitted).

188. *See id.* (“Wind, in and of itself, does not appear to be susceptible of any ownership. It is not like oil and gas in place where there is a deposit of hydrocarbons which can be reduced to possession by one or more mineral owners of the tracts under which the hydrocarbon deposit resides.”).

Nor would it necessarily hold that even if the Court accepted Respondent's premise that wind is analogous to minerals *in situ* that partition would be inappropriate. In a partition proceeding, the party claiming minerals prevent an equitable partition without manifest injury has the burden of demonstrating that the land contains such minerals.¹⁸⁹

The party opposing the partition in *Romero* apparently did not carry its burden because it argued only that "he *might be* disadvantaged in the future *if* Petitioners develop a wind farm and if his share of the partitioned land is not invited to participate."¹⁹⁰ The court concluded this assertion was "too speculative to contemplate."¹⁹¹

2. Problems Applying a Water Rights Regime to Wind

The United States Supreme Court has recognized water as "a 'mineral' in the broadest sense of that word."¹⁹² Yet, the Court refused to classify water as "a 'valuable mineral deposit'" regulated by the 1872 Mining Law because Congress early on recognized the power of the states to control their own waters.¹⁹³ Furthermore, the states have not regulated water uniformly, instead they have used a spectrum of approaches from prior appropriation to riparian rights and sometimes a combination of both.¹⁹⁴ Also, the treatment of rights may depend on whether the water is underground or in streams.¹⁹⁵ As *Romero* is a New Mexico case, the discussion below focuses only on two specific aspects of the New Mexico prior appropriation water regime and how that regime might apply in a wind context.

Of the western states, New Mexico was the first to adopt a prior appropriation system for groundwater.¹⁹⁶ Although the history of prior appropriation is extensive, the criticism of it is almost as extensive.

189. *Id.* at 1335-36.

190. *Id.* at 1334 (emphasis in original).

191. *Id.*

192. *Andrus v. Charlestone Stone Products Co.*, 436 U.S. 604, 610 (1978) (stating "[s]ince early times, water has been regarded as a mineral") (quoting *Charlestone Stone Products Co. v. Andrus*, 553 F.2d 1209, 1215 (9th Cir. 1977)). In *Andrus*, the court also noted that "the scientific division of all matter into the animal, vegetable or mineral kingdom would be absurd as applied to a grant of lands, since all lands belong to the mineral kingdom." *Id.* at 610 (quoting *N. Pac. Ry. Co. v. Soderberg*, 188 U.S. 526, 530 (1903)).

193. *Id.* at 610. The 1866 and 1870 laws intended to "approve and confirm the policy of appropriation for a beneficial use, as recognized by local rules and customs, and the legislation and judicial decisions of the arid-land states." *Id.* at 613 (quoting *Cal. Or. Power Co. v. Beaver Portland Cement Co.*, 295 U.S. 142, 154-55 (1935)).

194. *See, e.g.*, TARLOCK, *supra* note 107 § 5:8 (stating "Colorado and its arid neighbors rejected the dual system" of the Pacific Coast states, thus, rejecting common law riparian rights with the rationale that the federal government silently acquiesced in rejecting them and after 1866 gave congressional consent to state control); *see also* *Colorado v. Sw. Colo. Water Conservancy Dist.*, 671 P.2d 1294 (Colo. 1983), *cert. denied*, 466 U.S. 944 (1984).

195. For groundwater, some states follow the "English" or Absolute Ownership Rule of Capture limiting use to owners of land overlying the groundwater. *See, e.g.*, TARLOCK, *supra* note 107 § 4:6. New Mexico and other states follow the American or Reasonable Use Rule. *See id.* §§ 4.6-4.7, 6.10.

196. *Id.* § 6:5; *see also* N.M. CONST. art. XVI § 2; 2 WATERS AND WATER RIGHTS § 11.04(a) n.74 (Robert E. Beck & Amy K. Kelley eds. 1991).

Prior appropriation is “antiquated” because it “protects older and often inefficient uses of water.”¹⁹⁷ “The *first-in-time, first-in-right* principle in prior appropriation ensures that older uses, that may not be the best use of water in current times, must be fully satisfied before newer uses can be met.”¹⁹⁸

Although beneficial use is part of a prior appropriation model, New Mexico case law has recognized “most uses as beneficial.”¹⁹⁹ Thus, a prior appropriation system focuses on first-in-time, but does not necessarily consider the value of uses or encourage maximum benefit for the most people. In addition, prior appropriation water rights are assigned through litigation, and the “constant readjustment of rights” and “the difficulty of binding all claimants . . . makes it difficult if not impossible to give decrees . . . finality.”²⁰⁰

Consequently, a prior appropriation model may not be best for wind rights. A first-in-time focus for wind rights might be problematic because when wind developers map out a development area, they measure the intensity and regularity of winds. This varies depending on location, and some spots are better than others. Also, the economic feasibility of a project depends on a predicted electricity production that is carefully calculated. If another wind developer puts turbines upwind, these can impact downwind production efficiencies.²⁰¹ This might be especially problematic if the downwind wind farm has the potential for greater generation capacities and is closer to transmission facilities. Thus, it would benefit society and expend fewer resources to develop the downwind farm, yet a prior appropriation regime would give the upwind farm, less favorable site preference based simply on timing.

Second, New Mexico groundwater law assumes severance, recognizing “the separate and distinct nature of a water right” from ownership of the land.²⁰² The sole exception to the severance assumption is when water is used for irrigation because New Mexico has statutes explicitly restricting severance in those situations.²⁰³ While severance of a

197. Adell Amos, *Freshwater Conservation in the Context of Energy and Climate Policy: Assessing Progress and Identifying Challenges in Oregon and the Western United States*, 12 U. DENV. WATER L. REV. 1, 133 (2008).

198. *Id.*

199. 6 WATERS AND WATER RIGHTS 831 (Robert E. Beck & Amy K. Kelley eds. 1991). Excessive diversion is one of the only non-beneficial uses. *See id.* at 832 (citing *Jicarilla Apache Tribe v. United States*, 657 F.2d 1126 (10th Cir. 1981)).

200. TARLOCK, *supra* note 107, § 7:2.

201. *See* Troy Rule, *A Downwind View of the Cathedral: Using Rule Four to Allocate Wind Rights*, 46 SAN DIEGO L. REV. 207, 209 (2009) (“If turbines are built at both sites, the wake from [the upwind site] turbine will disrupt winds flowing to [the downwind site], rendering [the downwind site] unprofitable.”).

202. *Walker v. United States*, 162 P.3d 882, 888 (N.M. 2007); *see also* WATERS, *supra* note 199, at 79 (Supp. 2008).

203. *Walker*, 162 P.3d at 889 (citing N.M. STAT. § 72-1-2 (2007) (“[W]ater that is applied to irrigation becomes appurtenant to the land.”)). Prior to 2007, New Mexico courts also considered water rights appurtenant to land when use of water on the land is indispensable to the land’s enjoyment,

subsurface resource, such as water, may have minimal impacts on the value of a surface estate, this article has already addressed the problem of applying underground resource analogies in the context of wind power development.²⁰⁴ Wind power requires extensive surface use that makes coexistence with competing surface uses more problematic.²⁰⁵

However, by rejecting an oil analogy for wind and turning instead to a water model as an alternative, New Mexico appears to be moving in the right direction because it brings wind closer to solar analogies. New Mexico is one of only two states in the country that analogizes solar rights to water rights and by statute created a prior appropriation system for administering solar rights.²⁰⁶

There is one important distinction, however, between New Mexico's prior appropriation water regime and its prior appropriation regime for solar rights. While water is presumed to be severable, solar rights in New Mexico are "appurtenant to the real property upon which the solar collector is situated."²⁰⁷ Therefore, applying New Mexico's solar rights regime would eliminate one of the key impediments to wind development discussed throughout this article—the problem of severance.

V. CONCLUSION

Only a handful of state legislatures have addressed wind ownership issues,²⁰⁸ and even fewer have recognized and explicitly restricted wind severance.²⁰⁹ Without legislative guidance, courts logically turn to precedents defining the status of other resources, such as oil or water, for analogies. Yet, defaulting to traditional models is unlikely to encourage the best development of our country's wind resources.

but that exception was refuted in *Walker*. *Id.* at 892-93; see also WATERS, *supra* note 199, at 79 (Supp. 2008).

204. See discussion *supra* Part III.B.

205. See *supra* notes 132-37 and accompanying text (discussing the conflicts between wind development and other surface uses).

206. N.M. STAT. §§ 47-3-1 to 47-3-5 (2008); WYO. STAT. ANN. § 34-22-103 (2009); see Debora S. Grout, *Access to Sunlight: New Mexico's Solar Rights Act*, 19 NAT. RESOURCES J. 957 (1979). *But cf.* Adrian J. Bradbrook, *Future Directions in Solar Access Protection*, 19 ENVTL. L. 167, 179 (1988) ("The nature of sunlight and the development of solar access laws should be regarded as *sui generis*.").

207. N.M. STAT. § 47-3-10 (2008). Although the solar rights are "freely transferable," under section 47-3-4(B)(3), only grandfathered transfers are allowed separate from land. *Id.* § 47-3-10(B)(3).

208. MINN. STAT. § 500.30(2) (Supp. 2009); NEB. REV. STAT. § 66-910 (2003); OR. REV. STAT. § 105.905 (2007); WIS. STAT. § 700.35 (2001) ("[Wind or] [r]enewable energy resource easements shall run with the land benefited and burdened unless otherwise expressly stated therein."). Wisconsin also has a statute that declares any subsequent structure or vegetative growth that interferes with the functioning of a nearby solar or wind energy system to be a private nuisance. WIS. STAT. § 844.22 (2007).

209. Explicit restrictions on severance: N.D. CENT. CODE § 17-04-04 (Supp. 2009); S.D. CODIFIED LAWS § 43-13-19 (2004) ("No interest . . . associated with the production or potential production of energy from wind power on the tract of land may be severed from the surface estate . . . except that such rights may be leased for a period not to exceed fifty years.").

Without a legislative restriction, property law appears to allow severance of wind in a manner comparable to mineral severance. While some mineral models may be appropriate for resources developed underground, time has proved false the assumption that everything that happens below ground can stay below ground without impacting the surface.²¹⁰ Wind farms require long-term and extensive use of land, not only on the surface, but also immediately above and below the surface for transmission, distribution, and collection lines. As a result, wind development needs careful consideration to coordinate it with other surface and subsurface uses.

Furthermore, a specific analogy with oil extraction is problematic because applying the common law rule of capture to wind may cause wasteful development as it did with oil until legislatures introduced mechanisms to adjust the deficiencies of the common law model.²¹¹ An analogy to water also carries with it the baggage and deficiencies of the prior appropriation system. Progress toward treating wind rights in a manner similar to solar rights may be a step in the right direction. However, few states have effective solar right regimes, and the distinctions between wind and solar suggest that wind rights are best addressed by legislation specifically catered to wind development.²¹²

More importantly, yesterday's models cannot provide the best solutions for today's energy needs. Too long we have clung to our dependence on fossil fuels, such as coal and oil, and have resisted change even in the face of increasing evidence that this fossil fuel focus has led us to the brink of a worldwide crisis of climate change.

Instead of applying past regimes to wind, elected officials should study these models for pitfalls to avoid. Future legislation should be tailored to the unique issues raised in developing each specific alternative renewable resource. By taking a proactive approach, we can hope to convert inefficient practices of the past into the productive alternative energy solutions of our future.

210. Most scientists now view all natural systems as interrelated and subject to severe disruption by human interference. *See, e.g.*, International Development Research Center, Toward Sustainability, http://www.idrc.ca/en/ev-82309-201-1-DO_TOPIC.html (last visited Oct. 12, 2009).

211. *See supra* notes 160-69 and accompanying text.

212. When placed on vacant land, solar collectors represent a more intensive use of the surface because they take up the full area rather than being spaced as with wind turbines. However, when placed on roofs of existing buildings, solar collectors may be more amenable than wind rights to concurrent use.