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I'll Huff and I'll Puff and I'll Blow Your House Down: The Argument for the Ability to Purchase Your Neighbor's Wind

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I'LL HUFF AND I'LL PUFF AND I'LL BLOW YOUR HOUSE DOWN: THE ARGUMENT FOR THE ABILITY TO PURCHASE YOUR NEIGHBOR'S WIND

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Wind power capacity has increased substantially over the past decade. This growth in capacity is partially attributable to the policies that federal and state governments have enacted to help developers overcome the economic barriers to building commercial-scale wind facilities. However, the existing economic policies have a limited ability to continue to incentivize development of new wind power capacity. Therefore, if wind power capacity is going to continue to grow so that wind power eventually supplies enough electricity to meet a significant amount of the United States' energy needs, states need to supplement the economic policies with other, noneconomic policies. Specifically, states should create a recognized property right in wind that is severable and alienable. Currently, a wind power project developer takes on several risks at the beginning of a wind power project. One of the risks is that someone will build upwind of the developer's site, thereby obstructing the flow of wind to the turbines and making the whole project less efficient and less economical. Providing the developer with a recognized property right in wind is one way to limit the risk that wind power developers take on at the outset of a project. Limiting the risk will lead to increased wind power development by decreasing the cost of the project. Decreasing the project cost in turn reduces the cost of wind power, which makes wind power a more competitive source of electricity.

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INTRODUCTION

The expansion of renewable energy projects is touted as beneficial because renewable energy growth represents a potential area for new job creation,[1] a way to improve national security by reducing the United States' reliance on foreign energy sources,[2] and a means for reducing greenhouse gas emissions.[3] Maryland Governor Martin O'Malley expressed all of these ideas in a speech supporting the development of offshore wind power, saying, "We need the energy. We have the resources. We need the jobs, and we need a more renewable

1. *Colorado Enjoys the Spotlight on its Renewables*, MSNBC.COM (Feb. 20, 2009), http://www.msnbc.msn.com/id/29258186/ns/us_news-environment/t/colorado-enjoys-spotlight-its-renewables/#.TzKBPGNbUml; *see also* Press Release, Am. Wind Energy Ass'n, AWEA Statement on Lack of PTC Extension in Year-End Package (Dec. 17, 2011), http://www.awea.org/newsroom/pressreleases/statement_lack_of_PTC.cfm (estimating that the expiration of federal tax incentives for wind power could result in the loss of 37,000 jobs).

2. ENERGY, CLIMATE CHANGE, AND OUR ENVIRONMENT, http://www.whitehouse.gov/energy/securing-american-energy (last visited Feb. 10, 2012).

3. *Securing American Energy*, WHITEHOUSE.GOV, http://www.whitehouse.gov/energy/climate-change (last visited Feb. 10, 2012).

and cleaner, greener future for our kids."[4]

Wind is one of the most promising sources of renewable energy for the United States because the United States has the potential to generate substantial amounts of energy using commercial-scale wind turbines.[5] However, increasing wind power capacity is difficult because building a wind power project is a very costly and risky endeavor for developers.[6] Not only are the wind turbines themselves expensive, but future energy demand and wind flow conditions are uncertain.[7]

Currently, federal and state policies rely on subsidies and other economic incentives to encourage wind power development.[8] While economic policy is an important tool for spurring increased development, economic policy alone is not sufficient to encourage enough investment in new wind power capacity to make wind power a significant source of electricity in the United States.[9] To incentivize increased use of wind, economic policies must be supplemented with policies that promote development by reducing developer risk.[10]

One promising option to encourage increased wind power production is to provide developers with the ability to purchase a wind right. A wind right, as envisioned in this Comment, is a property right that guarantees undisturbed wind flow to the turbines.[11] Without the option to purchase a wind right, wind

4. *Mid-Atlantic Wind Farms Take Step Forward*, CBS BALTIMORE (Feb. 2, 2012).

5. The National Renewable Energy Lab estimates that the U.S. could produce over 38.5 million gigawatt-hours of electricity through wind annually; this is nearly ten times the amount of energy that the United States currently consumes. NAT'L RENEWABLE ENERGY LAB., ESTIMATES OF WINDY LAND AREA AND WIND ENERGY PRODUCTION, BY STATE, FOR AREAS >= 30% CAPACITY FACTOR AT 80M, (Apr. 13, 2011), http://www.windpoweringamerica.gov/pdfs/ wind_maps/ wind_potential_80m_30percent.pdf (providing estimates for the total potential capacity of wind power generation that could be produced); U.S. ENERGY INFO. ADMIN., ELECTRIC POWER ANNUAL 2010: TABLE ES2. SUPPLY AND DISPOSITION OF ELECTRICITY, 1999 THROUGH 2010 (Mar. 2012), http://www.eia.gov/electricity /annual/pdf/tablees2.pdf (providing information on the overall amount of electricity consumed in 2010).

6. *See infra* note 33 and accompanying text.

7. *See id.*

8. *See infra* Part II.

9. *See infra* Part II.

10. *See infra* Part III.

11. Wind generally blows from one prevailing direction. Thus, for the purposes of this paper, it is assumed that the "upwind" property is the one towards the direction from which the prevailing wind blows. Am. Meteorological Soc'y, *Glossary of Meteorology*, http://amsglossary.allenpress.com/glossary/ search? id=prevailing-wind-direction1 (last visited Nov. 2, 2012) (the prevailing wind direction is the wind direction most frequently observed).

power developers bear the risk that, after investing substantial resources in the construction of wind turbines and the associated infrastructure, a neighbor might build a structure that obstructs wind flow and thereby diminishes the efficiency of the turbine. This risk hampers development because it increases the cost of the project.[12] Clearly defined, alienable, and enforceable property rights in wind would limit the risk associated with uncertainty regarding future wind flow.[13] Currently, the vast majority of states[14] have not addressed, either judicially or legislatively, what rights wind project developers have to continued, undisturbed flow of wind to the turbines.

This Comment argues that if states are serious about obtaining more electricity from wind power, state legislatures must supplement the economic incentives currently in place with a recognized property interest in the wind that blows across a landowner's property. This right should be easily bought, sold, and transferred. More specifically, states should create a legislatively defined, severable property right to wind that an owner can sell or lease to another.

Part I provides an overview of present and potential wind power capacity in the United States. Part II discusses the federal and state policies currently in place to encourage development of wind energy and explains why these policies are inadequate to make wind a significant source of energy in the United States. Finally, Part III explains why defined property rights are necessary to encourage significant development of wind energy, and argues that a right established by the legislature is preferable to a common law right defined through judicial decisions. The Comment concludes by arguing that the most effective laws will allow for the severability of the wind right from the surface estate.

I. WIND AS A SOURCE OF RENEWABLE ENERGY IN THE UNITED STATES

Renewable energy development and siting is largely a

12. *See* ROBIN MALLOY, LAW IN A MARKET CONTEXT: AN INTRODUCTION TO MARKET CONCEPTS IN LEGAL REASONING 169–70 (2004) (explaining that uncertainty creates various risks which impose a cost on the party bearing that risk).

13. *See* Troy A. Rule, *Airspace in a Green Economy*, 59 UCLA L. REV. 270, 279 (2011).

14. *See infra* note 162 and accompanying text.

matter of state law.[15] As such, the development of additional wind power capacity depends on state action. States should take steps to encourage the development of wind power because wind has the potential to be a significant source of electricity in the United States in the future.[16] This section begins by explaining the extent of the United States' wind power resources and then discusses some of the reasons why these resources are underutilized.

A. Current and Potential Wind Power Capacity

In 2011, wind power generated 46,916 megawatts of electricity, a quantity sufficient to meet 3.3 percent of the United States' current electricity demand.[17] Although wind power currently satisfies a relatively small percentage of the United States' total electricity demand, wind power's contribution to the electricity mix has been growing in both absolute terms and as a percentage of total electricity produced.[18] In 2000, the United States had an installed wind capacity[19] of 2,539 megawatts.[20] Expansion of wind power capacity was slow and inconsistent until 2005, when the

15. Lincoln L. Davies, *Power Forward: The Argument for a National RPS*, 42 CONN. L. REV. 1339, 1342 (2010) (absent federal action, enacting renewable energy plans has been left to the states); *see also* Melanie McCammon, *Environmental Perspectives on Siting Wind Farms: Is Greater Federal Control Warranted?*, 17 N.Y.U. ENVTL. L.J. 1243, 1254 (2009) (stating that wind turbine siting decisions are left to the states).

16. See *supra* notes 1–3 and accompanying text for a discussion of why expanding renewable energy is an important goal. Reasons for promoting renewable energy include improved national security through energy independence, economic development, and environmental concerns. Jay P. Kesan, *The Renewable Energy Policy Puzzle: Putting the Pieces Together Symposium Introduction*, 2011 U. ILL. L. REV. 333, 333–34 (2011).

17. RYAN WISER & MARK BOLINGER, U.S. DEP'T OF ENERGY, 2011 WIND TECHS. MARKET REP. 6 (2012) [hereinafter 2011 WIND TECHS. MARKET REP.].

18. RYAN WISER & MARK BOLINGER, U.S. DEP'T OF ENERGY, 2010 WIND TECHS. MARKET REP. 3 (2011) [hereinafter 2010 WIND TECHS. MARKET REP.]; U.S. ENERGY INFO. ADMIN., *supra* note 5.

19. Installed capacity refers to the amount of electricity that a turbine could generate if operating at full capacity. Turbines typically operate at 20 to 40 percent capacity. RENEWABLE ENERGY RESEARCH LAB., U. OF MASS. AT AMHERST, WIND POWER: CAPACITY FACTOR, INTERMITTENCY, AND WHAT HAPPENS WHEN THE WIND DOESN'T BLOW?, http://www.umass.edu/windenergy/publications/published/communityWindFactSheets/RERL_Fact_Sheet_2a_Capacity_Factor.pdf (last visited Dec. 12, 2012).

20. *Installed Wind Capacity*, WIND POWERING AMERICA (Oct. 12, 2012), http://www.windpoweringamerica.gov/wind_installed_capacity.asp.

industry exploded.[21] Between the start of 2005 and the end of 2011, wind power capacity increased from 9,147 megawatts[22] to 46,916 megawatts.[23] The largest growth year was 2009, when the wind industry added 9,994 megawatts of capacity.[24] While 2011 saw higher growth than 2010, the amount of growth was much lower than in 2009. In 2011, developers added 6,816 megawatts of new generating capacity, an amount sufficient to increase the total wind energy capacity by 16 percent.[25] The low growth in 2010 was attributable to a combination of the industry experiencing a delayed impact of the 2008–2009 financial crisis, low natural gas prices, and decreased demand for energy.[26] By contrast, a rush to get projects online before government subsidies expired at the end of 2012 led to the slight recovery in 2011.[27]

Although there has been substantial growth in wind power capacity over the past decade, there is potential for wind to be a much larger source of energy in the future. The Department of Energy ("DOE") published a study in 2008 explaining how the United States could install enough new wind power to meet 20 percent of its electricity needs by 2030.[28] Producing 20 percent of the country's electricity from wind would require an installed capacity of over 300,000 megawatts of electricity.[29] Although reaching this goal necessitates a substantial

21. 2011 WIND TECHS. MARKET REP., *supra* note 17, at 3.

22. *Installed Wind Capacity*, *supra* note 20.

23. 2011 WIND TECHS. MARKET REP., *supra* note 17.

24. RYAN WISER & MARK BOLINGER, U.S. DEP'T OF ENERGY, 2009 WIND TECHS. MARKET REP. 3 (2010) [hereinafter 2009 WIND TECHS. MARKET REP.].

25. 2011 WIND TECHS. MARKET REP., *supra* note 17, at 3.

26. 2010 WIND TECHS. MARKET REP., *supra* note 18, at 3. The financial recession had a delayed impact on wind installation because there is a significant lag between planning a project and construction. *Id.* at 3–4. The majority of the projects that were built in 2010 were planned in 2008 and 2009 while the projects that were built in 2009 were planned before the economic crisis. *Id.*

27. 2011 WIND TECHS. MARKET REP., *supra* note 17, at 3; *see also infra* Part II.B. 2012 was also expected to be a large growth year, however, final installation numbers were not available when this Comment went to print.

28. U.S. DEP'T OF ENERGY, ENERGY EFFICIENCY & RENEWABLE ENERGY, 20% WIND ENERGY BY 2030 (2008) [hereinafter WIND ENERGY BY 2030]. As a point of reference, in 2011, coal was the largest source of electricity in the United States, supplying 42.3 percent of total electricity. U.S. ENERGY INFO. ADMIN., SHORT-TERM ENERGY OUTLOOK (Nov., 2012), http://www.eia.gov/forecasts/steo/archives/nov12.pdf. The second largest source of electricity was natural gas, which supplied 24.9 percent. *Id.*

29. WIND ENERGY BY 2030, *supra* note 28, at 2. In its study, DOE assumes that energy demand will increase 39 percent to 5.8 billion megawatt-hours between 2005 and 2030. *Id.* at 1–2.

expansion of current capacity, the National Renewable Energy Lab estimates that the United States has sufficient wind resources[30] to generate over eleven million megawatts.[31] Of the available resources, it is estimated that the United States could produce over eight million megawatts at prices that would be competitive with other electricity sources.[32]

B. Limitations on the Expansion of Wind Power Capacity

Given that the United States has more than enough wind resources to generate substantial amounts of electricity, and yet, wind power produces a small amount of electricity in the United States, it is important to explain the barriers that limit the expansion of wind power capacity. Generally, wind project development faces obstacles that fall in two categories: economic or siting.

On the economic front, developers are concerned about the ability to recoup the substantial upfront costs of building a wind energy project through electricity sales.[33] While the capital costs will likely remain an obstacle to wind power development, the significance of this barrier to development will likely diminish as the per-kilowatt-hour installation cost decreases. The per-kilowatt-hour installation cost is projected to decrease in the future as turbine capacity[34] and efficiency

30. As used in this paper, "wind resources" refers to the amount of wind power capacity that could be developed, or in other words, wind that could be converted to electricity. The term does not include wind that blows but cannot be converted to electricity because the development necessary to capture the wind is not possible.

31. NAT'L RENEWABLE ENERGY LAB., *supra* note 5; *see also* DENNIS ELLIOTT ET AL., NAT'L RENEWABLE ENERGY LAB., 80 AND 100 METER WIND ENERGY RESOURCE POTENTIAL FOR THE UNITED STATES (May 23–26, 2010), http://www.windpoweringamerica.gov/pdfs/wind_maps/poster_2010.pdf.

32. BLACK & VEATCH, 20 PERCENT WIND ENERGY PENETRATION IN THE UNITED STATES 6–9 (2007). For a discussion of the cost competitiveness of wind power, see *infra* notes 37–42 and accompanying text

33. In 2010, the average cost of building a commercial wind project was $2,155 per kilowatt. 2010 WIND TECHS. MARKET REP., *supra* note 18, at 46–47. The cost figure was calculated using costs for "turbine purchase and installation, balance of plant, and any substation and/or interconnection expenses." *Id.* at 46. Notably, cost of acquiring the land was not included. *Id.*

34. A turbine's capacity is the maximum possible amount of power that a turbine can produce. The amount of power that the turbine actually produces will be lower than the capacity. RENEWABLE ENERGY RESEARCH LAB., U. OF MASS. AT AMHERST, *supra* note 19. See *infra* notes 46–47 and accompanying text for a discussion of how wind speed affects the amount of power the wind turbine generates.

increase while technological advances cause turbine prices to decrease.[35]

In addition to the upfront costs associated with building wind turbines and transmission lines, developers must also ensure that there will be substantial demand for the energy that their turbines produce.[36] After factoring in subsidies, the average purchase price of wind energy obtained through 2011 power purchase agreements was $35 per megawatt-hour.[37] This number is down significantly from $59 per megawatt-hour in 2010 and $72 per megawatt-hour in 2009 as a result of decreases in both the capital costs and the operating and maintenance costs of turbines.[38]

Although the price of wind has decreased to a level that, with subsidies, is competitive with historical prices for most other forms of electricity, the price of wind energy remains above current market price for other sources of energy.[39] The current market price of energy is low due to cheap prices for natural gas—an alternative energy source—and decreased electricity demand as a result of the recession.[40] While the volatility of the natural gas market and the uncertainty regarding the continued availability of subsidies makes the future competitiveness of wind power uncertain, wind power does have the benefit of offering purchasers long-term price stability. Unlike the sale of natural gas or coal, which is based on spot market prices, wind power is typically sold via a long-term power purchase agreement at a fixed price.[41] Further, as was explained above, the price of wind power is also likely to decrease as technological advancements reduce developers' capital, maintenance, and operating costs.[42]

Siting issues, meaning where the wind turbine or wind farm will be located, are the second major source of potential problems for wind developers. Beyond needing to find a large,

35. 2010 WIND TECHS. MARKET REP., *supra* note 18, at 37, 47.

36. *Id.* at 73.

37. 2011 WIND TECHS. MARKET REP., *supra* note 17, at 52. Without the current federal subsidies, the price of wind electricity would likely be approximately $20 per megawatt-hour more expensive. *Id.* at 48.

38. *Id.* at 51–52.

39. 2010 WIND TECHS. MARKET REP., *supra* note 18 at 42–43.

40. *Id.* The decrease in natural gas price is attributable to both the decrease in demand and the discovery and successful exploitation of shale gas deposits. *Id.* at 43.

41. *Id.* at 44. By contrast, contracts to purchase wholesale electricity often have a very short duration and thus are subject to price fluctuation. *Id.*

42. *Id.* at 44–45.

unobstructed, consistently windy location, developers must also consider access to transmission lines, a multitude of federal regulations (*e.g.*, environmental laws, historical and cultural preservation laws, and Federal Aviation Administration laws), and local nuisance objections to turbines' appearance and sound.[43]

The need for unobstructed wind presents a significant concern for wind power developers because developers must evaluate not only the wind conditions at the time of development, but also the possibility of future development upwind of the project site.[44] The risk of upwind development, whether it is a building or another turbine, is concerning to developers because an upwind development could diminish the speed of the wind flowing to the turbine, and thus, affect the turbine's ability to produce electricity.[45] Wind speed is an important consideration for developers because the amount of power that a turbine can generate is directly related to the speed at which the wind hits the blades of the turbine.[46] Holding all other factors constant, doubling the wind speed results in an increase in the amount of power generated by a factor of eight.[47] The presence of an upwind obstacle, even one as small as a tree or a house, decreases the wind speed and increases the turbulence of the wind, thereby diminishing the

43. *See* Howard E. Susman & Kathleen J. Doll, *Wind Advisory: Finding a Suitable Site for a Wind Farm Requires More Than Locating a Blustery Location*, L.A. LAW., Jan. 2008, at 36; *see also Siting Considerations*, NEW ENGLAND WIND FORUM (Jan. 13, 2011), http://www.windpoweringamerica.gov/newengland/siting.asp (discussing important factors to consider when choosing a turbine site). Discussing each of the potential challenges to wind energy development, in particular the federal regulatory challenges and the effect of local opposition, is beyond the scope of this Comment. However, a brief discussion of the need for a windy spot near a transmission area is necessary because it is directly relevant to the need for establishing strong, well-defined property rights in wind.

44. Troy A. Rule, *A Downwind View of the Cathedral: Using Rule Four to Allocate Wind Rights*, 46 SAN DIEGO L. REV. 207, 208–09 (2009).

45. Rule, *Airspace in a Green Economy*, *supra* note 13, at 302–03.

46. *How Much Electricity can a Wind Turbine Generate?*, AM. WIND ENERGY ASS'N, http://www.awea.org/learnabout/faq/howmuchelectricity.cfm (last visited Nov. 17, 2011). The amount of electricity generated by a wind turbine is a function of the mass of the air, the area of the rotor, and the cube of the wind speed. Charles Norz, *The Physics and Economics of Wind Turbines*, WINDPOWER ENG'G & DEV. (Sept. 17, 2009), http://www.windpowerengineering.com/policy/the-physics-and-economics-of-wind-turbines/.

47. *How Much Electricity can a Wind Turbine Generate?*, *supra* note 46 (illustrating the impact of wind speed on generating capacity by explaining that a turbine operating on a site where the average wind speed is twelve miles per hour will generate approximately 33 percent more electricity than a turbine operating on a site with an average wind speed of eleven miles per hour).

amount of power that can be generated.[48] Developers are concerned about small obstacles as well as larger ones because the effect of an object on the airflow can extend vertically up to three times the height of the obstacle.[49]

Developers are also concerned about future development of upwind turbines because the turbines have a "wake effect" on downwind air, meaning that the blades produce a wake of slower, unstable air.[50] The wake can reduce the power output of downwind turbines.[51] Because there are a limited number of "ideal" wind power sites, it is conceivable that there will be competition to develop in the best areas, and a latecomer may build a turbine upwind of the original developer's site.[52] The latecomer would therefore make the original site less productive because of the wake effect of the new turbine.[53] This uncertainty about the development of upwind turbines and what rights the original developers possess to enjoin such future upwind development discourages investment because it is a source of risk.[54] The effects on investment are so serious that uncertainty regarding access to wind has been described as the "greatest impediment to widespread commercialization of wind power."[55]

Wind could be a large source of energy in the United States, feasibly providing 20 percent of the United States'

48. *Wind Obstacles*, DANISH WIND INDUSTRY ASS'N, http://wiki.windpower.org/index.php/Wind_obstacles (last visited Nov. 17, 2011).

49. *Id.*

50. *See* A. Jimenez et al., *Large-Eddy Simulation of Spectral Coherence in a Wind Turbine Wake*, 3 ENVTL. RESEARCH LETTERS 015004 (2008); *see also Wake*, DANISH WIND INDUS. ASS'N, http://wiki.windpower.org/index.php/Wake (last visited Mar. 25, 2013).

51. Rule, *A Downwind View of the Cathedral*, *supra* note 44, at 208.

52. *See Siting Considerations*, NEW ENGLAND WIND FORUM (Jan. 13, 2011), http://www.windpoweringamerica.gov/newengland/siting.asp (discussing important factors to consider when choosing a turbine site such as consistent wind, access to transmission lines, and local community support); *see also* Rule, *A Downwind View of the Cathedral*, *supra* note 44, at 214–15 (discussing efficient allocation of wind farm sites).

53. *See* Rule, *A Downwind View of the Cathedral*, *supra* note 44, at 208; *see also Wake*, supra note 50.

54. See Rule, *A Downwind View of the Cathedral*, *supra* note 44, at 215 for an explanation of the risks associated with competition for "good" wind sites. Increased competition and uncertainty impose a cost on developers, and thereby, discourage investment. MALLOY, *supra* note 12.

55. Kim R. York & Richard L. Settle, *Potential Legal Facilitation or Impediment of Wind Energy Conversion System Siting*, 58 WASH. L. REV. 387, 388 (1983).

electricity by 2030.[56] However, the economic and siting barriers discussed in this Part currently limit the growth of wind power production. In order for wind power to become more widespread, it is necessary to create laws that limit uncertainty and consequently limit the risk to developers.

II. CURRENT POLICIES TO ENCOURAGE WIND POWER DEVELOPMENT

Currently, both federal and state laws support the development of wind energy. Although the federal and state policies differ in their approaches, both seek to address the economic barriers to development. But, generally speaking, neither deals with the siting challenges facing developers.[57] This Part discusses the benefits and limitations of current federal and state policies.

A. Federal Policies

Most federal policies aimed at expanding American wind power capacity provide economic incentives to entice developers to build new turbines. While economic incentives make wind energy cost competitive with other energy sources,[58] their benefit is limited because the incentives are only available for a limited time period, and thus, do not offer long-term guarantees about the viability of wind power.[59]

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56. WIND ENERGY BY 2030, *supra* note 28, at 1–2.

57. Federal policy does not address siting issues at all. In the majority of states, siting is regulated at the local level through zoning; however, seven states are addressing these siting issues by creating recognized wind rights. *See infra* Part III.

58. The American Wind Energy Association reported that current power purchase agreements for wind power are typically for five or six cents per kilowatt-hour. Press Release, Am. Wind Energy Ass'n, Wind Industry Finishes 2010 with Half the Installations of 2009, Activity up in 2011, Now Cost-Competitive with Natural Gas (Jan. 24, 2011), *available at* http://www.awea.org/newsroom/pressreleases/release_01-24-11.cfm. This figure suggests that wind power prices with the federal subsidies are competitive with combined-cycle natural gas prices. Nathanial Gronewold, *Renewable Energy: Wind on Even Playing Field with Gas, Wind Industry Declares*, ENV'T & ENERGY DAILY (Apr. 7, 2011), http://www.eenews.net/eenewspm/2011/04/07/5; *see also supra* Part I.B.

59. Prior to 2013, there were three major federal subsidies available for wind power project developers: Renewable Energy Production Tax Credit, Federal Business Energy Investment Tax Credit, and a Treasury Cash Grant. All three incentives were set to expire December 31, 2012. *See* 26 U.S.C. § 45 (2011) (PTC); American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, subtitle B, pt.1, 123 Stat. 115, 319–21 (2009) (ITC and Cash Grant). The PTC and ITC

Currently, there are two major federal economic incentives available to developers: the Renewable Energy Production Tax Credit ("PTC") and the Federal Business Energy Investment Tax Credit ("ITC").[60] These incentives were set to expire December 31, 2012, and whether Congress would renew the incentives was uncertain up until the last minute.[61] Ultimately, Congress extended the PTC and ITC for one year as part of the fiscal cliff deal.[62]

The older of the federal policies is the PTC.[63] Originally enacted in 1992, the PTC provides developers with a per-kilowatt-hour tax credit for electricity generated and sold to third parties.[64] The tax credit is adjusted for inflation and lasts for ten years from the date that the facility is placed in service.[65]

Currently, the PTC provides facilities with a 2.2 cent-per-kilowatt-hour credit.[66] Since 1992, Congress has allowed the PTC to lapse several times but has always subsequently renewed the credit.[67] The tax credit was renewed as part of the American Recovery and Reinvestment Act of 2009 ("ARRA")[68] and again as part of the fiscal cliff deal in 2013.[69] In 2009,

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incentives were renewed for one year on January 1, 2013 as part of the fiscal cliff deal. Press Release, Am. Wind Energy Ass'n, Congress Extends Wind Energy Tax Credits for Projects That Start in 2013 (Jan. 1, 2013) *available at* http://www.awea.org/newsroom/pressreleases/congressextendswindptc.cfm.

60. 26 U.S.C. § 45 (2011); American Recovery and Reinvestment Act of 2009, subtitle B, pt.1. Under the American Recovery and Reinvestment Act ("ARRA"), there was also the United States Treasury cash grant, however, that expired on December 31, 2012 and was not renewed.

61. *Supra* note 60. Renewal of the wind power subsidies depended in a large part on the results of the 2012 presidential election because President Obama supported extending the tax credits while Governor Romney was opposed to extending the tax credits. Diane Cardwell, *An Industry Becalmed*, N.Y. TIMES, Sept. 21, 2012, at B1. *See also* Matthew L. Wald, *Developers of Wind Farms Run a Race Against the Calendar*, N.Y. TIMES, Dec. 27, 2012, at B1 (explaining that developers were rushing to get their wind projects online before the expiration at the tax credit at the end of the year).

62. Press Release, Am. Wind Energy Ass'n, Congress Extends Wind Energy Tax Credits for Projects That Start in 2013 (Jan. 1, 2013), *available at* http://www.awea.org/newsroom/pressreleases/congressextendswindptc.cfm.

63. 26 U.S.C. § 45 (2011).

64. *Id.* § 45(a).

65. *Id.* § 45(b); *see also Renewable Electricity Production Tax Credit (PTC)*, DSIRE: DATABASE OF ST. INCENTIVES FOR RENEWABLES & EFFICIENCY (May 22, 2012), http://dsireusa.org/incentives/incentive.cfm?Incentive_Code=US13F [hereinafter DSIRE PTC].

66. DSIRE PTC, *supra* note 65.

67. 2010 WIND TECHS. MARKET REP., *supra* note 18, at 61.

68. American Recovery and Reinvestment Act of 2009, *supra* note 60.

69. Nelson D. Schwartz & Matthew L. Wald, *Some Breaks for Industries are*

Congress extended the PTC to apply to facilities that became operational by December 31, 2012,[70] while the fiscal cliff deal only extended the tax credit for a single year.[71] Data showing significant reduction in installed capacity additions during years when the PTC was set to expire suggest that the PTC has been an important driver of development.[72]

In addition to extending the PTC, the ARRA also provided commercial wind developers the option to forego the PTC and instead receive either an ITC or an equivalent cash grant from the United States Treasury.[73] Notably, while developers benefit from the PTC based upon the amount of electricity they produce, developers benefit from the ITC or cash grant based upon the cost of their projects.[74] The ITC provides for a tax credit for 30 percent of the construction costs of the project, while the cash grant is a direct reimbursement for 30 percent of the project cost.[75] Under the ARRA, developers investing in turbines capable of producing over 100 kilowatts ("large turbines") can elect to use the ITC or receive the cash grant as long as the project was on-line before December 31, 2012.[76]

In the current economic environment where credit is tight, the cash grant option has been very popular; over 70 percent of new wind turbines installed in 2010 were built using the treasury cash grant.[77] Although the economic climate may favor an upfront cash grant, the developer's decision regarding

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Retained in Fiscal Deal, N.Y. TIMES, Jan. 3, 2013, at B1. Under the fiscal cliff deal, projects that are started during 2013 will be eligible for the tax credit; products need not be on-line by December 31, 2013. *Id.*

70. American Recovery and Reinvestment Act of 2009, *supra* note 60.

71. Schwartz & Wald, *supra* note 69.

72. *See* 2010 WIND TECHS. MARKET REP., *supra* note 18, at 3.

73. *Business Energy Investment Tax Credit (ITC)*, DSIRE: DATABASE OF ST. INCENTIVES FOR RENEWABLES & EFFICIENCY (Nov. 18, 2011), http://www.dsireusa.org/library/includes/incentive2.cfm?Incentive_Code=US02F [hereinafter DSIRE ITC].

74. 2010 WIND TECHS. MARKET REP., *supra* note 18, at 56.

75. 26 U.S.C. § 48 (2011); *see also* DSIRE ITC, *supra* note 73.

76. DSIRE ITC, *supra* note 73. Although the ITC originally only applied to small turbines, the ARRA 2009 changed this by removing the small turbine requirement. American Recovery and Reinvestment Act of 2009, *supra* note 59. For smaller projects and some other forms of renewable energy, the ITC does not expire until December 31, 2016. *Id.* The cash grant was initially limited to facilities that began construction in 2009 or 2010, however Congress extended the grant in 2010 to projects that began construction during 2011 and are operational by December 31, 2012. Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010, Pub. L. No. 111-312, § 707, 124 Stat. 3296, 3300 (2010) (codified as amended in scattered provisions of 26 U.S.C.).

77. 2010 WIND TECHS. MARKET REP., *supra* note 18, at 61.

which tax credit to use is also heavily influenced by the cost of the installed project and the project's power-production capacity.[78] Developments with higher project costs favor the ITC, while projects with higher capacity factors typically favor the PTC because of the economies of scale that allow the marginal cost of additional capacity to decrease.[79]

These financial incentives are important because of the enormous capital costs of building wind power facilities. However, their effect is limited because of uncertainty regarding the long-term availability of these incentives.[80] Wind projects must be planned several years in advance; as a result, absent some other guarantee of the project's long-term viability and success, developers may hesitate to build a project without assurances that the federal incentives will be in place when the project finally becomes operational.[81]

Evidence of developers' risk aversion is apparent in the fact that when the PTC has expired previously, in the following year, wind capacity installation decreased by between 73 and 93 percent.[82] A similar decrease in development was also apparent towards the end of 2012 as the wind industry prepared for the expiration of the ARRA's extension of the PTC, ITC, and cash grant.[83] For example, during 2012, Vestas, the world's largest turbine manufacturer, laid off or had plans to

78. *See also* MARK BOLINGER ET AL., ERNEST ORLANDO LAWRENCE BERKELEY NAT'L LAB., PTC, ITC, OR CASH GRANT? (Mar. 2009) at 6, http://eetd.lbl.gov/EA/EMP/reports/lbnl-1642e.pdf.

79. *Id.*

80. All three federal subsidies were set to expire at the end of 2012. 2010 WIND TECHS. MARKET REP., *supra* note 18, at 61; *see also* Press Release, Am. Wind Energy Ass'n, Backgrounder on Wind Energy and the State of the Union (Jan. 24, 2012), *available at* http://www.awea.org/newsroom/pressreleases/Statement_Pre_SOTU.cfm (discussing the effects of the uncertainty about whether Congress will renew the PTC). The PTC and ITC were renewed on January 1, 2013. Schwartz & Wald, *supra* note 69.

81. Under the ARRA, the subsidies were only available to projects that were "on-line" by December 31, 2012. 2010 WIND TECHS. MARKET REP., *supra* note 18, at 61. Under the fiscal cliff deal, the subsidies are available to projects that started construction during 2013. Schwartz & Wald, *supra* note 69. Although the projects do not need to be completed during 2013 to qualify for the tax credit, many companies shed a significant number of jobs leading up to the expiration of the tax credit in 2012 and as a result of the slow down proceeding the 2012 expiration and uncertainty regarding the long-term future of tax credits, new capacity added in 2013 is expected to be low. Ryan Tracy, *U.S. Wind Industry's Roar Might Diminish in 2013*, WALL ST. J., Jan. 16, 2013, at B2.

82. Angela Neville, *Prevailing Winds: Trends in U.S. Wind Energy*, POWER MAGAZINE, (Dec. 1, 2008), http://www.powermag.com/renewables/wind/Prevailing-winds-Trends-in-U-S-wind-energy_1573_p2.html.

83. Cardwell, supra note 61.

lay off 3,700 workers; another manufacturer in the United States laid off nearly one-third of its workforce.[84] The industry-wide picture is equally bleak; as of September 2012, the wind power industry as a whole shed approximately ten thousand jobs since production peaked in 2008 and 2009,[85] and more cuts were expected before the year ended.[86] By one estimate, if the PTC expired at the end of 2012, private investment in wind project development could have decreased by approximately two-thirds.[87] Even with the renewal of the PTC, it is unclear whether the industry will fully recover.[88]

B. State Policies

Although every state supplements federal policy by offering some form of financial incentive to renewable energy developers,[89] the states' most effective tool to encourage investment in new wind power capacity is their ability to establish a renewable energy portfolio standard ("RPS"). Although the exact RPS requirements vary by state, generally an RPS is a commitment by the state to obtain a certain percentage or quantity of the state's energy from renewable sources by a specific date.[90] In effect, the RPS creates a guaranteed market for wind developers' electricity by requiring states to purchase a certain amount of renewable energy in the future.[91]

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84. *Id.* (Clipper Windpower decreased its workforce from 550 employees to 376 employees).

85. *Id.*

86. Keith Johnson, *Wind-Sector Cuts Tied to Tax-Credit Clouds*, WALL ST. J., Sept. 20, 2012, at B6.

87. Press Release, Am. Wind Energy Ass'n, Statement on Lack of PTC Extension in Year-End Package, (Dec. 17, 2011), *available at* http://www.awea.org/newsroom/pressreleases/statement_lack_of_PTC.cfm.

88. Tracy, *supra* note 81.

89. *Financial Incentives for Renewable Energy*, DSIRE: DATABASE OF ST. INCENTIVES FOR RENEWABLES & EFFICIENCY, http://dsireusa.org/ summary tables/finre.cfm (last visited Nov. 17, 2011).

90. *Definition of Renewable Portfolio Standard*, DSIRE: DATABASE OF ST. INCENTIVES FOR RENEWABLES & EFFICIENCY, http://www.dsireusa.org/glossary/ (last visited Nov. 17, 2011). An RPS may calculate the percentage of energy based on either retail sales or generating capacity. *Id.* A state may also allow the generators to meet the RPS requirement through purchasing renewable energy credits ("RECs"). *Id.*

91. *Renewable Portfolio Standards Fact Sheet*, U.S. ENVTL. PROT. AGENCY (Apr. 2009), http://www.epa.gov/chp/state-policy/renewable_fs.html; *see also* David Hurlbut, *Conservation Update: A Look Behind the Texas Renewable Portfolio Standard*, U.S. DEP'T OF ENERGY EFFICIENCY & RENEWABLE ENERGY (2008), http:

Currently, twenty-nine states and the District of Columbia have an RPS in place.[92] Between 1999 and 2011, 65 percent of wind capacity was installed in states with an RPS.[93] In 2011, 78 percent of the new wind capacity was installed in states that have an RPS in place.[94] The quantity of renewable energy capacity added in states with RPS policies suggests that RPS policies are effective drivers of increased renewable energy development.

While the establishment of RPS policies by a majority of states has preceded substantial increases in the installation of renewable energy,[95] these policies are not aggressive enough to continue to drive significant future growth in capacity.[96] Simply stated, RPS policies, though beneficial, set goals that are too modest to make wind—and renewable energy generally—more than a "niche" source of energy.[97] For example, Texas met its RPS goal of 10,000 megawatts of renewable energy in 2010, fifteen years ahead of schedule.[98] Although there is no legal barrier stopping producers from generating more renewable electricity than what the RPS requires, developers may be reluctant to invest in extra renewable capacity because there is no guarantee that there will be a ready market for the additional renewable source electricity. This is an especially valid concern if the renewable source electricity is priced above the market price for other

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//www1.eere.energy.gov/wip/update/2008-03_texas_portfolio.html (last updated Mar. 25, 2013) (explaining that an RPS establishes a fixed minimum demand for renewable energy).

92. *Renewable Portfolio Standard Policies*, DSIRE: DATABASE OF ST. INCENTIVES FOR RENEWABLES & EFFICIENCY (Oct. 2012), http://www.dsireusa.org/documents/summarymaps/RPS_map.pdf. An additional eight states have renewable energy goals. *Id.*

93. 2011 WIND TECHS. MARKET REP., *supra* note 17, at 58. It is worth noting that while these statistics are indicative of a correlation between the establishment of an RPS and wind power development, they do not conclusively prove that a causal relationship exists. It is possible that RPS plans are enacted in places with lots of renewable energy resources, and thus, would occur with or without an RPS.

94. *Id.*

95. *See id.*

96. *Id.*

97. Kevin L. Doran, *Can the U.S. Achieve a Sustainable Energy Economy from the Bottom-Up? An Assessment of State Sustainable Energy Initiatives*, 7 VT. J. ENVTL. L. 95, 116 (2006).

98. *Texas Meets Renewable Energy Goal 15 Years Ahead of Schedule*, BREAKBULK MAG. (Apr. 6, 2010), http://www.breakbulk.com/node/1196. Texas produced over 10,000 megawatts of electricity from wind power alone in 2010. *Id.*

conventional sources such as coal or natural gas.[99]

The National Renewable Energy Laboratory reports that existing RPS policies require the addition of only approximately 100,000 megawatts of new renewable energy capacity by 2035.[100] Researchers at Lawrence Berkeley National Lab estimate that this equates to an additional four to six thousand megawatts per year of new renewable energy capacity between 2011 and 2020.[101] This projected number for total renewable energy capacity, not just required wind power capacity, is below the amount of new wind power capacity added in 2011.[102] Further, it is well below what the DOE calculated would be necessary to meet its 20 percent target by 2030.[103]

Although federal and state policies are steps in the right direction and encourage wind energy development, each of these policies has its limitations. The lack of certainty regarding the availability of tax incentives or a market for additional renewable energy translates to increased developer risk. Increased risk, in turn, makes projects more costly because developers require a greater return on their investment as compensation for assuming the risk.[104]

III. THE NEED FOR DEFINED PROPERTY RIGHTS IN WIND

One way to supplement existing economic incentives and encourage additional wind power development is through the creation of an established property right to wind flow. Currently, the majority of wind power developers are proceeding under the common law *ad coelum*[105] doctrine whereby a landowner is presumed to own everything above and

99. Hurlbut, *supra* note 91.

100. 2010 WIND TECHS. MARKET REP., *supra* note 18, at 62–63.

101. *Id.* at 63.

102. 2011 WIND TECHS. MARKET REP., *supra* note 17, at 3.

103. WIND ENERGY BY 2030, *supra* note 28, at 12–13 (In its feasibility study, DOE estimates that in order to meet the goal of having wind supply 20 percent of the United States' electricity by 2030, by 2016, the U.S. must add approximately 16 GW annually through 2030.).

104. JOSEPH HADAR, ELEMENTARY THEORY OF ECONOMIC BEHAVIOR 269–270 (Addison-Wesley 1966) ("[I]ncome can become an acceptable substitute for certainty.").

105. The full Latin maxim is *cujus est solum, ejus est usque ad coelum et ad inferos*. BLACK'S LAW DICTIONARY 42 (9th ed. 2009). This phrase means that whoever owns a tract of land owns the space "up to the sky and down to the earth's core." *Id.*

below the surface of the estate.[106] Based on this common law doctrine, the landowner has the right to use and develop the airspace above the surface.[107] Although it is generally accepted that a surface owner, subject to zoning laws, can develop the property as he or she sees fit, it is less clear if a surface owner who has constructed wind turbines may limit upwind development.[108] There is also debate about whether the surface owner should be allowed to sever the wind right and sell the right to a third party looking to develop the property as a wind farm. This is a contentious issue because severance creates a wind estate in a third party.[109]

In order to encourage increased wind power development despite unpredictable future financial conditions, states should enact laws that clearly define a wind right as a property right appurtenant to fee simple ownership of the surface estate. The wind right would recognize the holder's entitlement to use or obstruct the wind as it blows across the property. The right should be freely alienable, meaning that it would be treated as another "stick" in the "bundle of sticks" that comprises a property owner's rights.[110]

Although clearly defined wind rights would reduce developers' uncertainty about future wind flow, the majority of states have not enacted legislation on this issue.[111] Prior discussion of creating clearly defined wind rights centered on the potential conflict between the wind developers and the owners of the surface estate and/or the mineral estates.[112] As

106. Lisa Chavarria, *The Severance of Wind Rights in Texas* 1–2 (Sept. 11–12, 2008), http://www.sbaustinlaw.com/library-papers/Chavarria-The_Severance_of_Wind_Rights%20(Final).pdf; *see also* BLACK'S LAW DICTIONARY 42 (9th ed. 2009).

107. Chavarria, *supra* note 106, at 1–2.

108. The majority of states do not have any judicial opinions or legislative acts that define what constitutes a wind right. As such, it is unclear what rights a landowner might have to the continued flow of wind across the land (or phrased differently, whether a landowner has any ability to stop another from using or disrupting the flow of wind). *See* K.K. DuVivier, *Animal, Vegetable, Mineral—Wind? The Severed Wind Power Rights Conundrum*, 49 WASHBURN L.J. 69, 89–98 (2009).

109. *Compare id.* at 97–98 (arguing that wind rights should not be severable), *with* MINN. STAT. § 500.30 (2012) (allowing for the owner of a surface estate to sever and convey a real property interest in wind).

110. JAMES CHARLES SMITH ET AL., PROPERTY 2 (Aspen, 2d ed. 2008). A property owner is traditionally described as possessing a "bundle of sticks," meaning a set of rights, where each stick is a different right. *Id.*

111. *See infra* note 158 and accompanying text.

112. *See, e.g.*, K.K. DuVivier & Roderick E. Wetsel, *Jousting at Windmills: When Wind Power Development Collides with Oil, Gas, and Mineral Development*, 55 ROCKY MT. MIN. L. INST. 9-1, §§ 9.03–9.06 (2009).

such, the debate generally overlooked the benefit that developers would gain from increased certainty in property rights. Absent a defined legal right to the wind, the first person to develop an area for wind power is left to bear the risk of future wind flow disturbances and decreased returns on the investment.

The remainder of this Part is broken into three sections. Section A discusses the options available to a developer in the absence of a clearly defined wind right and explains why a wind right is preferable. Section B discusses the two methods for establishing a wind right: judicial decision and legislation. It explains why relying on judicial decisions about wind rights is inadequate to establish a strong and certain wind right. Finally, Section C argues that state legislatures should enact laws recognizing the wind right as a real property interest that is severable from surface estate.

A. The Insufficiency of Options Available in the Absence of a Clear Law and the Need for a Defined Wind Right

In the absence of a clear wind right, original wind developers have two options when upwind development affects turbine output: sue for nuisance or buy the upwind land. However, neither option provides developers with a cost-effective way to guarantee undisturbed wind power production.[113]

In theory, a developer could attempt to file a nuisance suit to stop an upwind neighbor from disrupting wind flow. However, the effectiveness of this action is far from certain. Nuisance law allows each landowner to develop his or her property so long as the development does not unreasonably interfere with the use and enjoyment of neighboring lands.[114] To succeed with a nuisance claim, the original developer must

113. Arguably, a third option also exists: zoning. However, zoning laws are established by local government, and thus, it is not realistic to think that it would be worthwhile for a developer to spend a significant amount of time trying to persuade local governments to enact zoning regulations. Further, zoning regulations that require minimum setbacks to deal with the problem of lost efficiency due to the wake effect of an upwind turbine lead to an inefficient use of land. Rule, *Airspace in a Green Economy*, *supra* note 13, at 302–03.

114. York & Settle, *supra* note 55, at 391–93. The Restatement (Second) of Torts defines a private nuisance as "a nontrespassory invasion of another's interest in the private use and enjoyment of land." RESTATEMENT (SECOND) OF TORTS § 821D, at 100 (1979).

prove that the new construction is unreasonable. [115] Although there do not appear to be any wind development cases that have attempted this strategy, succeeding on a nuisance claim would likely be very difficult. In the arguably analogous situation where the owner of solar panels sues a neighbor for blocking the sunlight, courts have been reluctant to find that new construction, if done according to zoning regulations, is a nuisance.[116] Beyond being an undesirable option because of the uncertainty of the outcome of the lawsuit, reliance on a nuisance claim is also undesirable because of the cost that litigation imposes on developers looking to minimize costs.

In the face of upwind development, a second option is for the developer to purchase enough of the upwind land to ensure that nothing is built on the upwind land that might obstruct the wind from reaching the turbine. While this can serve as a guarantee that new construction will not disturb the wind flow to existing turbines, it is likely a cost-prohibitive precaution.

A defined and enforceable property interest in wind is preferable to either nuisance suits or purchase of the fee for several reasons. First, it would give developers a stronger and more cost-effective tool to prevent new development that could harm their projects. A wind right could operate as an enforceable negative easement, limiting the surface estate owner's rights to use or obstruct the free flow of air across the land.[117] Because it would limit upwind construction, a wind right would ensure that turbines continue to benefit from unobstructed access to wind.[118] Second, a severed wind right could be defined broadly, meaning it could allow the developer to use the wind that blows across the surface, as well as a limited right to use the surface to the extent necessary to produce power from the wind estate.[119] This broader right allows for building turbines on the property without actually owning the underlying land, and thus reduces upfront costs. Additionally, a wind right could lead to more efficient use of

115. RESTATEMENT (SECOND) OF TORTS § 822, at 109 (1979).

116. Sara C. Bronin, *Solar Rights*, 89 B.U. L. REV. 1217, 1252–54 (2009). *But see* Prah v. Maretti, 321 N.W.2d 182, 192 (Wis. 1982) (finding that the plaintiff had a claim for nuisance when the defendant, with malicious intent, built a house that although in accord with zoning regulations, blocked plaintiff's solar panels).

117. For example, a downwind developer may buy an upwind neighbor's wind rights using a contract that precludes the upwind neighbor from building a structures that is more than thirty feet tall.

118. *See supra* notes 44–49 and accompanying text.

119. Chavarria, *supra* note 106, at 3.

land and resources because the wind right would be owned by the party that valued it most. [120]

Although negotiating for a property right might increase transaction costs at the time of sale, the benefit of decreased investor risk from the guarantee of protection that accompanies the property right could outweigh the increased transaction costs and thereby decrease the overall project costs.[121] This decrease in project costs would concurrently encourage additional investments in wind energy.

The potential for additional investment following increased certainty in property rights is one of the rationales that states use for clarifying the scope of wind rights.[122] For example, the North Dakota legislature began studying the best way to allocate wind rights based on the premise that statutorily defining the scope of a wind right would increase development.[123] The state's hypothesis was that wind rights would increase development by limiting developers' risks and expenses related to litigation and upwind construction.[124] Although the study is generally framed in terms of protecting a downwind turbine owner from upwind development of a house or building, it acknowledges that the wake from a turbine may have a substantial downwind impact as well.[125]

Assuming that defining wind rights is desirable, the right can either be a common law right defined through judicial

120. The Coase Theorem predicts that where rights are well-defined, absent transaction costs, the party that places the highest value on the right will purchase the right. *See* Ronald H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1, 19 (1960); *see also* Rule, *Airspace in a Green Economy*, *supra* note 13, at 291.

121. *See* Henning Bohn & Robert T. Deacon, *Ownership Risk, Investment, and the Use of Natural Resources*, 90 AM. ECON. REV. 526, 527 (2000) (suggesting that in a jurisdiction with weak property rights, when the extraction of a natural resource requires significant up-front investment, the resource will be underutilized or will not be extracted because people will not invest in the required physical capital).

122. *See, e.g.*, 1981 Wisc. Assemb. B. 62, Act 354, §1(2)(b), at 1482 (explaining that unsettled law discourages capital investment and that "codifying the right of individuals to negotiate and establish renewable energy resource easements" is a way to promote the development of renewable resources).

123. H.R. Con. Res. 3044, 61st Leg. Assemb., at 39 (N.D. 2009).

124. *Id.*

125. *Id.* at 1, 6. The wake of a commercial wind turbine affects the flow of air for a distance of eight to ten times the rotor diameter, a distance that can be as much as half a mile. Kimberly E. Diamond & Ellen J. Crivella, *Wind Turbine Wakes, Wake Effect Impacts, and Wind Leases: Using Solar Access Laws as the Model for Capitalizing on Wind Rights During the Evolution of Wind Policy Standards*, 22 DUKE ENVTL. L. & POL'Y F. 195, 204–05 (2011).

adjudication of cases, or a legislative right where the legislature enacts laws defining the scope of the right.

B. Judicial Adjudication—An Insufficient Solution

To date, there have been two judicial decisions, one in California and one in New Mexico, addressing whether a surface estate owner has a vested interest in wind and whether that interest can be severed from the surface estate.[126] Although both cases recognized the existence of a severable estate in wind,[127] neither case sufficiently explained exactly what rights a surface estate holder possesses or whether there are limits on which rights a surface estate holder may convey. The uncertainty of the rules established in these cases is one reason why judicial decisions are less desirable than legislation establishing a right to wind. Judicial decisions are also inherently more limited than legislative rules because they are based on the limited set of facts in front of the court. A third drawback to relying on judicial decisions is that judges, unlike the legislature, cannot commission neutral studies to become fully informed about the issue.

This section describes the existing two cases on the severability of wind rights and explains the limitations of each court's ability to create sufficient certainty with respect to the scope of a wind right to spur increased development.

1. *Contra Costa Water District v. Vaquero Farms, Inc.*

In *Contra Costa Water District v. Vaquero Farms, Inc.*, a California Court of Appeals was asked to decide whether Contra Costa Water District ("Contra Costa") could sever a wind estate from a surface estate.[128] Contra Costa sought to acquire 3,500 acres of Vaquero Farms' 6,000 acres through eminent domain for a reservoir project.[129] Vaquero Farms' property was historically used for cattle ranching; however, beginning in 1984, the owner of the farm leased over 2,100

126. *See* Contra Costa Water Dist. v. Vaquero Farms, Inc., 68 Cal. Rptr. 2d 272 (Cal. Ct. App. 1997); Romero v. Bernell, 603 F. Supp. 2d 1333 (D.N.M. 2009).

127. *Contra Costa*, 68 Cal. Rptr. 2d at 278; *Romero*, 603 F. Supp. 2d at 1335.

128. *Contra Costa*, 68 Cal. Rptr. 2d at 273.

129. *Id.*

acres for wind power production.[130] At the time of condemnation in 1993, there were 260 wind turbines on the ranch.[131] To save money, rather than condemning the entire estate, Contra Costa attempted to acquire just the surface estate while reserving to Vaquero Farms the wind estate wherever possible.[132] In practice, this meant that the wind rights would be severed from the surface estate in areas where wind power would be compatible with the proposed reservoir (i.e., Vaquero Farms would continue to have rights to produce wind power using turbines on land that would remain undeveloped open space).[133] Contra Costa believed that severing the wind rights would be a cheaper way to build the reservoir project because Contra Costa would gain ownership of the surface of the entire tract of land without having to condemn the existing turbines.[134] Vaquero Farms sued for additional compensation, arguing that Contra Costa could not sever the wind estate from the surface estate and reserve the wind estate to Vaquero Farms.[135]

Basing its decision on California's eminent domain law, which allows the condemnor to selectively condemn only those interests that are necessary to achieve the desired purpose, the court held that Contra Costa could sever the wind and surface estates.[136] The court determined that the wind estate was severable because Vaquero Farms' thirty-year wind lease was evidence that wind is a "substantial right," and thus should be considered an interest that can be excluded from condemnation.[137] The court explained, "The lease stands as irrefutable evidence that one may have a right to use windpower [sic] rights without owning any interest in the land."[138] The court, analogizing to oil and gas law, also emphasized that although Vaquero Farms did not have a property interest in the surface, like a mineral estate, the wind estate included the right of development as well as access and other rights necessary to "exploit the particular profit, estate or

130. *Id.* at 274.
131. *Id.*
132. *See id.* at 275–76.
133. *Id.*
134. *See id.*
135. *Id.* at 273.
136. *Id.* at 276–78. The court defined "interest" as "any right, title, or estate in property." *Id.* at 276 (internal quotation marks omitted).
137. *Id.* at 277.
138. *Id.*

interest reserved."[139]

Following severance of the estates, Contra Costa owned the surface estate for the entire tract and Vaquero Farms was left with the right to continue to develop wind power in the areas of the property where wind power was compatible with the reservoir project.[140] The court held that Vaquero Farms and its successors would retain the wind estate, which included "all rights for wind energy power conversion and the transmission of power generated by wind, including . . . the exclusive and perpetual right, . . . to develop, construct, install, maintain and operate windpower facilities."[141] The reservation also included an easement for ingress and egress.[142]

While the holding of *Contra Costa* leaves no doubt that wind rights are severable in California, the case does not provide clear guidance regarding the scope of the wind right. The case also does not explain how one acquires the right or whether the right is alienable. Further, if wind is to be treated like oil and gas, which is a debatable question and a conclusion that the court reached without analysis in *Contra Costa*, this decision gives little guidance as to how such an estate would function under common law doctrines such as the rule of capture.[143] Specifically, the decision does not address whether the wind estate owner has any rights prior to capturing the wind in a turbine.

2. *Romero v. Bernell*

In *Romero v. Bernell*, the Federal District Court for the District of New Mexico held that the owner of a surface estate may be able to either convey or reserve a severed wind estate once the wind has been "captured."[144] However, unlike *Contra Costa*, the *Romero* court, without any significant explanation, rejected the premise that wind development is analogous to oil and gas or other *in situ* mineral development.[145] Instead,

139. *Id.* at 278.

140. *Id.* at 274.

141. *Id.* at 277–78 (internal quotation marks omitted).

142. *Id.* at 276.

143. Traditionally, under oil and gas law, the owner of a well cannot claim a trespass against a property right when one neighbor appropriates oil or gas that prior to migration was on a neighbor's property. Elliff v. Texon Drilling Co., 210 S.W.2d 558, 561–62 (Tex. 1948).

144. Romero v. Bernell, 603 F. Supp. 2d 1333, 1334 (D.N.M. 2009).

145. The court states, "[I]t does not appear minerals in the ground are the

because wind moves across the surface estate, the *Romero* court analogized wind to water and wild animals.[146] The court explained that water and wild animals, which are free to move onto and off of the estate, are not considered real property until they are reduced to possession.[147] Thus, the court concluded that wind may be owned by an individual, but not until it is reduced to possession, meaning put to a beneficial use such as power production.[148]

Romero involved a request to partition a tract of land held by tenants in common.[149] Bernell opposed the partition on the grounds that the value of the land was primarily in the tract's potential as a wind farm.[150] Bernell argued that because *in situ* minerals cannot be equitably partitioned in-kind, the wind power rights also should not be partitioned.[151] The court rejected Bernell's analogy to minerals and allowed the estate to be partitioned.[152] In distinguishing wind from *in situ* minerals, the court explained that while minerals in place are considered real property, "[t]he right to 'harvest' wind energy is . . . an inchoate interest in the land which does not become 'vested' until reduced to 'possession' by employing it for a useful purpose."[153] The court concluded that wind may be a severable interest, but only "after it is reduced to actual wind power."[154] The court attempted to bolster its decision by stating that water rights also do not vest until the water is put to a beneficial use.[155] However, beyond noting that both water and wind flow across land, the court did not provide a robust explanation for why wind must be reduced to possession before the right can vest.[156]

Following *Romero*, it is uncertain whether the estate can be severed prior to the construction of wind turbines. It is also

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appropriate commodity to create a legal paradigm to analyze wind power." *Id.* at 1335.

146. *Id.*

147. *Id.*

148. *Id.*

149. *Id.* at 1334.

150. *Id.*

151. *Id.*

152. *Id.* at 1334–36.

153. *Id.* at 1335. The court defines "possession" as using the wind to "driv[e] the fins of a windmill which turn a generator and ultimately generates electricity." *Id.* (quoting Terry E. Hogwood, *Against the Wind*, 26 TEX. OIL, GAS & ENERGY RESOURCES LAW SEC. 6 (Dec. 2001)).

154. *Id.*

155. *Id.*

156. *See id.*

unclear from the *Romero* decision which rights an owner is entitled to upon perfecting a vested right in wind. Does the owner have a right to the unobstructed flow of the wind at the time the right was perfected or something less than that? Finally, because the court does not explain in detail why wind is like water, the applicability of water law to this situation seems debatable.

Both the *Contra Costa* and *Romero* cases suggest that an individual could sever the wind estate from the surface estate. However, because of the unusual factual situations in each of these cases, the scope of the holdings are unclear and do not provide as much certainty about the availability and extent of a wind right as would a legislative act. Further, neither decision specifies exactly what can be conveyed and what issues must be addressed in the transfer agreement. These decisions also highlight the fact that because judges are limited to ruling on the narrow issue before them, trying to establish a system of wind rights through the creation of a body of common law will be a slow and expensive process. For every question that is answered, several more emerge. A better and more economical solution would be to have state legislatures enact laws defining wind rights because legislatures have the power to pass broader laws based on general public policy considerations.

C. The Legislative Solution—A Move Towards Certainty

State legislatures should create a right to wind that entitles the owner of a surface estate to a severable interest in the air that blows across the property. Under the common law, the owner of a fee simple estate has rights to the surface and the space above and below the surface.[157] However, in most states, the extent of the right holder's entitlement to use or obstruct the wind is uncertain.[158] To eliminate this uncertainty, legislatures should grant the surface owner the right to whatever wind blows across the owner's land as part of a fee simple estate. The owner of the fee simple estate could, therefore, choose to build structures that obstruct the flow of air (e.g., a turbine or large house) or, alternatively, could choose to sell the right to obstruct (or influence) the wind flow to another. When sold, the right to wind would operate as a

157. *See supra* notes 105–106 and accompanying text.

158. To date, only eight states have enacted legislation clarifying wind rights. *See infra* note 162 and accompanying text.

negative easement, limiting the surface estate owner's rights to use or obstruct the free flow of air across the land. For example, the owner of a fee simple estate could convey an interest in the wind to a downwind neighbor, reserving for himself the right to build a structure up to thirty feet high. Notably, this formulation of a wind right does not rely on either prior appropriation[159] or the rule of capture.[160] Rather, it relies on the market because it requires developers to buy upwind wind rights in order to protect their access to the unobstructed flow of wind.[161]

A state legislature considering establishing a property right in wind would not have to enact this legislation without any guidance. To date, eight states have passed laws that recognize a landowner's real property interests in wind.[162] In each of these states, the legislature recognized that a property owner may grant an easement to provide undisturbed access to the wind.[163]

Although the scope of the wind right granted in each of these states varies,[164] all of the laws define the wind right as an interest in real property and specify that the purpose of the right is to allow a party to secure unobstructed access to the wind.[165] None of the laws suggest establishing a prior

159. The rule of prior appropriation grants water rights based on timing, meaning that the first person to claim the right to use the water has priority over people with subsequent claims. Irwin v. Phillips, 5 Cal. 140, 147 (1855).

160. *See infra* note 143 for a definition of the rule of capture.

161. Admittedly, reliance on the free market is not a perfect solution. There is a potential for holdout problems where an upwind land owner refuses to sell the wind rights or demands an exorbitant price. However, despite these issues, the market solution is still preferable to prior appropriation or traditional common law nuisance. Reliance on prior appropriation is problematic because it requires determining when the right vests and also determinations of how much disturbance is too much. Nuisance, as was explained above, is uncertain and involves potentially costly litigation. *See supra* notes 114–14 and accompanying text.

162. COLO. REV. STAT. § 38-30.7-101 (2012); MINN. STAT. § 500.30 (2012); MONT. CODE ANN. § 70-17-403 (2011); NEB. REV. STAT. §§ 66-901 to -914 (2012); N.D. CENT. CODE § 17-04 (2011); OR. REV. STAT. §§ 105.900–.915 (2011); S.D. CODIFIED LAWS § 43-13-16 (2012); WIS. STAT. § 700.35 (2011).

163. *Supra* note 162.

164. *Compare* MINN. STAT. § 500.30 (placing no limitations on the owner's ability to convey the interest), *with* S.D. CODIFIED LAWS § 43-13-19 (forbidding the severance of a wind right from the surface estate and limiting the leased period to a term no greater than fifty years).

165. *See, e.g.*, MONT. CODE ANN. § 70-17-402(4) (2011) (defining a "wind energy right" as "an interest in real property on and over which the wind resource is located and flows that is appurtenant to the real property"); *see also* OR. REV. STAT. § 105.900 (2011) (defining a wind easement as "any easement, covenant or

appropriation or rule of capture framework for determining how much wind one is granted under the right. Thus, each rule implicitly sets up a regime where the wind right holder is only entitled to the wind that blows across the land and has no right to stop a neighbor from interfering with the flow of wind. In other words, unless a downwind party buys the wind rights from an upwind estate owner, the downwind wind rights holder has no right to the continued undisturbed flow of wind. The upwind wind rights holder may build structures that disrupt the flow of wind as long as the structures comply with local zoning laws.

There are two important implications of defining the right to the wind flowing across one's land as a real property interest. First, the right validates the common law presumption that an owner possesses the rights from the heavens to the center of the earth.[166] Thus, under this scheme, unless the owner conveys the right to another, the owner may obstruct or change the natural flow of the wind across the land by building structures such as buildings or turbines. Defining the right in this way preserves the status quo but provides the surface owner the opportunity to alter the status quo by severing the wind right from the surface estate. Second, recognizing wind rights establishes a system whereby the right to wind can be thought of as one of the sticks in the bundle of sticks that make up a property right.[167] This is important because under traditional notions of property law, an owner has the ability to convey the various "sticks" separately.[168]

As was mentioned above, although the states that have created a property right to wind have all enacted similar definitions for what constitutes a wind right or wind easement, the scope of the right that a land owner can convey varies by state.[169] Minnesota allows the owner of a fee to convey the wind right separate from the estate.[170] Colorado, Montana, South Dakota, and North Dakota each forbid the grantee from severing the wind rights from the land and thus only allow granting an easement.[171] South Dakota further limits a

condition designed to insure the undisturbed flow of wind across the real property of another").

166. *See supra* notes 106–107 and accompanying text.

167. SMITH ET AL., *supra* note 110.

168. *Id.*

169. *See supra* notes 162, 164 and accompanying text.

170. MINN. STAT. § 500.30 (2012).

171. COLO. REV. STAT. § 38-30.7-103(1) (2012); MONT. CODE ANN. § 70-17-402

grantee by mandating that the easement automatically expires fifty years from the date of the grant.[172] Because these laws are all relatively new, it is unclear what the effects of these various limits will be; however, intuitively, it seems that the more restrictions that the state places on the wind right, the less incentive there is for investment.

The argument in favor of limiting the wind right to an easement rather than a severable estate is that granting a developer a wind estate could place too much of a burden on the surface estate owner.[173] The proponents of this view argue that developing wind power has a significantly larger surface impact than developing oil and gas.[174] As such, they contend that there is likely to be too much conflict between the owner of a severed wind estate and the owner of the surface estate (and potentially the owner of the mineral estate) regarding how much impact the wind estate is allowed to have on the surface when constructing and operating the turbines.[175]

This criticism of severability lacks merit. At the outset, the argument does not apply in a situation when a developer buys an upwind wind estate simply to protect the efficiency of the existing turbines. In this scenario, there is unlikely to be any significant conflict between the wind estate holder and the surface or mineral estate holder because the purpose of the purchase is to prevent development, not to build on the land.

However, even if the wind estate is purchased in order to construct turbines on the underlying land, it still does not follow that severability would place an undue burden on the underlying surface and mineral estates. First, given that the easement is set up to accomplish essentially the same result as a fee transfer and there does not appear to be any legislation limiting the scope of the easement, it is unclear why these issues would only exist when the estate is severed and not when a developer only obtains an easement. Second, there does not appear to be any reason why this conflict cannot be resolved through contracting and the payment of consideration.

(2011); N.D. CENT. CODE § 17-04 (2011); S.D. CODIFIED LAWS § 43-13-19 (2012).

172. S.D. CODIFIED LAWS § 43-13-19.

173. DuVivier, *supra* note 108, at 85–86.

174. *See id. But see* Jessica A. Shoemaker et al., *Negotiating Wind and Land Agreements*, *in* FARMERS' GUIDE TO WIND ENERGY 3-1 (Karen R. Krub ed., 2007) (noting that although a commercial wind farm requires a significant amount of land, only a small percentage of that area is actually required for turbines, access roads, and other equipment).

175. DuVivier, *supra* note 108, at 85–86.

For example, the wind estate could be sold as a servient estate to the mineral estate. This means that the mineral estate holder would be able to stop development of the wind estate that is incompatible with development of the mineral estate. Alternatively, if a wind developer does not want to purchase a servient estate, the developer should be able to pay more in order to obtain a right with fewer limitations regarding the development's surface impacts.

Another potential argument against severability is that allowing parties to contract for wind rights could be unfair if a wind developer is more sophisticated than the land owner. For example, wind developers could act as "wind squatters" and buy wind rights without any specific intent to act on those rights. However, this argument lacks force. First, a similar argument could be made in the oil and gas context, and yet, severance of the mineral estate has been allowed for decades. Second, it is a basic principle of contract law that parties may contract freely and the court will not evaluate the merits of the deal as long as the contract is not unconscionable and the contracting process was fair.[176] Third, the risk could be minimized through legislation that clearly defines how and to what extent wind rights can be transferred. For example, the law could require the contract to include certain limitations, such as a requirement that development of a wind turbine occur within five years. A law could also attempt to prevent future conflict by requiring that any contract that conveys wind rights address certain areas of potential conflict between the wind estate holder and the surface or mineral estate holders. Put differently, the law could require that each contract address what the wind estate holder's rights are vis-à-vis the extent of surface use and relative to the surface and mineral estates. This tactic is already being used in South Dakota, where the law mandates that parties include certain terms in the contract.[177] Similarly, Nebraska law requires that the

176. *See, e.g.*, Lincoln Gen. Ins. Co. v. Bailey, 224 P.3d 336, 341 (Colo. App. 2009) ("People should be entitled to contract on their own terms without the indulgence of paternalism by courts in the alleviation of one side or another from the effects of a bad bargain. . . . It is only where it turns out that one side or the other is to be penalized by the enforcement of the terms of a contract so unconscionable that no decent, fair[-]minded person would view the ensuing result without being possessed of a profound sense of injustice, that equity will deny the use of its good offices in the enforcement of such unconscionability." (quoting Carlson v. Hamilton, 332 P.2d 989, 990 (Utah 1958))).

177. S.D. CODIFIED LAWS § 43-13-18 (2012). For example, the contract must

agreement clarify the scope of the responsibilities and liabilities of each party.[178]

While there are many benefits to defining wind rights through legislation, even with clear laws, there will still be uncertainty and litigation over wind rights. Legislation recognizing a mineral estate owner's right to oil and gas is nothing new; yet, the debate about the rights of the mineral estate owner vis-à-vis the surface estate owner or other mineral estate owners still exists. However, even though a legislative property right does not guarantee complete certainty about the security of developers' investments, it provides more security than the current law (or lack thereof), which relies on post hoc judicial review to resolve disputes. Perhaps an early indicator of the benefit of this additional security is the fact that of the six states with the highest proportion of energy generated by wind, four have recognized property rights in wind.[179]

CONCLUSION

Wind energy capacity has increased substantially over the past decade, and this growth in capacity is largely attributable to the policies that federal and state governments have enacted to help developers overcome the economic barriers to building commercial scale wind facilities. However, if wind power capacity is going to continue to grow and eventually supply a significant amount of the United States' electricity needs, states need to supplement the economic policies with property rights that protect developers' investments.

This Comment addressed the importance of establishing a property right in wind, and explained the benefits of a legislatively-defined property right to wind as compared to reliance on judicial decisions. If a state is serious about producing more renewable energy, and specifically about developing its wind power resources, its legislature should

include "[a]ny provisions for compensation of the owner of the real property benefiting from the easement in the event of interference with the enjoyment of the easement, or compensation of the owner of the real property subject to the easement for maintaining the easement." *Id.*

178. NEB. REV. STAT. § 66-911.01 (2012).

179. The top six states, in order of percentage of in-state generation, are Iowa (15.4 percent), North Dakota (12 percent), Minnesota (9.7 percent), South Dakota (8.3 percent), and Kansas and Oregon (7.1 percent each). 2010 WIND TECHS. MARKET REP., *supra* note 18, at 9.

define a wind right as a real property interest that can be bought, sold, or leased like any of the other sticks in an estate owner's bundle.