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Wind-Energy Ventures in Indian Country: Fashioning a Functional Problem

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WIND-ENERGY VENTURES IN INDIAN COUNTRY: FASHIONING A FUNCTIONAL PARADIGM

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I. Introduction

A wind turbine located in the pastoral setting of an Indian reservation is likely to engender two disparate reactions. Some may view the wind turbine as existing in harmony with nature on account of its attributes as a renewable energy resource serving to combat the effects of climate change. Others may find themselves revisiting their childhood, humming a familiar tune and chanting, "One of these things is not like the other." Whatever the case may be, wind turbines have already begun to appear in Indian Country and are likely to continue to do so in the wake of heightened pressures to reduce carbon emissions and dependence on foreign oil. Such widespread expansion is achievable and salutary, provided that certain steps are taken to facilitate the economic viability of wind-energy projects on tribal lands.

This comment endorses the establishment of wind-energy projects on Native American land as a means both of promoting tribal economic self-determination and diversifying the national energy portfolio. Part II of this comment provides an overview of wind energy, explaining the logistics involved in launching a wind project, as well as the benefits realized through production of this type of energy. Parts III and IV consider the benefits and setbacks, respectively, to wind-energy projects in Indian Country. Part V examines the system currently in place, under which it is possible to establish Native American wind projects. Part VI espouses a more favorable framework, under which it becomes feasible to conquer the hurdles currently inhibiting wind-energy projects on tribal lands. This comment concludes in Part VII.

II. Overview of Wind Energy

A. How It Works

1. The Nature of Wind Energy

Wind power is generated through a conversion of solar energy.[1] Solar

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1. Ronald H. Rosenberg, *Making Renewable Energy a Reality—Finding Ways to Site*

radiation, upon reaching the earth, heats the terrain at rates that differ based on variable land surfaces and day/night alternation.[2] The imbalanced atmospheric warming causes warmer air to rise and cooler air to occupy the resultant low-pressure areas, thus creating wind.[3]

Surface winds are captured in the form of kinetic energy by the rotating blades of a wind turbine.[4] The blades of the turbine are attached to a shaft, and the shaft is attached to a generator.[5] As the blades of the turbine rotate, so too does the generator, converting the kinetic energy of the wind into electrical energy.[6]

Wind turbines typically are observed in large utility-scale groupings known as wind farms. But apart from these large installations, homes, farming cooperatives, and small communities can erect what is commonly termed a "distributed wind system" consisting of a single turbine or small collection of turbines.[7] Wind farms are intended for widespread power distribution and are thus invariably interconnected to the transmission grid.[8] Distributed wind systems, on the other hand, provide on-site power, either on a stand-alone basis or through a grid-connected configuration, in which the systems "are interconnected to existing local power distribution lines."[9]

2. Preliminary Requirements for Erecting a Wind Farm

Four preliminary steps must be completed before embarking on the construction phase of a wind farm: (1) a wind-resource assessment, (2) an ethnographic study, (3) an ecological study, and (4) the "courting" of private investors.[10] The results of the various studies, coupled with the ability to

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Wind Power Facilities, 32 WM. & MARY ENVTL. L. & POL'Y REV. 635, 649 (2008) [hereinafter Rosenberg, *Finding Ways*].

2. *Id.*

3. *Id.*

4. Kamaal R. Zaidi, *Wind Energy and Its Impact on Future Environmental Policy Planning: Powering Renewable Energy in Canada and Abroad*, 11 ALB. L. ENVTL. OUTLOOK J. 198, 204 (2007).

5. *Id.*

6. *Id.*

7. Avi Brisman, *The Aesthetics of Wind Energy Systems*, 13 N.Y.U. ENVTL. L.J. 1, 43 n.94 (2005).

8. *Id.*

9. *Id.*

10. *See* Patrick M. Garry et al., *Wind Energy in Indian Country: A Study of the Challenges and Opportunities Facing South Dakota Tribes*, 54 S.D. L. REV. 448, 451 (2009). While the cited source may impliedly posit an order by which these steps are to be undertaken, there is not necessarily an inherent hierarchy among the steps. It may very well be most prudent to pursue

obtain private investors, determine the feasibility of siting a wind turbine or wind farm in a given location.

By its nature, wind is a variable resource. Wind turbines are capable of producing electricity only when the wind blows.[11] Not only does the wind need to blow, but it must do so at relatively high speeds to make a proposed wind project attractive.[12] Wind turbines do not begin to produce electricity until a minimum wind speed is reached—typically nine to ten miles per hour.[13] Because wind power has a cubic relationship to wind speed, even a modest increase in speed can substantially increase energy production.[14] For example, "if the wind speed increases from 10 miles per hour to 20 miles per hour — a doubling in speed (2 x) — then the resulting increase in power is cubed (2 x 2 x 2), or eight times the power of the original wind."[15]

There is a limit, however, to desired wind speeds. Wind turbines are designed and manufactured such that they shut down when encountering wind speeds in excess of fifty-five to sixty miles per hour in order to safeguard against damage or destruction.[16] The ideal speed for optimal wind production is twenty-five to thirty miles per hour[17]—a number that seems strikingly high when one considers the average wind speeds in most of the country. For example, Chicago (dubbed the Windy City) boasts an average annual wind speed of 10.3 miles per hour,[18] barely reaching the threshold required for turbines to begin producing electricity. It is therefore imperative to locate wind farms in the relatively limited selection of sites enjoying consistently high wind speeds.[19]

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private investors before conducting any studies, as the results of such studies would prove immaterial without entities willing to invest in the project. The steps are intended to serve as a list of preliminary requirements, rather than as a chronological roadmap.

11. Jeffry S. Hinman, *The Green Economic Recovery: Wind Energy Tax Policy After Financial Crisis and the American Recovery and Reinvestment Tax Act of 2009*, 24 J. ENVTL. L. & LITIG. 35, 45 (2009).

12. *See* Dwight H. Merriam, *Regulating Backyard Wind Turbines*, 10 VT. J. ENVTL. L. 291, 301 (2009).

13. *Id.* at 294.

14. Shannon L. Ferrell, *Wind Energy Agreements in Oklahoma: Dealing with Energy's New Frontier*, 80 OKLA. B.J. 1015, 1016 (2009).

15. *Id.*

16. Merriam, *supra* note 12, at 294.

17. *Id.*

18. Wind- Average Wind Speed-(MPH), http://lwf.ncdc.noaa.gov/oa/climate/online/ccd/avgwind.html (last visited June 7, 2010).

19. *See* Patricia E. Salkin & Michael Donohue, *Planning & Zoning for Wind Power in New York*, N.Y. ZONING L. & PRAC. REP., Sept.-Oct. 2005, at 1, 2.

Recognizing the magnitude of even a slight change in wind speed, one can appreciate the prudence and necessity of conducting a thorough wind-resource assessment. The purpose of the assessment is to ascertain whether ample wind speed exists at a proposed location.[20] In a wind-resource assessment, the property owners grant access to the developers to conduct wind-resource studies.[21] These studies typically involve gathering wind and meteorological data and serve to determine a proposed project's technical and economic feasibility.[22]

If a proposed location contains adequate wind resources, the next step involves conducting an ethnographic study to determine whether a proposed project location features any cultural significance.[23] An ethnographic study "identifies the customs and beliefs of a people."[24] Such studies are vital to proposed wind projects on tribal lands because a tribe's "subsistence, culture, and spirituality are intimately connected to the lands they inhabit."[25] If a proposed location is of cultural or religious significance, the tribe must weigh the importance of financial gain against the preservation of specific cultural resources.

Upon completion of the ethnographic study, an ecological study must be performed. The purpose of the ecological study is to ascertain whether local wildlife would be adversely impacted.[26] Because of their sheer size, wind projects "unavoidably displace[] a certain amount of flora and fauna."[27] As a result, the goal of the ecological study becomes one of mitigation[28]—to assuage and minimize the potential negative environmental consequences accompanying a proposed wind project.

The final step to launching a new wind project is to acquire private investors. Considering the capital-intensive nature of a wind-energy project,[29] coupled with the pervasive poverty saddling many Native American

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20. Garry et al., *supra* note 10, at 451.

21. Mustafa P. Ostrander, *Wind Power: A Lawyer's Guide to Representing Landowners*, BUS. L. TODAY, July-Aug. 2007, at 24, 26.

22. *Id.*

23. Garry et al., *supra* note 10, at 451.

24. *Id.* at 453.

25. Jacqueline P. Hand, *Global Climate Change: A Serious Threat to Native American Lands and Culture*, 38 ENVTL. L. REP. NEWS & ANALYSIS 10329, 10330 (2008).

26. Garry et al., *supra* note 10, at 451.

27. *Id.* at 453.

28. *Id.*

29. *See* Kevin L. Shaw & Richard D. Deutsch, *Wind Power and Other Renewable Energy Projects: The New Wave of Power Project Development on Indian Lands*, ROCKY MTN. MIN. L. FOUND. Special Ed., Nov. 2005, at ch. 9.

communities, this step becomes particularly relevant to tribal ventures.[30] It is estimated that the installation of one megawatt of turbine capacity requires approximately $2 million of up-front capital.[31] Bearing in mind that a common project size contains one hundred megawatts of capacity,[32] the importance of obtaining private investors with sizeable wealth at their disposal soon becomes clear.

B. Benefits of Wind Energy

Wind power has been sanguinely hailed as the energy source of the future.[33] Its proponents assert that wind energy provides an attractive and viable solution to the problems encumbering traditional energy sources.[34] Three primary factors driving the growth of renewable energy are the environmental concerns surrounding global warming, energy-infrastructure security, and the promotion of rural economic welfare.[35]

1. Climate Change

On average, one megawatt hour of electricity produced by means of traditional energy sources produces emissions of 1341 pounds of carbon dioxide, 7.5 pounds of sulfur dioxide, and 3.55 pounds of nitrogen oxides.[36] Wind energy, by contrast, produces zero emissions.[37] Bearing in mind that annual United States electricity production exceeds four billion megawatt

30. *See* Lincoln L. Davies, *Skull Valley Crossroads: Reconciling Native Sovereignty and the Federal Trust*, 68 MD. L. REV. 290, 362 (2009) (noting the difficult economic decisions faced by often-impoverished tribes).

31. Ferrell, *supra* note 14, at 1017.

32. *Id.*

33. *See, e.g.*, Brisman, *supra* note 7, at 6 n.11.

34. *See* Kathryn Wiens, Center for Biological Diversity, Inc. v. FPL Group, Inc.*: Encouraging Wind Energy Production While Protecting the Public Trust*, 32 ENVIRONS: ENVTL. L. & POL'Y J. 389, 390 (2009).

35. *See* Kelsey Jae Nunez, Comment, *Gridlock on the Road to Renewable Energy Development: A Discussion About the Opportunities & Risks Presented by the Modernization Requirements of the Electricity Transmission Network*, 1 J. BUS. ENTREPRENEURSHIP & L. 137, 141 (2007).

36. Corey Stephen Shoock, Note, *Blowing in the Wind: How a Two-Tiered National Renewable Portfolio Standard, a System Benefits Fund, and Other Programs Will Reshape American Energy Investment and Reduce Fossil Fuel Externalities*, 12 FORDHAM J. CORP. & FIN. L. 1011, 1025 (2007).

37. Dorothy W. Bisbee, *NEPA Review of Offshore Wind Farms: Ensuring Emission Reduction Benefits Outweigh Visual Impacts*, 31 B.C. ENVTL. AFF. L. REV. 349, 350 (2004).

hours,[38] the pollution statistics for traditional energy sources are staggering. Reduced emissions, however, do not represent the sole environmental advantage gained via wind-energy production. Statistics pertaining to water savings rival those of reduced emissions in magnitude. Every megawatt hour of wind energy that replaces traditional energy sources could potentially save up to six hundred gallons of water.[39] Replacing twenty percent of annual United States electricity production with wind energy could thus save four trillion gallons of water by 2030.[40]

Climate change is of particular concern to Native Americans, as its impacts can weigh especially heavily on tribal economies.[41] Tribal economies commonly center on agriculture, natural resources, and tourism, all of which suffer direct adverse affects as a result of natural disasters and other events associated with climate change.[42] Additionally, Native Americans "may be unable to relocate if their climates become inhospitable" due to the ravaging effects of global warming.[43] Native American tribes "are place-based entities whose subsistence . . . [is] intimately connected to the lands they inhabit."[44] Even a slight change in climate has the potential to "cause the migration or extinction of culturally important species if their habitat . . . [is] no longer suitable."[45] In short, "Indian tribes have little opportunity to follow the migrating species because tribes are often tied to specific parcels of land" created by treaty or other agreement.[46]

The effects of climate change burden every member of society, but the negative impacts on tribal entities cut much more deeply as a result of their relationship with the lands they inhabit. Accordingly, Native Americans are likely to be further incentivized to participate in renewable-energy projects, which serve effectively to reduce emissions and, in turn, prevent depletion of vital environmental, cultural, and economic resources.

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38. Alexandra B. Klass & Sara E. Bergan, *Carbon Sequestration and Sustainability*, 44 TULSA L. REV. 237, 240 (2008).

39. Elizabeth Burleson, *Wind Power, National Security, and Sound Energy Policy*, 17 PENN ST. ENVTL. L. REV. 137, 140 (2009) (quoting U.S. DEP'T OF ENERGY, 20% WIND ENERGY BY 2030: INCREASING WIND ENERGY'S CONTRIBUTION TO U.S. ELECTRICITY SUPPLY, EXECUTIVE SUMMARY 17 (2008), *available at* http://www.20percentwind.org/Final_DOE_Executive_Summary.pdf [hereinafter 20% WIND ENERGY]).

40. *See id.* (quoting 20% WIND ENERGY, *supra* note 39, at 17).

41. Hand, *supra* note 25, at 10330.

42. *Id.*

43. *Id.*

44. *Id.*

45. *Id.*

46. *Id.*

2. National Security

Energy concerns related to national security are twofold. The first concern involves uneasiness about America's dependence on foreign oil.[47] Many fear that such dependence undermines national security by "tying the U.S. economy to unstable and undemocratic nations, thus increasing the risk of military conflict in political hotspots around the globe."[48] Wind power, however, is a domestically available resource.[49] Bearing in mind conventional notions of supply and demand, any increase in domestic wind production consequently leads to a decrease in energy imports, effectively bolstering national security.[50]

Second, concerns surround the vulnerability of the United States' aging transmission grid.[51] As a result of its interconnected properties and overstressed condition, the transmission grid is susceptible to an intentional attack, which could have far-reaching consequences when one considers the nature of the grid itself.[52] The grid's interconnectedness "allows for the transmission of power over large distances, [but] it also implies that local disturbances propagate over the whole grid."[53] An intentional attack on a single point in the grid could thus result in a devastating power outage reminiscent of the August 2003 blackout, the largest power failure in North American history, which left 40 million Americans and 10 million Canadians without power and cost the United States up to $10 billion.[54]

A present investment to construct transmission capacity could forestall the monumental losses associated with large-scale power failures. Instead of paying enormous curative costs, the government could build more transmission lines, thereby taking a preventative rather than a remedial approach to energy security. In addition to reducing the risk of blackouts,

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47. *See* Nunez, *supra* note 35, at 145.

48. *Id.* (quoting WORLDWATCH INST., AMERICAN ENERGY: THE RENEWABLE PATH TO ENERGY SECURITY 8 (2006), *available at* http://images1.americanprogress.org/il80web20037/americanenergynow/AmericanEnergy.pdf).

49. *See* Bent Ole Gram Mortensen, *International Experiences of Wind Energy*, 2 ENVTL. & ENERGY L. & POL'Y J. 179, 184 (2008).

50. *See id.* at 184-85.

51. *See* Nunez, *supra* note 35, at 155-56.

52. *Id.* at 156.

53. Réka Albert et al., *Structural Vulnerability of the North American Power Grid*, PHYSICAL REV. E, Feb. 2004, at 025103-1, -2.

54. Scott V. Heck, Note, *Lights Out for New Jersey: The August 2003 Blackout and the End of Electricity Regulation in New Jersey*, 29 SETON HALL LEGIS. J. 279, 285 (2004).

adding transmission capacity would indirectly reduce dependence on foreign energy, as substantial commercial growth of wind energy is not feasible without considerable expansion of the current transmission infrastructure.[55] Accordingly, the addition of sizable transmission capacity to make widespread wind production tenable could pacify concerns relating to national security by reducing the risk of widespread power failures and increasing the use of domestic energy.

3. Boosting Rural Economies

Because of the vast amount of land required to house wind farms,[56] large-scale wind projects are ordinarily erected in rural areas.[57] Rural communities, frequently rendered the victims of a depressed economic reality, stand to gain considerably from the economic boost accompanying the establishment of a major wind project.[58]

Wind projects inject revenue and advance rural economies in at least four ways.[59] First, the construction of the wind farm generates employment opportunities for those living in the rural communities.[60] Assembling wind turbines and towers "employs construction workers at an estimated rate of 4.8 job-years" for every megawatt of wind power installed.[61]

Second, a smaller number of permanent jobs would become available for the maintenance of the wind farms—an increase of particular significance in rural economies historically facing stunted job growth.[62] Estimates suggest that approximately ten full-time service personnel would be required to maintain a wind farm containing one hundred megawatts of capacity.[63]

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55. *See* Melanie McCammon, *Environmental Perspectives on Siting Wind Farms: Is Greater Federal Control Warranted?*, 17 N.Y.U. ENVTL. L.J. 1243, 1249 (2009); *see also* Burleson, *supra* note 39, at 146.

56. Becky H. Diffen, Comment, *Energy from Above and Below: Who Wins When a Wind Farm and Oil & Gas Operations Conflict?*, 3 TEX. J. OIL GAS & ENERGY L. 240, 242 (2008).

57. Roy Fuller, Note, *Wind Energy Development on BLM Lands*, 24 J. LAND RESOURCES & ENVTL. L. 613, 620 (2004).

58. Ronald H. Rosenberg, *Diversifying America's Energy Future: The Future of Renewable Wind Power*, 26 VA. ENVTL. L.J. 505, 525 (2008) [hereinafter Rosenberg, *Diversifying*].

59. *See* Rosenberg, *Finding Ways*, *supra* note 1, at 664-65; *see also* Windustry, Wind Basics: Why Wind Energy?, http://www.windustry.org/wind-basics/learn-about-wind-energy/wind-basics-why-wind-energy/why-wind-energy (last visited June 10, 2010) [hereinafter Wind Basics: Why Wind Energy?].

60. *See* Rosenberg, *Finding Ways*, *supra* note 1, at 664.

61. *Id.*

62. *Id.*

63. *Id.*

Though this figure may seem marginal at best, the creation of ten permanent employment positions could have a stunning impact on the individualized circumstances of remotely located communities because the jobs would occur in sparsely populated rural areas with "few incoming job opportunities" and would be distributed over a vast geographic region.[64] In terms of overall job creation, estimates suggest that sixteen years of employment and between fifteen and nineteen jobs are created for every megawatt of installed wind capacity, again noting that these jobs primarily occur in poverty-stricken rural communities.[65] In addition to greater availability of employment opportunities, tribal members enjoy further benefits when the wind farms on which they work are located on their reservations. In *McClanahan v. State Tax Commission of Arizona*,[66] the Supreme Court held that a state may not tax a tribal member for income earned exclusively on the reservation.[67] Thus, if a wind farm is located on an Indian reservation, tribal members of that reservation employed on the wind farm will not be subject to a state income tax.

Third, wind farms are conventionally sited on leased land, on which royalties must be paid to the landowner.[68] In rural areas, such lease payments could offer invaluable income for landowners otherwise presented with scant economic alternatives.[69] A further benefit for rural landowners is that wind-energy development is compatible with many existing land uses, such as livestock grazing, recreational use, wildlife habitat, and oil, gas, and geothermal production.[70] The coexistence of wind production with other fruitful rural land uses allows rural landowners the opportunity to "enjoy a new revenue stream that could supplement their existing farm and ranch incomes, having an additional effect of stabilizing rural populations in areas currently losing population."[71] Finally, wind-energy projects can diversify rural economies, "adding to the tax base and providing new types of income."[72] Wind farms also have the potential to add to property values in rural areas otherwise struggling to attract new industry.[73]

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64. *Id.*
65. Mortensen, *supra* note 49, at 182-83.
66. 411 U.S. 164 (1973).
67. *Id.* at 165.
68. Rosenberg, *Finding Ways*, *supra* note 1, at 663.
69. *Id.*
70. *Id.*
71. *Id.*
72. Wind Basics: Why Wind Energy?, *supra* note 59.
73. *Id.*

As nontaxable entities, "adding to the tax base" is not of consequence to Native American tribes.[74] Nevertheless, tribal communities share many common threads with rural communities. As in rural areas, tribal industry is "inextricably intertwined" with the land itself.[75] Any revenue or commerce capable of being generated through the exploitation of existing resources provides a gainful advantage to tribal communities, whose available business opportunities, like those of their rural counterparts, are limited. Not only would the construction of a wind project on tribal land diversify the economy and generate profits for the tribal wind owners, it would also create much-needed employment opportunities for tribal members.

Native Americans represent one of the most poverty-stricken ethnic groups within the United States, with unemployment rates on reservation lands exceeding fifty percent.[76] Although the jobs created through a wind farm are relatively small in number, they represent industrial opportunities that would not otherwise be available in areas exceedingly limited in economic diversity—both rural and tribal communities. Though tribes may not enjoy every commercial benefit available to traditional rural communities in hosting a potential wind farm,[77] they nonetheless gain tremendous economic advantages through the introduction of new industry that accompanies a wind-project installation within the boundaries of their reservations.

III. Advantages of Wind-Energy Production on Tribal Lands

For a host of reasons, wind production on tribal lands is a particularly attractive endeavor. Though there remain numerous barriers burdening the implementation of wind projects on Indian reservations,[78] the weighty advantages accompanying production on tribal lands incentivize both tribes and other governments to uncover workable solutions to overcome those barriers. The three primary benefits to locating a wind project in Indian Country are the vast resource supply, the ability to avoid the bureaucratic

74. *See* Dean B. Suagee, *Going "Code Green" in Indian Country*, NAT. RESOURCES & ENV'T, Spring 2009, at 56, 57.

75. Patrice H. Kunesh, *A Call for an Assessment of the Welfare of Indian Children in South Dakota*, 52 S.D. L. REV. 247, 253 (2007).

76. Therese Bissell, *The Digital Divide Dilemma: Preserving Native American Culture While Increasing Access to Information Technology on Reservations*, 2004 U. ILL. J.L. TECH. & POL'Y 129, 133 (2004).

77. *See* Suagee, *supra* note 74, at 57 (noting that tribes are unable to take advantage of the Production Tax Credit (PTC) on account of their status as nontaxable entities).

78. *See* discussion *infra* accompanying notes 105-91.

delays encountered in launching off-reservation energy projects, and the tax incentives enjoyed through the employment of Native American workers.

A. Availability of Resources

Wind speed is paramount to the practicality of siting a wind project in a given location.[79] Tribal land in the Great Plains holds a prodigious potential for wind projects on account of its extraordinary wind resources.[80] Twenty-three tribes hold wind-generating potential in excess of three hundred gigawatts, an amount "equal to over half of present U.S. installed electrical capacity."[81] The combination of this leviathan wind resource with millions of acres of unobstructed land makes Indian Country an ideal environment for erecting a wind farm.[82] Recognizing that such a massive economic opportunity is sitting idle, tribes have identified wind energy as a means of stabilizing habitually fluctuating revenue streams and have endeavored to pursue the establishment of wind-energy facilities on their lands in order to alleviate some of the adverse effects associated with their current economic circumstances.[83]

B. Evasion of Federal Delays

After satisfying the preliminary requirements in selecting a location for a wind farm, the project "must undergo a rigorous permitting process at local, state, and federal levels."[84] In addition to the fact that wind projects are subject to local zoning laws,[85] several pieces of environmental legislation also burden construction of wind-energy projects by placing rigid constraints on the location and manner of potential wind farms.[86]

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79. *See* Elizabeth A. Ransom, Note, *Wind Power Development on the United States Outer Continental Shelf: Balancing Efficient Development and Environmental Risks in the Shadow of OCSLA*, 31 B.C. ENVTL. AFF. L. REV. 465, 497 (2004).

80. Garry et al., *supra* note 10, at 450.

81. Maxine Burkett, *Just Solutions to Climate Change: A Climate Justice Proposal for a Domestic Clean Development Mechanism*, 56 BUFF. L. REV. 169, 229 (2008) (quoting Winona LaDuke, *Local Energy, Local Power*, YES! MAG., Winter 2007, at 26, 26).

82. Garry et al., *supra* note 10, at 450.

83. *Id.*

84. 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, -21 (2004).

85. *See* Windustry, Wind Basics: Know Your Land, http://www.windustry.com/wind-basics/learn-about-wind-energy/wind-basics-know-your-land/know-your-land (last visited June 10, 2010).

86. Adam M. Dinnell & Adam J. Russ, *The Legal Hurdles to Developing Wind Power as an Alternative Energy Source in the United States: Creative and Comparative Solutions*, 27 NW.

The appeal of constructing a wind farm on tribal lands is bolstered by the fact that "tribes constitute sovereign governments within the federal system," making it possible for them to evade onerous zoning restrictions mandated by local governments.[87] As a component of their inherent sovereignty, tribal governments have the authority to craft their own regulations.[88] This benefits all parties to a wind transaction, because not only are they exempt from local or state regulation, but their sovereign status also allows them to bypass many federal guidelines and procedures customarily imposing "complexity and delay" on industrial projects.[89] Where a wind-energy project is erected in Indian Country and tribally managed, modern case law suggests that "the scale will likely tip in favor of preserving tribal sovereignty and not subjecting such project to federal regulations."[90] In some instances, tribes have even succeeded in gaining complete regulatory control over environmental matters for utilities built on their lands, allowing for the circumvention of further arduous administrative constraints.[91] The federal government's hands-off approach suggests to private investors that investing in tribal wind projects in Indian Country lessens "the nuisance of government intervention."[92]

A related issue concerns community reaction to a proposed wind project. The development of wind energy in rural and residential communities has triggered a string of nuisance litigation.[93] The "not in my backyard" attitude[94] has stifled wind production when local governments have acquiesced to the sentiments of complaining residents. But it is unlikely that such local opposition will hamper tribal wind projects. Investors launching renewable-energy ventures on tribal lands do not face intervention from various echelons of government and private-interest groups. In tribally managed wind-energy projects, the only governing body is a single tribal council, allowing project investors substantially to lower the financial and political risks associated with

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J. INT'L L. & BUS. 535, 555 (2007). The list of environmental legislation hampering wind-energy production includes the Migratory Bird Treaty Act (MBTA), the Bald and Golden Eagle Protection Act (BGEPA), the Endangered Species Act (ESA), the National Environmental Policy Act (NEPA), the National Wildlife Refuge Systems Administration Act (NWRSAA), and the National Historic Preservation Act (NHPA). *Id.* at 555-65.

87. Shaw & Deutsch, *supra* note 29, at IV-A.

88. *See id.*

89. *Id.*

90. *Id.*

91. *Id.* at IV-B.

92. *Id.* at V-A.

93. *See* Fuller, *supra* note 57, at 620-21 (citing Rose v. Chaikin, 453 A.2d 1378 (N.J. Super. Ct. Ch. Div. 1982); Rassier v. Houim, 488 N.W.2d 635 (N.D. 1992)).

94. *Id.* at 617.

financing a renewable-energy venture.[95] A notable correlative is that approval on the part of the tribal council is "usually accompanied by the approval of the community."[96] Equipped with inherent tribal sovereignty and its attendant advantages, "'only the availability of the resource and the creativity of the individuals involved limit the options available to tribal governments.'"[97]

C. Tax Incentives via Indian Employment Credits

While Native Americans stand to benefit on numerous levels from housing wind projects on their lands, outside investors realistically have just as much to gain. Not only do private investors profit by avoiding a lengthy governmental permitting process, they also enjoy favorable tax breaks through employing Native Americans for the wind project. Recognizing the enterprising nature of capitalist society, "[t]wo magic words sum up one of the more attractive features for outside investors doing business on Indian lands: tax incentive."[98]

Within the Internal Revenue Code is a provision entitled "Indian employment credit."[99] The provision, 26 U.S.C. § 45A, gives a twenty-percent tax break for the wages and health insurance paid by an employer to every qualified tribal employee.[100] A qualified employee includes a member of an Indian tribe or his or her spouse, so long as the employee's services are substantially performed within the Indian reservation and the member or spouse lives on or near the reservation.[101]

The minor limitations within the statute are unlikely to prevent a substantial number of Native American hires for wind projects from being considered qualified employees. The statute exempts those being paid annual wages in excess of $30,000, subject to adjustment for inflation.[102] In July 2008, the wage cap was set at $35,000 per year.[103] The statute also excludes related

95. *See* Shaw & Deutsch, *supra* note 29, at V-A (quoting Craig Goodman, former President, National Energy Marketers Association).

96. *Id.*

97. *Id.* at IV-B (quoting DEAN B. SUAGEE, RENEWABLE ENERGY IN INDIAN COUNTRY: OPTIONS FOR TRIBAL GOVERNMENTS (REPP Issue Brief No. 10, May 1998), *available at* http://www.repp.org/repp_pubs/articles/issuebr10/index_ib10.html).

98. *Id.* at V-C.

99. 26 U.S.C. § 45A (2006).

100. *Id.* § 45A(a).

101. *Id.* § 45A(c)(1).

102. *Id.* § 45A(c)(2)-(3).

103. *Indian Governments and the Tax Code: "Maximizing Tax Incentives for Economic Development": Hearing Before the S. Comm. on Finance*, 110th Cong. (2008) (statement of

family members and owners of a five-percent-or-greater interest.[104] Because it is unlikely that the Indian wind-farm workers will be of relation to the private investors and doubtful that those Indians earning less than $35,000 annually will hold any substantial ownership interests, many Indian employees working on a wind project on reservation land may potentially meet the criteria for qualified employees for purposes of the tax exemption.

In addition to the abundant resources found on tribal lands and the avoidance of federal bureaucratic delays resulting from the sovereign status of tribal entities, the tax credit further incentivizes private investors to pursue wind-project opportunities on tribal lands. They receive a twenty-percent return on wages paid that they would not receive were they to employ non-Indian workers outside of the physical boundaries of the reservation. Granted, the tax credit, standing alone, is unlikely to be a decisive project-siting factor. Nevertheless, when coupled with the other measurable benefits of investing in wind projects on tribal lands, the tax credit effectively provides a supplementary impetus for tribal wind endeavors.

IV. Barriers to Wind-Energy Production on Tribal Land

While several advantages exist in siting a wind project on Native American lands, certain impediments may stonewall widespread implementation. To render wind production on tribal lands practicable and economically viable, tribes, governments, and private investors must work together to conquer the hurdles presently frustrating the feasibility of extensive exploitation of tribal renewable-energy resources. Current cumbersome obstacles include (1) the capital-intensive nature of sizeable energy ventures, (2) an aging and often inaccessible transmission infrastructure, (3) the ineligibility of Indian tribes to qualify for fundamental tax incentives, (4) tribal concerns with respect to the preservation of tribal sovereignty, (5) the maintenance of the trust relationship with the federal government, and (6) the intimate connection that Native Americans share with the lands they inhabit.

A. Up-front Capital Requirements

The typical cost of installing one megawatt of turbine capacity requires approximately $2 million in capital.[105] Recognizing that a common size for a wind project includes one hundred megawatts of capacity, the preliminary cost

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Donald Laverdure, Chief Legal Counsel, Crow Nation Executive Branch).

104. 26 U.S.C. § 45A(c)(5)(A)-(B).

105. Ferrell, *supra* note 14, at 1017.

of establishing a wind project is formidable.[106] Although the initial investment represents almost the entirety of the necessary funding (because a wind farm requires little in the way of maintenance costs and no fuel costs),[107] Indian communities do not have such sizeable capital reserves at their disposal.[108] As a result, they are forced to seek out private investors in order to proceed, an action that can spawn further problems for tribes desiring more managerial control than financing sponsors might be willing to allow.

The initial costs of launching a wind project include turbines, construction and interconnection fees, metering equipment, maintenance, and any consulting services used.[109] While the enormous cost of the turbine itself is prohibitive, factoring in these additional expenditures[110] places potential wind projects even further from the practical reach of tribal entities. Also, because tribal lands are typically situated in remote places far from access to high-capacity utility transmission lines, tribal wind projects compel the added expense of constructing new connective infrastructure.[111] Bearing in mind that transmission lines can cost more than one hundred thousand dollars per mile,[112] tribal wind ventures appear exorbitantly expensive. As a result of a lack of tribal access to capital, tribes will remain unable singlehandedly to finance renewable-energy projects without the assistance of private investors or the federal government, both of which evoke sovereignty concerns.[113]

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106. *Id.*

107. Hinman, *supra* note 11, at 43.

108. *See* Robert J. Miller, *American Indian Entrepreneurs: Unique Challenges, Unlimited Potential*, 40 ARIZ. ST. L.J. 1297, 1327 (2008) (quoting Theresa Julnes, *Economic Development as the Foundation for Self-Determination, in* AMERICAN INDIAN POLICY: SELF-GOVERNANCE AND ECONOMIC DEVELOPMENT 151, 155 (Lyman H. Legters & Fremont J. Lyden eds., 1994)).

109. Windustry, Wind Basics: Know Your Economics, http://www.windustry.org/wind-basics/learn-about-wind-energy/wind-basics-know-your-economics/know-your-economics (last visited June 12, 2010).

110. *See* Windustry, How Much Do Wind Turbines Cost?, http://www.windustry.org/how-much-do-wind-turbines-cost (last visited June 12, 2010) (noting that the average commercial-scale wind turbine costs approximately $3.5 million to install) [hereinafter How Much Do Wind Turbines Cost?].

111. *See* Rosenberg, *Finding Ways*, *supra* note 1, at 666 (describing the difficulty of linking "remotely located wind power sources" with existing power grids).

112. Shaw & Deutsch, *supra* note 29, at VI-A.

113. *See* discussion *infra* accompanying notes 147-62, 192-242.

B. Transmission

The ideal location to construct a wind farm is on lands that possess strong winds and are positioned in close proximity to existing electric-power lines.[114] Unfortunately, on account of the remoteness of many of the sites with the best wind resources, they are typically situated a great distance from practical access to transmission.[115] But if the United States "is ever to distance itself from fossil-fuel dependency, the immense . . . wind . . . resources that are typically available in remote areas . . . must be utilized."[116] Use of these isolated wind resources requires the development of transmission capacity that can "deliver the energy from these remote areas to our big cities and surrounding suburbs"[117]—the places that consume the most electricity.

While the construction of considerable transmission access would facilitate the advancement of wind production in remote areas, the current regulatory framework presents obstacles that must be overcome in order for remote wind power to become economically viable. Historically, the policies in place favor existing traditional electricity generators and are "inherently resistant to new market entrants" such as renewable-energy sources.[118]

Four governing policies have stifled the efficacy of wind power and other renewable resources. First, energy generators have traditionally faced formidable penalties for failing to satisfy a previously determined delivery schedule.[119] This regulation was intended to keep providers from limiting supply at their option, thereby increasing prices.[120] The concern for those producing variable resources is the inherent difficulty in accurately predicting potential supply.[121] Because wind is susceptible to relatively unpredictable and rapid fluctuation, it would be unreasonable for wind generators to be expected to satisfy a pre-determined delivery schedule.

Second, owners and operators of each segment of a transmission line have traditionally collected access charges for use of their respective segments.[122]

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114. Joseph O. Wilson, Note, *The Answer, My Friends, Is in the Wind Rights Contract Act: Proposed Legislation Governing Wind Rights Contracts*, 89 IOWA L. REV. 1775, 1786 (2004).

115. *Id.*

116. Alborz Nowamooz, *Inadequacy of Transmission Lines: A Major Barrier to the Development of Renewable Energy*, 3 ENVTL. & ENERGY L. & POL'Y J. 176, 179-80 (2008).

117. *Id.* at 180.

118. *Id.*

119. *Id.* at 181.

120. *Id.*

121. *See id.*

122. *Id.*

Because many wind-energy projects exist in remote areas, the wind-power generators must use the transmission systems of multiple owners, paying access fees to each.[123] This practice, known as rate pancaking,[124] penalizes wind-energy producers by imposing additional discriminatory costs based solely on the remote location of their generation facilities.[125]

Third, it is customary for transmission lines to be "owned by older vertically integrated companies that are generators of energy themselves," spawning concerns of conflicts of interest with other energy providers.[126] These companies charge fixed interconnection rates in the form of tariffs, imposing unfair burdens on renewable-energy generators, who "have a much smaller impact on the transmission system."[127]

Last, because of the congestion[128] resulting from limitations in transmission capacity, renewable-energy generators face discrimination in transmission access.[129] Access has traditionally been granted on a "first-come, first-served basis," and the extant framework consequently discriminates against new market entrants.[130] The Federal Energy Regulatory Commission (FERC) "has been working to identify these discriminatory policies" and to make the regulatory structure more conducive to renewable-energy production.[131] Although the FERC has been somewhat successful in alleviating the inequities existing under the prior framework,[132] lack of investment in the expansion of transmission capacity continues to plague the wind-energy industry (particularly those projects located in remote locations) by thwarting

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123. *Id.*

124. *Id.*; *see also* Michael Coyn Mateer, Note, *When the Lights Go Out: The Impact of House Bill 6 on Regional Transmission Organizations and the Reliability of the Power Grid*, 12 GEO. MASON L. REV. 775, 793 n.174 (2004). "'Pancaking' is an industry term" describing the charges (or "open access tariffs") incurred by energy generators when their power travels "through areas of the grid owned by different utility companies while on its path to its final destination." *Id.* This results in "'pancaked' rates which would have been much lower had the power traveled a different [i.e., less fractionated] path." *Id.*

125. Nowamooz, *supra* note 116, at 181.

126. *Id.*

127. *Id.*; *see also* Mateer, *supra* note 124, at 813.

128. *See* Mateer, *supra* note 124, at 813 (noting that congestion is typically discussed in terms of "bottlenecks," which occur when more energy is being demanded and produced than can fit through the available transmission infrastructure, blocking much of the distributed power from flowing through the lines).

129. *See* Nowamooz, *supra* note 116, at 181.

130. *Id.*

131. *Id.*

132. *Id.* at 181-82.

economically viable distribution access.[133] For wind production on tribal lands to become a practicable industrial opportunity, substantial transmission capacity must be constructed, and the regulatory framework must be revised to eradicate the practices that have a discriminatory effect on renewable-energy resources.

C. Tax-Exempt Status of Native American Tribes

The federal production tax credit (PTC)[134] is the single most important incentive for developing an economically viable renewable-energy facility.[135] Without the PTC, wind-energy projects in the United States "would not be economically viable" under the current regulatory framework.[136] The PTC provides a per-kilowatt-hour tax credit for electricity derived from renewable resources for the first ten years of a renewable-energy facility's operation.[137] The current per-kilowatt-hour credit is set at 2.1 cents,[138] and "[f]or a taxpayer with a positive tax liability, the electricity production credit is equivalent to a subsidy that pays the taxpayer for each kilowatt-hour of electricity produced in addition to the price at which the producer sells the electricity."[139] The owner therefore profits from the funds received through the tax credits as well as from the income generated through electricity sales. Standing alone, the economic impact of the PTC is remarkable—a relatively small thirty-megawatt wind farm generates more than $1.6 million per year in tax credits.[140] Estimates suggest the PTC has the potential to add as much as seventeen percent to the profitability of a wind-energy project.[141]

In order to take advantage of the tax credits, "the owner must have a large, steady tax liability from non-wind operations that they can offset with the PTC

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133. *See* Darrell Blakeway & Carol Brotman White, *Tapping the Power of Wind: FERC Initiatives to Facilitate Transmission of Wind Power*, 26 ENERGY L.J. 393, 421 (2005).

134. 26 U.S.C. § 45 (2006).

135. *See* Rosenberg, *Diversifying*, *supra* note 58, at 532.

136. Garry et al., *supra* note 10, at 455.

137. Rosenberg, *Diversifying*, *supra* note 58, at 532.

138. Union of Concerned Scientists, Production Tax Credit for Renewable Energy, http://www.ucsusa.org/clean_energy/solutions/big_picture_solutions/production-tax-credit-for.html (last visited June 12, 2010).

139. Shaw & Deutsch, *supra* note 29, at III-A (quoting JOINT COMM. ON TAXATION, PRESENT LAW AND BACKGROUND RELATING TO TAX CREDITS FOR ELECTRICITY PRODUCTION FROM RENEWABLE SOURCES (2005), *available at* http://www.jct.gov/x-36-05.pdf).

140. *See* Mark Shahinian, Special Feature, *The Tax Man Cometh Not: How the Non-Transferability of Tax Credits Harms Indian Tribes*, 32 AM. INDIAN L. REV. 267, 274 (2007-2008).

141. Garry et al., *supra* note 10, at 457.

credits."[142] This fact can prove doubly troublesome for tribal wind-farm owners. First, tribes are non-taxable entities, making them ineligible to receive the PTC.[143] Second, even if the tribes hypothetically were able to take advantage of the tax credits through some particular government agreement, the impoverished reality of many tribes[144] could preclude them from having the necessary substantial tax liability through alternative tribal commerce to make realistic and effective use of the tax credits.[145] The inapplicability of the tax credits to tribal entities thus prevents them from independently participating in the renewable-energy industry as currently structured.[146]

D. Tribal Sovereignty

Since the time of European settlement, Native American tribes have fought for their sovereignty.[147] As a result, it is only natural that they would desire control over their own business ventures. Allowing tribal entities to develop and own wind-energy projects gives them more control over their resources, thereby effectively increasing tribal sovereignty.[148] The most effective way for tribes to control wind-energy development on their land is to develop the wind projects as a tribal enterprise.[149] Although this may be the ideal situation, it does not comport with present reality, as most large-scale resource development remains under the management of non-Indian companies entering into leases and other agreements with tribes.[150] Given the current

142. Shahinian, *supra* note 140, at 274; *see also* Chris Sanders, *Credit Where Credit Is Due*, 74 TENN. L. REV. 241, 247 (2007) (quoting BORIS I. BITTKER & LAWRENCE LOKKEN, FEDERAL TAXATION OF INCOME, ESTATES AND GIFTS § 32.2.4 (2006)). A tax credit functions to reduce the amount of federal income tax owed. The credit offsets the tax liability "dollar for dollar." *Id.* at 247 (citation omitted). A tax credit is different from a deduction, which reduces only the income subject to tax. *Id.*

143. Suagee, *supra* note 74, at 57.

144. *See* Bissell, *supra* note 76, at 133 (noting that a great many tribes face harsh economic conditions and pervasive poverty).

145. *See* Richard J. Ansson, Jr. & Ladine Oravetz, *Tribal Economic Development: What Challenges Lie Ahead for Tribal Nations as They Continue to Strive for Economic Diversity?*, 11 KAN. J.L. & PUB. POL'Y 441, 466 (2002) (noting that "with only a few notable exceptions, the vast majority of tribes and tribal peoples are still utterly impoverished").

146. *See* Shahinian, *supra* note 140, at 274.

147. John Fredericks III, *America's First Nations: The Origins, History and Future of American Indian Sovereignty*, 7 J.L. & POL'Y 347, 409 (1999).

148. *See* Shahinian, *supra* note 140, at 288.

149. *See* Judith V. Royster, *Practical Sovereignty, Political Sovereignty, and the Indian Tribal Energy Development and Self-Determination Act*, 12 LEWIS & CLARK L. REV. 1065, 1070 (2008) [hereinafter Royster, *Practical Sovereignty*].

150. *See id.* at 1071.

infrastructure, these agreements are necessary because tribes currently have neither the capital necessary to finance such costly projects nor the ability to employ the indispensible tax credits available to taxable entities.[151]

Concerns about tribal sovereignty can be problematic both for the tribes themselves and the private investors in the renewable-energy projects. Because tribes are likely to desire control of the project, it may engender tension between the tribe and the investors, both of whom may expect to have decision-making authority—the tribes on account of "owning" the land that hosts the projects and the investors on account of the capital they provide:

> From the outset, tribes and investors need to have a mutual understanding of the unique issues present, most notably, the tribal independence that is potentially curbed through influence from a non-tribal investor working to maximize their [sic] own interest in the project. This dichotomy between the two entities can create a more complicated dual ownership structure that must be identified and addressed by the parties involved from the project's inception.[152]

A further concern stemming from these joint business ventures is the question of how disputes will be resolved.[153] "[P]rinciples of sovereign immunity can complicate legal issues that may arise should private investors and a tribe disagree on some aspect of a wind facility's construction or operation."[154] The question of whether the tribal, state, or federal courts "will ultimately have jurisdiction to resolve [such] dispute[s]" holds particular importance.[155] Though the precise jurisdictional determination is outside the scope of this comment, the question remains an important consideration for tribes and private investors seeking to form a renewable-energy-project partnership.

E. Trust Relationship with the Federal Government

Tribes have traditionally played a relatively minor role in energy development and resource extraction in Indian Country.[156] Some tribes collected royalties from mineral development, but few took the initiative to

151. *See* Shahinian, *supra* note 140, at 275.
152. Garry et al., *supra* note 10, at 454.
153. *See id.* at 458.
154. *Id.*
155. *Id.*
156. Shaw & Deutsch, *supra* note 29, at I-B.

develop the resources themselves.[157] Tribes today, however, are no longer resting idle. Shifting federal policy has inspired a change in tribal attitudes on energy development.[158] The preliminary factors compelling tribal entities to re-think their positions on energy development centered on the deregulation of the natural gas supply, as well as "the recent turmoil in the reconfiguring of the electricity sector."[159] "[T]he federal government's passage of enactments supporting renewable energy development on reservations" and its concession of related regulatory power to tribes have been decisive factors in the growth and investment of renewable-energy projects in Indian Country.[160]

Some commentators insist that successful tribal economic development in the renewable-energy market requires the federal government to transition from a decision-making role to that of a mere advisor.[161] Others assert that the language of tribal energy resource agreements undermines the guardian-ward relationship by relieving the federal government of all liability stemming from energy-development projects.[162] The concerns relating to the maintenance of the trust relationship will be more easily understood after examining the enactments themselves (tribal energy resource agreements), discussed in Part V.

F. Relationship with Nature

The Native Americans' relationship with nature presents a further obstacle to siting wind projects on tribal lands. Tribal "subsistence, culture, and spirituality are intimately connected to the lands they inhabit."[163] As a result, tribal governments will weigh the limited negative environmental impacts accompanying wind-energy projects against the potential benefits "in the context of their religious, cultural, and traditional frameworks."[164] On account of their intimate relationship with nature, tribes may be less inclined than non-tribal entities to surrender the pristine landscape of their reservations in exchange for the affluence attainable from the installation of a wind-power project. The negative environmental impacts of the wind projects, however,

157. *Id.*
158. *Id.*
159. *Id.*
160. *Id.*
161. Royster, *Practical Sovereignty*, *supra* note 149, at 1069.
162. Andrea S. Miles, Comment, *Tribal Energy Resource Agreements: Tools for Achieving Energy Development and Tribal Self-Sufficiency or an Abdication of Federal Environmental and Trust Responsibilities?*, 30 AM. INDIAN L. REV. 461, 470-71 (2005-2006).
163. Hand, *supra* note 25, at 10330.
164. Victoria Sutton, *Wind and Wisdom*, 1 ENVTL. & ENERGY L. & POL'Y J. 345, 351 (2007).

are negligible when weighed against the attendant advantages,[165] and the tribes (many of which are in dire economic straits) may find the possible environmental harm of even less consequence when factoring in the monetary benefits. Still, possible negative environmental impacts must be addressed.

Legitimate concerns exist regarding both the construction and operation of wind-energy projects. The concerns relating to construction center on the consequences associated with road construction, while those relating to operation include aesthetics, noise, and avian mortality.[166]

1. Environmental Impacts of Wind-Farm Construction

Among the noteworthy impacts wind farms could have on rural landscapes, "extensive road building can be the most significant."[167] If existing roads are not already in place or are unsuitable for accommodating construction equipment, "developers must displace massive amounts of soil and construct roads in hilly terrain typical of most wind-farm sites," compelling even greater soil depletion.[168] Additionally, road construction and subsequent use launch fugitive dust into the air, negatively affecting both air quality and visibility.[169]

Although some harm to the landscape is inevitable during construction of wind farms, the negative environmental effects stemming from the vast amount of land required for these projects can be largely mitigated by thoughtful planning and design.[170] To reduce disturbance, developers should endeavor to build only necessary roads and to minimize the amount of road grading.[171] Likewise, developers should place wind facilities on relatively flat terrain in order to avoid hillside cuts,[172] which have a tendency to exacerbate existing problems with water erosion and fugitive dust.[173] In terms of minimizing land disturbance, it is also advantageous to locate wind-power

165. *Id.* at 354.

166. *See* Fuller, *supra* note 57, at 617-22; *see also* Gregory M. Adams, *Bringing Green Power to the Public Lands: The Bureau of Land Management's Authority and Discretion to Regulate Wind-Energy Developments*, 21 J. ENVTL. L. & LITIG. 445, 450-54 (2006); Wang Mingyuan, *Government Incentives to Promote Renewable Energy in the United States*, 24 TEMP. J. SCI. TECH. & ENVTL. L. 355, 357 (2005); Rosenberg, *Finding Ways*, *supra* note 1, at 668-69.

167. Adams, *supra* note 166, at 451.

168. *Id.*

169. *Id.*

170. *See* Fuller, *supra* note 57, at 619.

171. *Id.*

172. *Id.*

173. *Id.* at 617.

facilities near existing infrastructure (including roads and power lines) where possible,[174] though this becomes a particularly arduous undertaking in tribal regions where existing infrastructure is either limited or entirely nonexistent.

While most noise impacts are contemplated in terms of turbine operation, "[c]onstruction activities pose the largest threat for high levels of noise because of heavy equipment, traffic, and blasting through geologic formations to dig the foundations for turbine towers."[175] Though the construction noise will be of a much more finite duration than the operation noise, the noise created during the construction phase could be especially offensive on reservation lands, considering the fact that inhabitants of the archetypal bucolic landscape are unlikely to be accustomed to any persistent amount of industrial noise. Unfortunately, such noise is unavoidable in any construction project, and because it would be nearly impossible successfully to mitigate the noise, complaints surrounding such noise are likely to go unappeased.

2. Environmental Impacts of Wind-Farm Operation

While the aesthetic impact of a wind installation is largely subjective, wind farms are destined to encounter heightened opposition when placed in areas of unindustrialized natural beauty. Unfortunately, little can be done to placate residents who take issue with the appearance of the wind turbines. Local and tribal governments will be forced to balance the objections of disgruntled community members against the fiscal and environmental value of regional wind-farm operation. Because of the ample concomitant advantages, it is unlikely that governments will be compelled to abandon a proposed wind project based on aesthetically motivated criticisms.

Those objecting to wind projects on aesthetic grounds are perhaps too myopic in their opposition. In rural communities likely to be targeted for wind-farm installation, pervasive poverty often accompanies a paucity of potential industrial opportunities.[176] Not only will a wind facility improve the economic circumstances of the community, but it may very well be the least repugnant means of doing so. When one considers widespread urbanization or the construction of air-polluting factories as alternatives, wind farms suddenly become an attractive option to those wishing to maintain the ecological integrity of their community without facing endemic destitution.

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174. *Id.* at 619.

175. Adams, *supra* note 166, at 452.

176. *See* Peter B. Edelman, *Toward a Comprehensive Antipoverty Strategy: Getting Beyond the Silver Bullet*, 81 GEO. L.J. 1697, 1735 (1993).

Noise was also a primary concern with early turbine designs.[177] City and county governments have responded to the problems associated with wind-turbine noise by enacting ordinances that prohibit the noise from exceeding a certain level.[178] Although such ordinances have encouraged technological development, yielding quieter turbines,[179] the mechanical components of the wind turbine still produce a limited amount of noise. But, "[t]o put this into perspective, a wind turbine located 250 meters from a residence is no noisier than a kitchen refrigerator."[180] While the "low level of unavoidable aerodynamic noise" may be more offensive to those in characteristically quiet rural areas,[181] "wind farm noise will be partly masked by ambient noise such as that from rustling leaves or grasses"[182]—or even the wind itself. In addition, the likelihood that wind farms will be situated in close proximity to residences is reduced in such sparsely populated areas. Population density aside, it is always improvident to place a turbine substantially close to a building, as this obstructs the free flow of wind, thereby diminishing productivity.[183] The low level of noise, coupled with the improbability of finding numerous contiguous residences in rural areas and the imprudence of situating a turbine near obstruent structures, thus makes it unlikely that local and tribal governments will terminate a proposed wind project based solely on grievances concerning the potential for noise disturbances.

Avian mortality is perhaps the most commonly associated consequence of wind-energy development.[184] The concerns may be unsubstantiated, however, as research indicates that the number of associated bird deaths are negligible when compared to other causes of avian mortality.[185] Estimates suggest wind

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177. Brisman, *supra* note 7, at 75 (quoting AM. WIND ENERGY ASS'N, THE MOST FREQUENTLY ASKED QUESTIONS ABOUT WIND ENERGY 16 (2002), *available at* http://www.awea.org/pubs/documents/faq2002%20-%20web.pdf).

178. Fuller, *supra* note 57, at 620.

179. *Id.*

180. Brisman, *supra* note 7, at 75 (quoting AM. WIND ENERGY ASS'N, *supra* note 174). For those who are not metric-savvy, 250 meters is approximately equal to 820 feet.

181. *See* Adams, *supra* note 166, at 452.

182. Brisman, *supra* note 7, at 76 (quoting ARI REEVES, WIND ENERGY FOR ELECTRIC POWER 17 (REPP Issue Brief, July 2003), *available at* http://www.repp.org/articles/static/1/binaries/wind%20issue%20brief_FINAL.pdf).

183. *See* Thaddeus Baria, Comment, *Up the Creek with a Paddle: Water Doctrine as a Basis for Small Wind Energy Resource Rights*, 59 DEPAUL L. REV. 141, 167 (2009) (noting that "a building situated on neighboring property can disrupt airflow for a distance of twenty times its height").

184. Adams, *supra* note 166, at 452-53.

185. *See* Meredith Blaydes Lilley & Jeremy Firestone, *Wind Power, Wildlife, and the*

turbines are responsible for less than 0.003% of bird deaths.[186] The statistics relating to other causes of avian mortality provide some perspective. While collisions with buildings may cause nearly one billion fatalities each year and attacks by cats account for hundreds of millions of casualties, wind turbines are responsible for only an estimated 33,000 annual bird deaths.[187] Despite the low numbers of deaths associated with wind turbines, any level of avian mortality may be of greater consequence to tribes, who view the issue in light of cultural, religious, and historical significance.[188] It is noteworthy that a sizeable portion of the birds killed are birds of prey or raptors—a class that includes the eagle,[189] which is a symbol of religious significance to many Native Americans.[190]

Because terminating all tribal wind projects is not a judicious resolution, the objective becomes one of mitigation. Evidence indicates that bird deaths can be mitigated by locating facilities distant from areas with high raptor populations[191]—an undertaking that can be accomplished through thoughtful planning in the initial land-assessment studies. A second mechanism to alleviate the high rate of avian mortality is to position the facilities away from the migratory paths of birds of prey, another task realistically practicable through meticulous planning during the preliminary land-assessment phase. Because avian mortality can be largely mitigated through careful planning during the pre-construction phases of wind development, it is unlikely, when weighed against the potential for substantial capital gain, that the relatively negligible associated casualties will prevent a proposed wind project from taking shape.

V. The Current Design of Tribal Wind-Energy Projects

With the current regulatory and legal framework, wind projects on tribal lands are rendered attractive and practical through a combination of tribal energy resource agreements and a specific type of arrangement with private

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Migratory Bird Treaty Act: A Way Forward, 38 ENVTL. L. 1167, 1172 (2008).

186. AM. WIND ENERGY ASS'N, WIND ENERGY AND WILDLIFE (2009), *available at* http://www.awea.org/pubs/factsheets/Wind_Energy_and_Wildlife_Mar09.pdf.

187. Lilley & Firestone, *supra* note 185, at 1172.

188. Sutton, *supra* note 164, at 351.

189. Victoria Sutton & Nicole Tomich, *Harnessing Wind Is Not (by Nature) Environmentally Friendly*, 22 PACE ENVTL. L. REV. 91, 95 (2005).

190. Antonia M. De Meo, *Access to Eagles and Eagle Parts: Environmental Protection v. Native American Free Exercise of Religion*, 22 HASTINGS CONST. L.Q. 771, 774-75 (1995).

191. Fuller, *supra* note 57, at 622.

investors. Although the strategy is not without flaws, it exists as a present means for tribes and investors jointly to pursue wind projects on reservation lands absent a change in the regulatory structure.

A. Tribal Energy Resource Agreements

The Nonintercourse Act of 1834 required federal consent for any lease or other conveyance of Indian trust land to be valid.[192] Title V of the Energy Policy Act of 2005[193] essentially eliminates the federal-consent requirement, allowing tribes to bypass Secretarial approval of certain energy-related arrangements through the use of a tribal energy resource agreement (TERA).[194] The Act permits tribes to enter into leases for up to thirty years for "generation, transmission, and distribution of electric power" without requiring the approval of the Secretary of the Interior.[195] To enter into such leases, a tribe drafts a TERA and submits it to the Secretary.[196]

> The TERA must include provisions regarding: (1) how to ensure acquisition of necessary information from the applicant for the lease, business agreement or right-of-way; (2) the term, amendments and renewals of agreements; (3) economic return to tribes; (4) technical or other relevant requirements; (5) environmental review; (6) compliance with all applicable environmental laws; (7) identification of final approval authority; (8) public notification of final approval of any business agreement; (9) consultation with any affected state concerning potential off-reservation impacts and (10) remedies for breach of any lease, agreement or right-of-way.[197]

In addition, the TERA must delineate the Secretary's duty to conduct periodic reviews to ensure the tribes' compliant performance under the terms of the

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192. Judith Royster, *Indian Natural Resources Development: Tribal Energy Resource Agreements Under the Energy Policy Act of 2005*, ABA TRENDS, May-June 2006, at 8, 8 [hereinafter Royster, *Indian Natural Resources Development*]. The terms of the Nonintercourse Act are contained in 25 U.S.C. § 177 (2006).

193. 25 U.S.C. § 3504.

194. Royster, *Indian Natural Resources Development*, *supra* note 192, at 8.

195. 25 U.S.C. § 3504(a); *see also* Reid Peyton Chambers, *Compatibility of the Federal Trust Responsibility with Self-Determination of Indian Tribes: Reflections on Development of the Federal Trust Responsibility in the Twenty-First Century*, ROCKY MTN. MIN. L. FOUND. Special Ed., Nov. 2005, at ch. 13-A, III-C.

196. Chambers, *supra* note 195, at ch. 13-A, III-C.

197. *Id.*

TERA.[198] The Secretary must approve or disapprove the TERA within 270 days of receiving it, after providing for a period of public notice and comment.[199] The Secretary is required to approve a proposed TERA if he determines that the TERA includes all required provisions and that the tribe has sufficient capacity to regulate resource development on their land.[200] After a TERA is approved, all agreements falling under the TERA are no longer subject to federal action.[201]

Three primary concerns exist with respect to TERAs. The first is that the TERA scheme "eliminates the federal guarantees of . . . environmental review from energy development decisions in Indian Country."[202] Because no federal action would occur, the environmental-review protections mandated under the National Environmental Protection Act would be lost.[203] Congress added an environmental-review process to the TERA model due to concerns that tribes could ignore other federally mandated environmental-review procedures.[204] Under this review process, tribes must identify and evaluate any substantial environmental impacts associated with the lease.[205] Tribes must also identify ways to mitigate negative environmental impacts and subsequently incorporate these measures into the TERA.[206] Tribes must further provide an opportunity for public notice and comment, as well as "tribal oversight of energy development activities by other parties to the instruments to ensure compliance" with the terms of the TERA and its concomitant environmental safeguards.[207]

With the myriad conditions that the tribes must satisfy under this strict environmental-review process, concerns surrounding tribes' ability to launch environmentally improvident energy projects have been considerably allayed. The tribes, however, have not been so enthusiastic about the environmental-review requirements.[208] Because the federal government was essentially

198. *Id.*
199. *Id.*
200. *Id.*
201. *Id.*
202. Miles, *supra* note 162, at 470.
203. *Id.* at 471 (quoting *Oversight Hearing to Review the Permitting of Energy Projects: Before the S. Comm. on Env't & Pub. Works*, 109th Cong. 3 (2005) (prepared testimony of Sharon Buccino, Senior Attorney, Natural Resources Defense Council)).
204. *Id.* at 472.
205. Royster, *Indian Natural Resources Development*, *supra* note 192, at 9.
206. *Id.*
207. *Id.*
208. *See* Royster, *Practical Sovereignty*, *supra* note 149, at 1090.

mandating action on the part of tribal governments without providing financial resources with which to conduct the compulsory environmental reviews, there was some tribal opposition to the environmental-review process.[209] Despite such tribal opposition, the environmental-review process remains in effect.

The second concern involves the reduced trust responsibility under TERAs. Title V of the Energy Policy Act requires that the Secretary act in the best interests of the tribes and in good-faith conformity with the federal trust responsibility and further asserts that "nothing in the act absolves the federal government of its trust responsibilities."[210] But Title V paradoxically also absolves the federal government of liability to tribes or other parties to the lease for any attendant losses "so long as the instrument was entered into in accordance with an approved [TERA]."[211]

Although the Secretary is required to approve a TERA if he deems that all requirements have been satisfied, the determination is a subjective one. Such a scheme, "wherein a cabinet Secretary has prescriptive control over decisions regarding Indian energy development, but no subsequent liability, is an abdication of the federal trust responsibility that is patently unfair to tribes."[212] Tribes have expressed concern that they are being saddled with the onerous costs of energy development without adequate resources to carry such costs.[213] They are forced to "absorb the costs—both direct and indirect—of preparing TERAs, negotiating leases, . . . conducting environmental reviews, and responding to challenges by 'interested parties.'"[214]

In addition to bearing the costs, tribes are also obliged to shoulder liabilities in the event that difficulties arise.[215] The protections theoretically unfailingly afforded to tribes through the federal government's trust responsibility are eradicated under TERAs. Under Title V of the Energy Policy Act, "the judicially defined trust doctrine appears to have little room within which to

209. *Id.*

210. Royster, *Indian Natural Resources Development*, *supra* note 192, at 9 (quoting 25 U.S.C. § 3504(e)(6)(A) (2006)).

211. *Id.* (quoting 25 U.S.C. § 3504(e)(6)(D)).

212. Royster, *Practical Sovereignty*, *supra* note 149, at 1099 (quoting *Tribal Energy Self-Sufficiency Act and the Native American Energy Development and Self-Determination Act: Hearing on S. 424 and S. 522 Before the S. Comm. on Indian Affairs*, 108th Cong. 107 (2003) (supplemental statement of Joe Shirley, Jr., President, Navajo Nation) [hereinafter *Hearings*]).

213. *Id.*

214. *Id.* "The federal statute defines an 'interested party' as a person or entity that will sustain or has sustained an adverse environmental impact because the tribe failed to comply with its TERA." *Id.* at 1095.

215. *Id.* at 1099.

operate."[216] If the TERA system is to be kept in place, its tenets must be re-examined in order to ensure that the federal trust responsibility remains on steady ground. This would require the federal government to afford to tribal entities some degree of protection in the event of conflict under the lease, rather than the current reprieve from all liability.

Logic would suggest that the current eschewal of the trust responsibility would be accompanied by an increase in tribal self-determination. But TERAs effectively undermine tribal sovereignty. They essentially authorize imposition on tribal sovereignty on account of the various opportunities for public input.[217] Not only is the proposed TERA itself subject to public input, but the Secretary must also consider the public comments in deciding whether to approve the TERA, and the tribe must provide an opportunity for public input on final approvals of leases or other resource-development instruments.[218]

Further, the tribe is obligated to afford an opportunity for public notice and comment concerning its environmental-review process and respond to such comments prior to approval.[219] The TERA applicants are essentially at the mercy of potentially cantankerous community members throughout the approval process. Even after the TERA is approved, the tribes remain figurative hostages to belligerent local residents, who "may, after exhausting tribal remedies, petition the Secretary to review the tribe's compliance with its TERA."[220]

The irony of the public-review process is that it serves to protect states, non-tribal local governments, and non-tribal local residents at the expense of tribal self-governance. The trust doctrine is intended to shelter tribes from outside interference, yet the public-review process under the TERA system essentially encourages the very outside interference against which the trust doctrine is intended to protect. The TERA provisions basically propose "the elimination of Secretarial approval in exchange for the promulgation of tribal regulations that not only require consultation with State officials, but also require public notification and comment processes and ultimately, private citizen challenges" of leases approved under the TERA system.[221] The federal trust responsibility

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216. Lynn H. Slade, *The Federal Trust Responsibility and Tribal-Private Natural Resource Development*, ROCKY MTN. MIN. L. FOUND. Special Ed., Nov. 2005, at ch. 13B, III-A-3.

217. Royster, *Practical Sovereignty*, *supra* note 149, at 1086.

218. *Id.*

219. *Id.*

220. *Id.*

221. *Id.* (quoting *Hearings*, *supra* note 212, at 159 (statement of Maynes, Bradford, Shipps & Sheffel, LLP, Attorneys for the Southern Ute Indian Tribe)).

and traditional notions of tribal sovereignty are intended to protect tribes against incursion into tribal decision-making both by state governments and non-members,[222] but such protections are lost under the public-notice-and-comment process.

In essence, the regulations ask tribes to relinquish "fundamental aspect[s] of sovereignty in exchange for the elimination of Secretarial approval,"[223] yet the public-comment and TERA-approval requirements themselves may be more stringent than those encountered if traditional Secretarial approval remained intact. In the course of TERA review, "the Secretary may take *any action necessary* to protect the asset, including re-assuming responsibility for the development of tribal energy resources."[224] Not only is the Secretary able to deny an application based on his own subjective belief regarding tribal competence, but he is also given unbridled discretion completely to divest the tribe of its interest in the project. The copious restrictions placed on the tribes, coupled with the limitless discretion of the Secretary, effectively suffocate tribal sovereignty despite the intended goal of fostering tribal self-determination.[225]

Notwithstanding the profound shortcomings of the TERA structure, TERAs remain instrumental in facilitating tribal energy projects within the confines of the current regulatory framework. If the current abuses can be mitigated through appropriate legislative action targeting the rampant governmental encroachment within the existing TERA structure, TERAs could stimulate massive growth of tribal energy development, resulting in an amelioration of tribal economic welfare.

B. The Flip Model

Recognizing that the deficiencies of the TERA model need to be addressed before TERAs can provide an attractive avenue for tribal energy production, the aptly named flip model provides a means by which tribes can take advantage of the PTC and thus render wind projects on tribal lands economically viable. To be eligible to receive the PTC, one must be a taxpayer producing electricity.[226] To qualify as a producer, "a taxpayer must

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222. *Id.* at 1086-87 (quoting *Hearings*, *supra* note 212, at 159 (statement of Maynes, Bradford, Shipps & Sheffel, LLP, Attorneys for the Southern Ute Indian Tribe)).

223. *Id.* at 1087 (quoting *Hearings*, *supra* note 212, at 159 (statement of Maynes, Bradford, Shipps & Sheffel, LLP, Attorneys for the Southern Ute Indian Tribe)).

224. Scot W. Anderson, *Energy Development on Indian Lands: Title V of the Energy Policy Act of 2005*, ROCKY MTN. MIN. L. FOUND. Special Ed., Oct. 2005, at ch. 6 (emphasis added).

225. *See* Miles, *supra* note 162, at 472.

226. Hinman, *supra* note 11, at 59.

have an ownership interest in the qualifying electricity facility," something problematic for wind-energy developers, as it customarily takes several years before a wind farm proves profitable.[227] In the absence of other commercial enterprises producing sufficient income to make use of the tax credits, the PTC provides only a negligible benefit to developers in the initial years of a facility's operation.[228] Such a "financial reality has led to complex partnership agreements that allow the developer to monetize the PTC or effectively sell the tax benefit to an investor."[229] The result is that the investor acquires an ownership interest in the qualifying wind-energy facility, giving the investor eligibility for receipt of PTC benefits.[230]

The statute governing the PTC[231] instructs a partnership to allocate the PTC proportionate to each partner's ownership interest.[232] This permits the developer to structure the financing arrangement in the form of a partnership whereby a majority of the partnership interest is allocated to the private investors, allowing the majority of the PTC to be directed to them.[233] Under such an agreement, a tribe can allocate majority ownership interest to the private investor, and the PTC is applied to that portion of the ownership.

In the standard flip model, the private investor owns ninety-nine percent of the project during the first ten years of project operation, while the PTC is in place.[234] After the tax credits expire, "the project is 'flipped' (i.e., sold) to the tribe."[235] Over the course of three years, the tribe essentially re-purchases the project from the private investor in an arms-length, fair-market-value transaction.[236] Afterward, the tribe owns ninety-nine percent of the project.[237] A concern with such an arrangement is that the ownership structure "conflicts with the tribes' desire to own the resource projects on their lands" and may therefore undermine tribal sovereignty.[238] Because the agreement allocates majority ownership to the outside investor, the tribe may fear that the investor

227. *Id.*
228. *Id.*
229. *Id.*
230. *Id.*
231. 26 U.S.C. § 45 (2006).
232. Hinman, *supra* note 11, at 59.
233. *Id.*
234. Shahinian, *supra* note 140, at 279.
235. *Id.*
236. *Id.*
237. *Id.*
238. *Id.* at 280.

would accordingly expect majority decision-making capacity, which cuts against tribal goals of commercial self-sufficiency.

An adaptation of the standard flip model that serves to pacify the tribal-sovereignty concerns is known as the Minnesota flip, "which is structured so that the [tribe] can 'own' 1% of the project in a cash flow sense but retain . . . majority voting rights," effectively furnishing the tribe with the control absent in the standard flip model.[239] Under this model, ownership later flips to the tribe in the same manner as under the standard flip model.[240] While the Minnesota flip model provides tribes with greater autonomy, it may cause concern for private investors. Private investors have expressed reluctance to enter into partnership agreements requiring them to supply ninety-nine percent of the initial capital in order to gain ninety-nine percent of the cash flow, while simultaneously exposing them to the risks attendant to minority-ownership status.[241]

While such a solution has yet to be advocated, parties under either model may be conciliated if decision-making terms were to be established outright, with specified mandatory responses to a variety of foreseeable events. For example, the parties could contractually stipulate that no funds are to be allocated to road construction for the siting of additional turbines after the initial project has been established. Such a provision would establish a certain outcome in advance, rather than permitting the party with the superior ownership interest to determine that outcome later. Pre-determined responses to foreseeable events will not solve every problem, however, as unforeseeable events are largely unavoidable. But such premeditated decision-making may provide some relief to parties faced with the perceived lack of control accompanying minority-ownership status. The action to be taken in the case of an unforeseeable event would continue to depend on whether the standard or Minnesota flip were in place, as this designation would dictate which party held the ultimate decision-making capacity.

Though it remains difficult within the current system to satisfy both parties under a given flip model, both models are nevertheless instrumental in allowing tribes and those investing in tribal wind projects to take advantage of the PTC. Under the present regulatory framework, employing the PTC is of "paramount importance" to the economic viability of a wind project on tribal

239. *Id.*
240. *Id.*
241. *Id.*

lands, "and, consequently, ownership agreements must be structured to trigger" such incentives.[242]

C. Remaining Concerns

The TERAs provide tribes with increased independence in their dealings once they have overcome the plethora of hurdles associated with the application process. The flip model provides an additional apparatus by which the tribe can facilitate the construction of wind projects on their land. Still, there exist peripheral obstacles frustrating the potential for widespread implementation of wind projects on tribal lands.

Neither the TERA nor the flip model addresses the lack of access to transmission or the pervasive discriminatory practices within the distribution industry. Since building extensive transmission capacity remains prohibitively expensive, even for private investors with substantial assets, any functional proposal for wind projects on tribal lands should include government assistance in expanding the transmission infrastructure. The government has already expressed its intent to expand transmission capacity[243] in light of concerns relating to energy security—all that is required is a driving force to set the plan in motion. To this end, the so-called German model may provide the foundation for a system offering, at a minimum, protections equivalent to those afforded by way of TERAs and the flip model, as well as tackle the obstacles the current schemes fail to address.

VI. Adopting and Adapting the German Model

The system implemented in Germany to encourage renewable-energy growth is the feed-in tariff, which has been hailed as "the world's most successful policy mechanism for stimulating the rapid development of renewable energy."[244] Under the feed-in tariff model, wind-energy capacity has expanded at an annual rate of seventy percent over the past decade.[245] The advantages enjoyed under the German system include, but are not limited to, "effective induced expansion of wind power, lower prices than quota systems,

242. Garry et al., *supra* note 10, at 455.

243. *See* Burleson, *supra* note 39, at 146 (noting that the Department of Energy has called for transmission investment of $60 billion through 2030).

244. Paul Gipe, Electricity Feed Laws, Feed-in Laws, Feed-in Tariffs, Advanced Renewable Tariffs, and Renewable Energy Payments, http://www.wind-works.org/articles/feed_laws.html (last visited June 30, 2010).

245. Susan Perera, Note, *Following Minnesota's Renewable Energy Example: Will Federal Legislation Fly High or Flap in the Wind?*, 9 MINN. J. L. SCI. & TECH. 949, 965 (2008).

avoidance of windfall gains, and equal incentives for small and medium-sized market participants as large market competitors."[246] By combining the successful elements of the German model with other gainful policy mechanisms, wind energy can become a nascent force in both the American electrical industry and tribal economies.

A. Feed-in Tariffs

Feed-in tariffs operate such that any renewable-energy generator is guaranteed the right to receive long-term payments for every kilowatt hour of electricity sent to the grid.[247] The feed-in tariff has three key elements: "a guaranteed grid connection, a long term contract, and a fixed price sufficient [to provide] for a reasonable return on investment."[248]

The feed-in tariffs require that every utility connect and give priority to all renewable-energy sources, "using that energy first, rather than producing its own."[249] By requiring utilities to provide grid connection to all renewable-energy generators, the feed-in tariff system eliminates the discriminatory practices historically in place, which operate under a first-in-time approach.[250] Providing grid connection, however, may not be such a simple endeavor. In remote locations, grid connection is often not feasible without the construction of new transmission capacity.[251] The most favorable way of approaching this problem is to require that utilities and developers share interconnection and infrastructure-upgrade costs in isolated areas.[252] Of course, if the federal government were to fulfill its stated intentions of widespread expansion of

246. Christopher W. Fry, Comment, *Harvesting the Sky: An Analysis of National and International Wind Power*, 19 COLO. J. INT'L ENVTL. L. & POL'Y 427, 445 (2008).

247. Ben Block, *North American Feed-in Tariff Policies Take Off*, WORLDWATCH INST., Aug. 12, 2009, http://www.worldwatch.org/node/6221.

248. John Farrell, *Feed-in Tariffs in America: Driving the Economy with Renewable Energy Policy That Works*, NEW RULES PROJECT, Apr. 2009, at 6, http://www.newrules.org/sites/newrules.org/files/feed-in%20tariffs%20in%20america.pdf.

249. Brad A. Kopetsky, Comment, *Deutschland Über Alles: Why German Regulations Need to Conquer the Divided U.S. Renewable-Energy Framework to Save Clean Tech (and the World)*, 2008 WIS. L. REV. 941, 979.

250. *See* Nowamooz, *supra* note 116, at 181.

251. *See* Christopher E. Cotter, Comment, *Wind Power and the Renewable Portfolio Standard: An Ohio Analysis*, 32 U. DAYTON L. REV. 405, 409 (2007).

252. TOBY COUTURE & KARLYNN CORY, NAT'L RENEWABLE ENERGY LABORATORY, STATE CLEAN ENERGY POLICIES ANALYSIS (SCEPA) PROJECT: AN ANALYSIS OF RENEWABLE ENERGY FEED-IN TARIFFS IN THE UNITED STATES 5 (2009).

transmission capacity,[253] neither the utilities nor the developers would be forced to shoulder this burden.

The feed-in tariff contract provides renewable-energy generators with guaranteed per-kilowatt-hour payments for a definite period of time, often twenty years.[254] Utilities must buy electricity from renewable-energy generators at incentivized rates for the twenty-year period.[255] This long-term contract provides renewable-energy-project owners with stability and certainty.[256] By offering such contracts, feed-in tariff policies assure stable revenue streams, reducing the risks characteristic of renewable-energy investments while simultaneously reducing the overall costs of financing a renewable-energy project. [257] The "long-term price security . . . remove[s] many barriers to rapid [renewable-energy] development, creating conditions conducive to market growth."[258]

Within the long-term contracts is the guarantee of a fixed price above market rates.[259] To guarantee that developers enjoy profitable returns, "[p]ayments are set at pre-established rates, often higher than what the market would ordinarily pay."[260] The guaranteed pricing encourages development by creating "a low-risk investment environment"[261] and allows individuals and rural communities "to compete with utilities and large developers by requiring utilities to pay a fair price for [renewable] energy put into the grid by anyone."[262]

Guaranteed pricing also gives rise to the tangential effect of increased market competition, which occurs as a result of ownership diversity. The market structure under the feed-in tariff system "creates the mass markets and economies of scale necessary to drive down the cost of [renewable-energy resources]."[263] Instead of the current American system where the different

253. *See* Burleson, *supra* note 39, at 146 (noting that the Department of Energy has called for transmission investment of $60 billion through 2030).

254. KARLYNN CORY ET AL., NAT'L RENEWABLE ENERGY LABORATORY, FEED-IN TARIFF POLICY: DESIGN, IMPLEMENTATION, AND RPS POLICY INTERACTIONS 2 (2009).

255. Farrell, *supra* note 248, at 14.

256. COUTURE & CORY, *supra* note 252, at 17.

257. *Id.* at 31.

258. *Id.*

259. Barnas, *supra* note 84, at 5-19.

260. Block, *supra* note 247.

261. Cristin Cavanaugh, Book Note, 19 SYRACUSE SCI. & TECH. L. REP. 68, 72 (2008) (reviewing JOSEPH SZARKA, WIND POWER IN EUROPE: POLITICS, BUSINESS AND SOCIETY (2007)) (quoting Szarka).

262. Perera, *supra* note 245, at 972.

263. Bradford Plumer, *Clean Break*, AUDUBON, Mar.-Apr. 2009 (article contained in

types of energy sources and project sizes battle one another for the lowest bid, the feed-in tariff system stimulates competition "among developers and manufacturers to reduce prices to maximize their welfare."[264] The result of such a market scheme is "less expensive renewable energy"[265] and the potential for less expensive electricity altogether.[266]

By eliminating the need for the PTC, the feed-in tariff system should prove particularly attractive to tribes. Under the feed-in tariff model, the profits come from utility revenues.[267] As a result, this system avoids the nuisance of "cobbl[ing] together an unwieldy structure of local investors and tax equity investors" necessary under the American system to make use of the PTC.[268] Because prices are set at a rate that guarantees cost recovery as well as a reasonable profit, renewable-energy producers "need not rely on attracting the relatively few individuals or corporations with large amounts of tax liability" to defray the costs.[269] Under a feed-in tariff system, "there's no negotiating with utilities, partnering with tax-credit-hungry investors, or uncertainties about Congress."[270]

The feed-in tariff system inspires a fairer market by removing the "barriers to participation" from minority players.[271] It provides an avenue by which individuals with nominal tax liability, such as farmers, as well as non-taxable entities, such as tribal nations, may independently pursue renewable-energy projects.[272] The elimination of the need for the PTC and its associated partnership structures is encouraging for tribes that were uncomfortable with the rescission of their sovereignty that accompanied the schemes employed in order to take advantage of the PTC. Under this new system, tribes are afforded

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unnumbered pull-out section between pages 20 and 25).

264. Farrell, *supra* note 248, at 25.

265. *Id.*

266. *See id.* at 19.

267. *Id.* at 21.

268. *Id.*

269. *Id.* at 13.

270. *Id.* at 14; *see also* Hinman, *supra* note 11, at 64 (noting that the 2008-2009 recession and congressional action have led to a decrease in wind-energy capital). The "uncertainties about Congress" are in reference to the PTC. The PTC is not of an indefinite duration. "Congress has consistently allowed the PTC to expire, only to renew it, causing boom and bust cycles in the wind industry." Lisa Chavarria, *Wind Power: Prospective Issues*, 68 TEX. B.J. 832, 834 (2005). Projects proliferate when the PTC is in place, followed by a near-cessation in project growth when it expires. The current PTC is set to expire in 2013. *See* 26 U.S.C. § 45(d)(1) (2006).

271. Farrell, *supra* note 248, at 14.

272. *Id.*

singular ownership and decision-making authority, as they no longer must allocate ownership rights to outside parties in order to profit from the tax incentives.

Unfortunately, although the feed-in tariff system offers countless attractive features for making tribal wind projects feasible, it does not decrease the amount of up-front capital required.[273] Though the higher rate of return for renewable power over a fixed period of years helps to defray the initial cost of the equipment,[274] tribes are unlikely to have such capital at the outset. In order to make this system more conducive to tribal ventures, tribes will have to acquire loans (though less sizeable than those required under alternate schemes) from private investors, or else the federal government will have to provide grants to encourage wind production on tribal lands. Loans from private investors will not have the same onerous effects as do the partnership structures under the PTC because the tribes will not be required to allocate ownership interests to the private investors. The loan method allows tribes to acquire the up-front capital without compromising their desire for exclusive ownership.[275]

Grants from the federal government present another practical option, provided that such grants are not conditioned in any way that could engender further deprivation of tribal sovereignty. If the federal government had subjective decision-making authority or retained any form of ownership interest in the project after the grant had been paid to the tribe, the same sovereignty issues would arise as are present in the TERA model and the partnerships with private investors. To encourage the growth of wind energy on tribal lands, any grants from the federal government should be free from any potential coercive influence.

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273. CORY ET AL., *supra* note 254, at 11.

274. Kate Galbraith, *Europe's Way of Encouraging Solar Power Arrives in the U.S.*, N.Y. TIMES, Mar. 13, 2009, at B1.

275. On account of the nature of ownership in Indian Country, tribes confront unique barriers in acquiring private loans. The federal government owns fee title to all Indian lands held in trust, with the Indians retaining a right of occupancy. *See* Johnson v. M'Intosh, 21 U.S. (8 Wheat.) 543, 574 (1823). Because lenders are invariably wary of granting unsecured loans, tribes and their members may confront difficulty in acquiring private loans since homes and other buildings on trust land cannot serve as reliable collateral. *See* Yair Listokin, *Confronting the Barriers to Native American Homeownership on Tribal Lands: The Case of the Navajo Partnership for Housing*, 33 URB. LAW. 433, 440 (2001). In order to secure private loans, tribes and their members must therefore possess alternate collateral of sufficient value to satisfy the loan.

B. Renewable Portfolio Standards

While many governments have taken an "either/or" approach to feed-in tariffs and renewable portfolio standards, it has been suggested that the two are capable of harmonious co-existence—and may in fact be entirely complementary.[276] A renewable portfolio standard (RPS) requires that a set percentage of a retail electricity supplier's energy come from renewable sources.[277] The set percentage often starts low and gradually escalates over time, spurring steady growth in the overall renewable-energy supply.[278] To satisfy the requirement, retail electricity suppliers must provide the governing body with sufficient renewable-energy credits (RECs) at the end of a regulatory period to establish compliance with the standard.[279] Each REC "certifies that a unit of electricity (e.g., a kilowatt hour) has been generated from a qualified renewable source."[280] Retail electricity providers have the luxury of choosing the most efficient way to meet the RPS requirement.[281] They may obtain RECs either by producing the renewable energy themselves or by purchasing the RECs from another electricity supplier that has produced in excess of its obligation.[282]

The establishment of a successful RPS requires six elements. The RPS must (1) specify the percentage of renewable electricity and applicable time frame, (2) determine which technologies qualify as renewable, (3) identify who is required to provide or obtain the renewable energy, (4) determine whether the standard will include RECs, (5) designate an agency to oversee and administer the standard, and (6) set penalties for utilities that fail to meet their obligation.[283]

The RPS will further the successes of a feed-in tariff system. It provides long-term certainty for wind energy by assuring that a certain amount of electricity is generated from renewable resources. This long-term predictability enables wind-project owners to "attract investment capital and achieve manufacturing economies of scale that will spur economic development, lower consumer prices, strengthen U.S. energy security, and help

276. *See* COUTURE & CORY, *supra* note 252, at 24.

277. Emily Kennedy, *Federal Regulations, Incentives, and Funding of Renewable Energy in 2006*, 1 ENVTL. & ENERGY L. & POL'Y J. 403, 404 (2007).

278. Kopetsky, *supra* note 249, at 958.

279. *Id.*

280. Robin J. Lunt, Comment, *Recharging U.S. Energy Policy: Advocating for a National Renewable Portfolio Standard*, 25 UCLA J. ENVTL. L. & POL'Y 371, 383 (2006-2007).

281. *Id.* at 382-83.

282. Kopetsky, *supra* note 249, at 958.

283. Lunt, *supra* note 280, at 381-82.

our environment."[284] The RPS also diversifies the energy supply by developing domestic renewable energy, which functions "to shield consumers from spikes in energy prices" accompanying the volatile foreign energy market.[285] Last, by encouraging the rapid growth of renewable energy, the RPS will generate employment opportunities and "increase[] income across the country, especially in economically hard-pressed rural areas,"[286] which include many tribal lands. Because each large utility-scale wind turbine erected generates over $2 million in economic activity,[287] the potential impact on rural and tribal communities would be stunning.

As sovereign nations, tribes will not be subject to the federally mandated REC-generation requirements that other retail electricity suppliers must satisfy. But the tribes will still be capable of selling RECs generated through their facilities in order to assist other suppliers in meeting their obligations. The RPS will thus assist the tribes in accelerating the timeframe within which the tribes will be able to realize profits by providing supplemental income with which to repay any loans acquired for project development.

C. Net Metering

Though not applicable to large utility-scale wind farms on tribal lands, net-metering agreements are invaluable to tribal groups using small wind projects to power their homes or business facilities. Under a net-metering agreement, wind-turbine owners are interconnected with a local utility that allows the wind-turbine owners to return excess electricity to the utility when their systems produce more power than they use and allows them to draw power from the utility in times of underproduction.[288] In essence, net metering allows the interconnected wind-turbine owner "to use the electrical grid as a storage battery."[289] Thus, similar to feed-in tariffs and RPS implementation, net metering demands transmission access, which in turn requires widespread expansion of the current transmission infrastructure.

Under net metering, when a tribe produces more power than it consumes, "the electric meter runs backwards generating credits."[290] When the tribe "uses

284. AM. WIND ENERGY ASS'N, RENEWABLE ELECTRICITY STANDARD (RES), *available at* http://www.awea.org/legislative/pdf/RES_General.pdf.

285. *Id.*

286. *Id.*

287. *Id.*

288. Windustry, Net Metering and Net Billing, http://www.windustry.org/net-metering-and-net-billing (last visited June 30, 2010).

289. *Id.*

290. STATE ENVTL. RES. CTR., NET METERING, *available at* http://www.serconline.org/

more power than is being produced, the meter runs forward normally."[291] The tribes are "charged only for the 'net' power that they consume" from the utility "accumulated over a designated period or, if their renewable-energy-generating systems make more electricity than is consumed," the utility may pay the tribe for the excess electricity contributed to the grid over the same designated period.[292] "Because wind energy is a variable resource, the need for energy may not align exactly with its availability."[293] By connecting to the grid and participating in net metering, a wind-energy producer "can obtain the full value of the electricity produced on-site without needing expensive battery storage systems."[294]

The specific conditions within a net-metering agreement vary by jurisdiction.[295] In order to promote tribal ownership of renewable energy, a federal net-metering policy should be adopted. In the spirit of promoting renewable energy and rural prosperity, tribal owners should be compensated at the retail rate rather than the avoided cost. The retail rate represents the price of electricity that the utility charges to residential customers.[296] The avoided cost represents an estimate of what it would cost the utility to produce supplementary generation and is lower than the retail rate.[297]

Additionally, the billing cycle should be calculated annually, rather than monthly, as this reduces administrative costs to the utility and distributes the relative excesses and shortages over a greater period of time, mitigating seasonal demand fluctuations. Should an independent generator produce more energy in a given year than it consumes, that generator should have the option either to carry the net excess generation over to the following annual billing period or be compensated for the net excess generation at the retail rate.

All utilities should be required to participate in the federal net-metering policy. It should be noted that generators are not the only parties to benefit from net-metering agreements. Utilities benefit when the customer-generators provide electricity to the grid during peak demand cycles because it improves

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netmetering/index.html (last visited June 30, 2010).

291. *Id.*

292. *Id.*

293. AM. WIND ENERGY ASS'N, NET METERING, *available at* http://www.awea.org/pubs/factsheets/netmetfin_fs.pdf.

294. *Id.*

295. *See* Karl R. Rábago, *A Strategy for Developing Stationary Biodiesel Generation*, 36 CUMB. L. REV. 461, 476 (2005-2006).

296. How Much Do Wind Turbines Cost?, *supra* note 110.

297. *Id.*

the system load factor.[298] By decreasing the frequency both of billing statements and meter readings, net metering also reduces administrative costs.[299] Management of customer-generator facilities, in turn, costs less and eliminates the need for further regulation once net-metering programs are established.[300] The cost savings to all parties involved, as well as the time saved by utility companies, make net-metering agreements a constructive addition to a comprehensive federal policy encouraging renewable energy.

D. Combining the Schemes

Feed-in tariffs, a national RPS, and a federal net-metering system are all individually propitious. Taken together, they have the potential to make the United States a global leader in renewable energy by encouraging development from the ground up. A federal policy including feed-in tariffs, a national RPS, net metering, and a plan for transmission-infrastructure expansion could solve those problems facing wind-energy projects on tribal lands that are capable of resolution while simultaneously making wind production more feasible for society as a whole.

The first problem facing tribal wind production is the up-front capital required. The feed-in tariff system reduces the need for such capital as a result of the economic security provided through the system's stable structure. Second, by mandating that utilities connect generators to the grid, the feed-in tariff system, along with net metering, mitigates the rampant abuses and discrimination historically present in the regulatory structure of the transmission industry. Third, by revamping the transmission infrastructure, either by having utilities and developers share in the cost of grid interconnection and building of new infrastructure in rural areas or through the establishment of a federal plan whereby the government finances expansion of the aging transmission infrastructure, it will become feasible for tribal ventures to connect to utilities. This will allow them gainfully to participate in a market scheme that employs feed-in tariffs and net metering. Fourth, both the feed-in tariff and RPS eliminate the need for the PTC by providing stability

298. U.S. DEP'T OF ENERGY, NET METERING POLICIES, *available at* http://apps3.eere.energy.gov/greenpower/markets/netmetering.shtml (last visited June 30, 2010); *see also* Robert Means & Deborah Cohn, *Common Carriage of Natural Gas*, 59 TUL. L. REV. 529, 566 n.111 (1985) (quoting AM. GAS ASS'N, REGULATION OF THE GAS INDUSTRY GL-90 (1984)) (noting that "the load factor is '[t]he ratio of the average requirement [of power usage] to the maximum requirements [of power usage] for the same time period'").

299. Valerie J. Faden, *Net Metering of Renewable Energy: How Traditional Electricity Suppliers Fight to Keep You in the Dark*, 10 WIDENER J. PUB. L. 109, 124 (2000).

300. *Id.*

in return profits as well as income through the purchase of RECs, making partnerships with private investors obsolete. Instead, the relationship that a tribe will have with investors is that of a borrower, precluding the tribe from having to relinquish any ownership interest and thereby preserving tribal economic sovereignty. Fifth, the trust relationship also remains intact because the tribes will effectively own the project, obviating the need to enter into leases using a TERA. The only obstacle remaining is the tribe's relationship with nature. Unfortunately, no federal policy capable of solving this problem could be constructed, so the solution remains one of mitigating the negative environmental effects to the greatest extent possible.

VII. Conclusion

Within Indian Country, the United States enjoys the potential for widespread expansion of wind-energy production. The positive impact of reducing harmful pollutants, coupled with the concomitant effects of bolstering national security and providing a much-needed boost to rural economies, makes wind-energy projects on Native American land attractive to all parties involved. Though such projects are presently possible, the current regulatory framework is fraught with complications.

In order successfully to stimulate extensive development of wind-energy projects within Indian reservations, a federal policy inspired by the German model should be enacted that includes a combination of feed-in tariffs, a national RPS, and net metering, along with a comprehensive plan for expansion of the currently inadequate transmission infrastructure. Such a model would be capable of overcoming both the economic and sovereignty concerns plaguing the system currently in place.