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The Role of Community Values in Wind Energy Development: Exploring the Benefits and Applications of Community Wind for Reducing Local Opposition to Wind Energy Systems

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The Role of Community Values in Wind Energy Development: Exploring the Benefits and Applications of Community Wind for Reducing Local Opposition to Wind Energy Systems

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Introduction

Wind energy is a rapidly growing sector in US and global energy markets. As a source of electricity, wind power has several attractive attributes: wind is unlimited, plentiful and free; despite their large rotor size, wind turbines have a small footprint, so most of the land on which they are located is still usable for other activities;[1] wind turbines neither require nor emit greenhouse gases or toxic chemicals.[2] Europe leads in wind energy production, boasting 56,535 megawatts (MW) of total installed wind capacity in 2007 – an eighteen percent increase since 2006![3] Forty percent of the EU's new power installations in 2007 were wind power facilities.[4]

The United States, with its vast, windy plains and long mountain ranges, contains ample resources for wind power generation – enough to supply an estimated twenty percent of Americans' energy needs.[5] In 2007 alone, the U.S. wind energy industry installed 5,244 MW of new wind projects, increasing the country's total installed capacity to 16,818 MW (a forty-five

[1] *UPC Wind Pledges $50 Million in Bid for Molokai Ranch, Plans Wind Farm*, Energy Resource, Nov. 11, 2007. On the Hawaiian island of Moloka'I, the community is planning a wind project to generate lease revenue and to "keep the land rural and accessible for traditional uses such as farming, hunting and cultural practices." *Id.*

[2] Christina Real de Azua, *The Future of Wind Energy*, 14 Tul. Envtl. L.J. 485, 492-93 (Summer 2001).

[3] *Wind energy leads EU power installations in 2007, but national growth is inconsistent* 1, European Wind Energy Association – News Release, Feb. 04, 2008, *available at* http://www.ewea.org/fileadmin/ewea_documents/mailing/PR_040208_2007stats.pdf (last visited 05/19/2008). In 2007, Spain installed a record 3,522MW of wind energy, which now generates ten percent of Spain's power supply. *Id.* Germany, Denmark, France, Italy and the United Kingdom are also big players in the European wind energy field; Germany alone contains 22,247 MW of wind power facilities. *See* "European Union," Global Wind Energy Council, available at http://www.gwec.net/index.php?id=8 (last visited 04/14/2008); "Did you know?", Danish Wind Industry Association, available at http://www.windpower.org/en/didyouknow.htm (last visited 04/14/2008); "Wind Map," available at http://www.ewea.org/fileadmin/ewea_documents/mailing/windmap-08g.pdf (last visited 04/14/2008).

[4] *Wind energy leads EU power. . . , supra* note 3, at 2.

[5] "Wind Web Tutorial: Wind Energy Potential," American Wind Energy Association, *available at* http://www.awea.org/faq/wwt_potential.html#How%20much%20energy (last visited 04/14/2008) (citing conclusions reached by Battelle Pacific Northwest Laboratory, a federal laboratory).

percent increase) in thirty-four states.[6] Wind energy currently supplies just over one percent of U.S. electricity, or enough to power over 4.5 million homes.[7]

Compared to that in Europe, the growth of the wind industry in the U.S. has been stilted and tentative, for three reasons: (1) the uncertainty of the federal production tax credit (PTC); (2) the lack of transmission lines connecting wind power facilities to local utility grids; and (3) local cultural and aesthetic objections to wind turbines, which will be the focus of this paper.

Acceptance of wind energy systems in the U.S. has been inconsistent, sometimes varying dramatically between adjoining towns.[8] Wind projects face formidable opposition from local residents, primarily in the form of aesthetic or cultural objections to wind turbines and their accompanying roads and transmission lines.[9] Many individuals, particularly those living in rural communities, believe on a visceral level that their area isn't the "kind of place" where wind turbines should be located.[10] These communities often use zoning ordinances to restrict the construction of large or residential-scale wind turbines. Alternately, some objectors take a common law approach, arguing that a turbine or wind farm constitutes a nuisance.[11] Even environmentalists – presumably supporters of clean energy - have raised significant opposition to wind turbines because of their oft-cited (and exaggerated) tendency to birds and bats.[12]

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[6] "Another record year for new wind installations," American Wind Energy Association (AWEA), *available at* http://www.awea.org/pubs/factsheets/2008_Market_Update.pdf (last visited 05/19/2008).
[7] *Id.*
[8] *See generally* Ecogen, LLC v. Town of Italy, et. al, 438 F.Supp.2d 149 (W.D.N.Y. 2006) (upholding the town of Italy's one-year moratorium on wind turbine construction, despite the acceptance and enthusiasm for wind energy development in the neighboring down of Prattsburgh, NY).
[9] *See* Avi Brisman, *The Aesthetics of Wind Energy Systems*, 13 N.Y.U. Envtl. L.J. 1, 7-8 (2005).
[10] *See id.*
[11] *See generally* Rassier v. Houim, 488 N.W.2d 635 (N.D. 1992); Rose v. Chaikin, 453 A.2d 1378 (N.J. Super. Ch. 1982).
[12] *See Environmentalists Appear to Be Wind's Biggest Enemy*, RedOrbit.com: Science, 02/18/2008, *available at* http://www.redorbit.com/news/science/1258373/environmentalists_appear_to_be_winds_biggest_enemy/ (last visited 05/20/2008).

Essentially, most wind projects suffer from an imbalanced allocation of costs and benefits: their costs (aesthetic and cultural) are concentrated among residents of their host communities, whereas their benefits (cleaner air, energy) are diffused over large geographic regions.[13] Financial benefits from wind turbines flow primarily to the projects' owners and land lessors[14]. Some states and municipalities have encouraged the presence of wind energy facilities by instituting permissive zoning ordinances, tax credits, and renewable energy production incentives. However, these programs do little to correct the imbalance of costs and benefits: they increase rewards to developers, while offering little to local residents.[15] Solutions to wind project hostility must also address the other side of the equation by lowering the costs for residents.

Community wind is a model of wind energy development that has achieved unique success in reducing local resistance. Proponents of community wind understand that the aesthetic and cultural values of residents are not necessarily fixed; as John Darley noted, "perception is in fact a decision process . . . it involves a good deal of past learning, often confirms stereotypes and generally sees what we expect to be there."[16] Most wind projects have little to offer local residents that would make the turbines seem attractive, aesthetically or culturally. Community

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[13] *Cf. HSPH Report Quantifies Health Impact of Air Pollution From Two Massachusetts Power Plants*, Harvard School of Public Health – Press Releases, May 04, 2000, *available at* http://www.hsph.harvard.edu/news/press-releases/archives/2000-releases/press05042000.html (last visited 04/14/2008) (presenting conclusions that living near a coal or oil plant dramatically increases incidences of asthma and respiratory disease).

[14] *See* Ali Velshi, *Billionaire oilman backs wind power*, CNN.com, May 20, 2008, *available at* http://www.cnn.com/2008/US/05/19/pickens.qa/index.html (last visited 05/20/2008) (interviewing wealthy Texan T. Boone Pickens about his proposed wind farm, which he expects to generate $20,000 per year per turbine in royalty income, part of which will compensate the neighbors whose land he will lease for turbine placement). Local municipalities receive the financial benefit of the wind facility's property taxes, but these gains may seem intangible to local citizens who do not lease their land to the wind companies. *See* "Wind Energy Facts and Myths: 'No Benefits,'" Ifnotwind.org – a website of the American Wind Energy Association (AWEA), *available at* http://www.ifnotwind.org/myths/myth-benefit.shtml (last visited 05/20/2008).

[15] *See* Antoinette Alberti,: Siting – Local Approvals, *at* Financing Wind Power: The Future of Wind Energy (May 8, 2008) (noting that "aside from economic benefits, most benefits of wind energy are global and most negatives are local").

[16] John M. Darley, *The Cognitive and Social Psychology of Contagious Organizational Corruption*, 70 Brook. L. Rev. 1177, 1182 (2004-2005).

wind increases the local appeal of wind turbines by using local ownership, services and utility grids to concentrate the economic benefits of wind power in the communities that produce it.[17] In doing so, community wind creates advocates that counteract local opposition to wind projects.[18]

In this paper, I will first discuss the aforementioned challenges facing wind projects: the PTC, transmission lines, and local opposition. Next, I will describe the workings of the community wind model and demonstrate how it overcomes the third obstacle – local opposition - by reframing residents' aesthetic and cultural perceptions of wind turbines. Finally, I will present my proposal for applying the community wind model in a suburban context, through the mechanism of the homeowner's association (HOA). I will show how HOAs are uniquely situated to implement community wind to lower their energy costs, provide affordable housing, enhance local schools, and shift Americans' perception of wind farms in a more positive direction.

Part I: Challenges Facing Wind Energy Development

A. Financial Uncertainty: The Federal Production Tax Credit

[17] Lisa Daniels, Presentation: Community Wind, *at* Financing Wind Power: The Future of Wind Energy (May 8, 2008); *see also* "Community Wind," Windustry, *available at* http://www.windustry.org/communitywind (last visited 05/20/2008).

[18] *Id.* For non-taxable entities exempt from the PTC - state and local governments, municipalities, rural electric cooperatives, Native American tribal governments, and non-profit organizations - Clean Renewable Energy Bonds (CREBs) provide federal funds to entities that wish to finance renewable energy projects. The federal government issues the bonds, then uses tax credits to pay the interest, creating an interest-free source of financing. *See* Community Wind Development Handbook 66, Rural Minnesota Energy Board, *available at* http://www.auri.org/research/communitywindstudy/community_wind_study.htm (last visited 05/20/2008) (hereinafter *Minnesota Community Wind Handbook*).

The PTC is the primary tool for financing U.S. wind energy projects.[19] A federal tax credit located in Section 45 of the Internal Revenue Code, the PTC currently awards the owner of a wind project 2.1 cents per kilowatt hour of electricity produced and sold to an unrelated person, for a ten-year period that begins on the facility's date of activation.[20] Since its creation as part of the Energy Policy Act of 1992, the PTC has expired three times, yet has consistently been reactivated by Congress due to intense lobbying.[21] However, by repeatedly extending the PTC in only one-year increments, Congress has burdened the U.S. wind industry with enormous uncertainty, which has hindered its growth.[22] Wind power facilities are extremely capital-intensive, with commercial wind turbines costing (in 2006) $1.4 to $2.1 million per MW of installed capacity.[23] Siting wind turbines requires lengthy meteorological research and permitting processes at state and local levels, which may span several years. Moreover, due to high demand yet limited manufacturing of turbines, equipment orders must be placed one to two years in

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[19] James F. Duffy, Esq., Presentation: Pre-Conference Wind Basic Panel, *at* Financing Wind Power: The Future of Wind Energy (May 7, 2008).

[20] *Id*. The value of PTC decreases by up to 50 percent if a wind project receives federal, state or local grant money, state or local tax exemptions, or subsidized energy financing. *Id.* The 2.0¢/kWh PTC applies to electricity generated by wind, closed-loop biomass and geothermal energy production; electricity from open-loop biomass, small irrigation hydroelectric, landfill gas, municipal solid waste resources, and hydropower receives only 1.0¢/kWh. "Renewable Energy Production Tax Credit," DSIRE: Federal Incentives for Renewable Energy, Feb. 13, 2008, *available at* http://www.dsireusa.org/library/includes/incentive2.cfm?Incentive_Code=US13F&State=Federal%C2%A4tpageid=1 (last visited 05/19/2008).

[21] "Renewable Energy Tax Credit Extended Again, but Risk of Boom-Bust Cycle in Wind Industry Continues," Union of Concerned Scientists, Feb. 14, 2007, *available at* http://www.ucsusa.org/clean_energy/clean_energy_policies/production-tax-credit-for-renewable-energy.html (last visited 05/19/2008).

[22] *Id.*; *see also* Dennis J. Duffy, Presentation: Federal Incentives for Wind Energy *at* Financing Wind Power: The Future of Wind Energy (May 08, 2008).; Brisman, *supra* note XXX, at 132-33 (noting that "in order for wind energy to achieve more of its potential in the United States, this country needs a permanent extension of the PTC . . .").

[23] "How much do wind turbines cost?", Windustry, available at http://www.windustry.org/how-much-do-wind-turbines-cost (last visited 05/19/2008).

advance.[24] Because they require substantial capital investments and advance planning, wind projects are particularly vulnerable to the potential yearly expiration of their main method of financing. Thus, for the U.S. wind industry to truly exploit its natural potential, the PTC must be extended for longer increments.

B. Logistical Hurdles: Transmission Lines

Because rural areas contain fewer physical and political obstacles to wind power, developers are eager to locate their wind projects in these regions. However, these sparsely populated sites come with a caveat: they rarely contain sufficient existing transmission lines to carry the electricity generated to large electrical grids, where wind power enters the utility market. Wind energy developers are reluctant to build where transmission lines do not exist, yet utilities are equally reluctant to install transmission in areas that do not yet have power generators.[25] Moreover, wind farms can be constructed five times more quickly than transmission lines.[26] Currently, wind project developers must bear the expense of building both transmission lines and substations, as well as upgrading the capacity of the downstream power grid to handle the wind farm's influx of power.[27] Building one mile of 115-kilovolt transmission line costs approximately $286,000 on "ideal terrain" (flat, no major obstructions) – on a mountainside, the price climbs even higher![28] New transmission lines may also impose heavy

[24] Eric White, Presentation: Pre-Conference Wind Basic Panel, *at* Financing Wind Power: The Future of Wind Energy (May 08, 2008).
[25] "Wind Energy Transmission," State Energy Conservation Office, *available at* http://www.seco.cpa.state.tx.us/re_wind-transmission.htm (last visited 05/19/2008).
[26] *Id.*
[27] White, *supra* note 24. If a developer installs more grid capacity than his project requires, and a later developer uses that excess capacity (called "headroom"), the first developer can recover the cost difference for the excess capacity installed. *Id.*
[28] "Wind: Transmission Line Costs," Energy Information Administration: Background Information and 1990 Baseline Data Initially Published in the Renewable Energy Annual 1995, last modified May 02, 2001, *available at*

transaction costs upon a wind project in the form of "kitchen-table" negotiations with landowners, in order to secure easements allowing the transmission line to cross their property.[29]

In Texas, lawmakers have addressed the problem of transmission lines through various incentives. In September 2005, Texas Senate Bill 20 set ambitious renewable energy goals for Texas, and required the Texas Public Utility Commission (PUC) to designate "competitive renewable energy zones" (CREZ), then develop a plan to expand generous transmission capabilities to those zones.[30] In July 2007, responding to a proposed commitment of $10 billion from private companies to increase Texas wind generation, the PUC approved construction of additional transmission lines to windy areas of the state. [31] By including provisions for the expansion of transmission lines in Senate Bill 20, the Texas legislature has demonstrated a strong commitment to facilitating current and future wind energy projects in this state.

C. Local Approval: Aesthetic/Cultural Objections

1. Understanding the Role of Perceptions and Values

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http://www.eia.doe.gov/cneaf/solar.renewables/renewable.energy.annual/backgrnd/chap10h.htm (last visited 05/19/2008).

[29] White, *supra* note 24.

[30] Bill SB20, Legislative Session: 79(1), Senate Bill 20 (1st C.S.), Senate Author: Fraser, Effective: 9-1-05, House Sponsor: King, Phil et al., *available at* http://www.capitol.state.tx.us/BillLookup/BillSummary.aspx?LegSess=791&Bill=SB20 (last visited 05/19/2008). The Electric Reliability Council of Texas (ERCOT), which operates the state's electric grid, published a report called "Analysis of Transmission Alternatives for Competitive Renewable Energy Zones in Texas" in December 2006. This report identified twenty-five geographic areas that qualified as CREZs, based on the quality of the wind and the availability of transmission service in that area. The PUC narrowed this list down to eight areas, and their interim final order recommends expanding transmission capabilities in these areas from 10,000 MW to 22,806 MW. *See* "Wind Energy Transmission," *supra* note 25 (summarizing and providing links to Senate Bill 20, the ERCOT report, and CREZ maps.)

[31] "Wind Energy Transmission," *supra* note 25.

The most-cited cause of opposition to large wind energy projects is their potential aesthetic impact on the surrounding environment.[32] Wind turbines are noticeable. To maximize the power of the wind, utility-scale turbines must reach high above the tree line (up to 442 feet from base to rotor tip) and their blades must span a broad distance (up to 295 feet).[33] Particularly for residents of an area known for its scenic value, the presence of wind turbines, and the access roads necessary to maintain them, may seem to diminish or destroy the unique rural character of their region.[34] Concerns about the aesthetic impact of wind turbines on local scenery have prompted some municipalities to declare a moratorium on the construction of wind projects in their town, which courts have upheld.[35]

[32] Aside from aesthetic concerns, those who object to wind farms often express fears about the project's effect on neighboring property values. However, the Renewable Energy Policy Project (REPP) conducted a study to assess the impact of wind development on local property values between 1998 and 2001, ultimately concluding that wind farms had no negative effect – but rather, a neutral or positive effect – on the property values within their viewshed. *See* George Sterzinger, et. al, *The Effect of Wind Development on Local Property Values* 9, Renewable Energy Policy Project, May 2003, available at http://www.powernaturally.org/Programs/Wind/toolkit/21_impactsonpropertyvalues.pdf (last visited 05/20/2008). Many online handbooks for siting residential turbines also refer to the REPP study as evidence of small turbines' neutral impact upon nearby property values. *See* Permitting Small Wind Turbines: A Handbook – Learning From the California Experience (PowerPoint presentation) 17, *available at* http://www.awea.org/smallwind/documents/PERMITTINGGUIDEREVIEW.pdf (last visited 04/08/2008); *see also* Michael S. Bergey, *Does a small wind turbine installation diminish property values?*, American Wind Energy Association: Wind Energy FAQ, April 23, 1997, *available at* http://www.awea.org/faq/propvalue.html (last visited 04/12/08) (letter from president of Bergey Windpower, Co., w wind turbine supplier, insisting that no property owners have ever reported diminished property value as a result of their small wind systems).

[33] "How Big is a Wind Turbine?", American Wind Energy Association, *available at* http://www.awea.org/faq/wwt_basics.html#How%20big%20is%20a%20wind%20turbine (last visited 04/14/2008).

[34] Ecogen, 438 F.Supp.2d at 153 (describing how, in passing its moratorium on construction of wind turbine towers, the Board stated that "a principal concern is the scenic and aesthetic attributes of the Town of Italy as they relate to the use of land in the Town for residential, recreational and tourism purposes"); *see also* Brit T. Brown & Benjamin A. Escobar, *Wind Power: Generating Electricity and Lawsuits*, 28 Energy L. J. 489, 496-97 (2007).

[35] *See id.* at 159, 162 (upholding Town of Italy's moratorium on wind turbine construction, but requiring the town's Board to, in the near future, either enact a comprehensive zoning plan or render a decision on the developer's application for a hardship exception); *see also* Ernest Smith, *Wind Energy: Siting Controversies and Rights in Wind*, 1 Envt'l & Energy L. & Pol'y J. 281 (Spring 2007).

Aesthetic preferences and local cultural values are largely the product of social norms that influence what members of a particular community value as "beautiful" and "appropriate."[36] The boundaries of these categories are enforced (and reinforced) through explicit and implicit social messages that reverberate within a community over many years.[37] For example, many people view wind turbines as an ugly mechanical encroachment, inappropriate for their "unspoiled" natural landscape.[38] In Brander v. Town of Warren Town Board,[39] the court elegantly explained:

> "the introduction of the sleek ultra-modern four hundred foot tall kinetic wind turbines . . . throughout this landscape forever alters and changes the rural setting, which itself . . . serves as the backdrop of the architectural and cultural heritage of these communities."[40]

Communities such as those in Brander populate their understandings of "beautiful" and "appropriate" with certain images: trees, mountains, prairies, etc. More importantly, they define their community as one which embraces and protects these basic values. Even if residents generally view attributes like "renewable" or "taxable" as positive, these concepts may not be a part of their community's understandings of "beautiful" or "appropriate." Thus, simply insisting to these individuals that, because a wind turbine generates clean energy, it should also be perceived as "beautiful" and "appropriate" is not only unrealistic – it's insulting.

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[36] Joan Iverson Nassauer, *Cultural Sustainability: Aligning Aesthetics and Ecology*, in Placing Nature (Joan Nassauer, ed. 1997) (arguing that aesthetic conventions are a uniquely powerful form of social control), *cited in* Kimberly L. Smith, *Mere Taste: Democracy and the Politics of Beauty*, 7 Wis. Envtl. L.J. 151, 160 (2000).
[37] Pierre Bourdieu, Outline of a Theory of Practice 79, 86 (Richard Nice trans., Cambridge University Press 1977) (1972) .
[38] *See* Brisman, *supra* note 9, at 77 (2005) (quoting a wind project objector in Vermont's Glebe Mountains: "We'd be giving up something that is quite precious in Vermont – what you might call the purity of Vermont's ridgelines.").
[39] Brander v. Town of Warren Town Board, 847 N.Y.S.2d 450, 2007 N.Y. Slip Op. 27498 (N.Y. Sup. 2007).
[40] *Id.* at 456 (holding that the town board failed to adequately review, analyze, and mitigate potential adverse environmental impacts).

Although social norms are not necessarily fixed, they are stubborn and enduring because they often operate on a subconscious level.[41] Altering aesthetic preferences and cultural values necessitates not simply stretching the boundaries of "beautiful" and "appropriate," but rather, reimagining the meanings of the categories themselves.[42] On a more tangible level, shifting entrenched preferences and values – for example, by making wind turbines seem "beautiful" or "appropriate" in a scenic landscape – may be achieved by reallocating the benefits and burdens of wind energy, prompting residents to reconsider what it means, in *their* community, to be "beautiful" or "appropriate."[43] As I will discuss in Part II, I believe that the model of community wind could stimulate this process by localizing more of the benefits of wind power.

A community's perceptions about its "natural" or "unspoiled" regional culture often encompass another aspect: "peace and quiet." Many areas well-suited for wind energy are attractive to residents because they offer an escape from the artificial sounds of more developed regions. When developers or private landowners propose building wind turbines in these environments, residents sometimes respond with a common-law remedy: nuisance claims.[44]

Turbine blades produce a "wooshing" sound when they spin;[45] whether this noise is audible or bothersome over that of the wind itself, has been the subject of much dispute.[46] In

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[41] *See* Bourdieu, *supra* note 37, at 82.
[42] For some individuals, exposure to other aesthetic and cultural values through travel or study reshapes their own perceptions of "beautiful" and "appropriate"; aware of the social norms of others, they see their home communities with "new eyes."
[43] *See* Int'l Energy Agency, *Benign Energy? The Environmental Implications of Renewables* (1998), *available at* http://www.iea.org/textbase/nppdf/free/1990/benign1998.pdf (last visited 05/20/2008) ("Deployment experience has shown reduced perception of visual amenity impacts where the local community can see the benefits of a scheme, either from directly using the wind energy or from seeing existing fossil fuel stations displaced."), *quoted in* Brisman, *supra* note 9, at 80; *cf.* Brisman, *supra* note 9, at 94 (noting that, for some Dutch artists, windmills were simply "part of" the landscape, rather than objects of note).
[44] Nuisance claims regarding wind turbines generally include concerns about a "strobe" effect, ice throws, and apprehension of the turbine falling or the blades breaking; however, the noise issue has proven the most persuasive.
[45] The machinery of turbines also produces a slight mechanical sound. *See* Int'l Energy Agency, *supra* note 43, *cited in* Brisman, *supra* note 9, at n.196.

Rose v. Chaikin,[47] the court held that a sixty-foot residential turbine in the seaside town of Brigantine, New Jersey constituted an actionable nuisance, because the turbine's sound was "particularly alien" to the area, which was characterized by sounds of "the sea, the shore birds, the ocean breeze – [which] are soothing and welcome."[48] However, since Rose was decided in 1982, many states have enacted statutes supporting the development of alternative energy sources, so modern nuisance lawsuits may strike a different balance between the social equities of wind turbines.[49]

Wind energy projects ideologically divide two groups of environmentalists: those concerned with increasing the use and availability of renewable energy, and those intent on protecting endangered species and natural landscapes.[50] Environmentalism is itself a cultural perception about one's surroundings:[51] if residents view their community as an unofficial wildlife habitat, they are likely to object when turbines seem to threaten this cultural identity. Some early wind farms were designed with little regard for the dangers they presented to birds

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[46] *See* Rassier v. Houim, 488 N.W.2d 635, 638 (N.D. 1992) (alleging that the sound of a neighbor's turbine drowns out conversations and interferes with sleep).
[47] Rose v. Chaikin, 453 A.2d 1378 (N.J. Super. Ch. 1982).
[48] *Id.* at 1382. Yet, ten years later, in Rassier v. Houim, a residential turbine was not an actionable nuisance when the complaining neighbor had "come to the nuisance" by purchasing his property with knowledge of the turbine's presence next door. 488 N.W.2d 635, 638 (N.D. 1992).
[49] Ernest Smith, *supra* note 35, at 281. In a rare nuisance lawsuit against a large wind farm, Burch v. Nedpower Mount Storm, LLC, the Supreme Court of Appeals of West Virginia found that nearby residents' claim of noise could be considered an abatable nuisance, for which they could seek compensation for any diminution in their property value caused by the turbines. 647 S.E.2d 879, 889, 891 (W.Va. 2007). Despite this lawsuit, Nedpower progressed with the construction of the Mount Storm wind facility; by March 2008, 82 turbines had been erected. *See* Mona Ridder, *Mount Storm wind farm project behind schedule*, Cumberland Times-News, March 08, 2008, *available at* http://www.times-news.com/local/local_story_068234902.html (last visited 04/10/2008).
[50] *See Environmentalists Appear to Be Wind's Biggest Enemy*, *supra* note 12.
[51] *Cf.* Kimberly Smith, *supra* note 36, at 158-59 ("[T]he pursuit of natural beauty may represent other, non-aesthetic concerns [including] an intellectual satisfaction with the *idea* of pristine wilderness . . . [S]ome environmentalists suggest that aesthetic interest is essentially an anthropocentric interest, a misguided attempt to value nature only insofar as it relates to human needs and desires.").

and bats.[52] However, modern wind turbines are far more bird- and bat-friendly: their smooth, widely spaced towers discourage perching, and their longer, slow-moving blades are less likely to intercept flying species.[53] Moreover, wind project planners must now conduct detailed avian impact studies before and after wind farms are constructed.[54] Recent studies indicate that each U.S. wind turbine kills only one or two birds per year, compared to the estimated 100 million to over 1 billion yearly avian fatalities due to collisions with man-made structures and attacks by house cats.[55] However, like negative aesthetic perceptions of wind turbines, the view that turbines slaughter birds endures among many groups.[56]

2. Regulatory Ramifications

Because the drafters of most zoning ordinances never conceived of a large wind farm in their municipality, many ordinances – particularly in rural areas – impose strict use, setback, and

[52] The wind farm most notorious for avian mortality is the Alamont Pass wind farm, about sixty miles east of San Francisco. Developers of this project – constructed in the early 1990s - used turbines with small blades atop lattice structures, and situated them close together in a canyon that served as a habitat and migratory route for thousands of birds, particularly raptors. The raptors would perch on the lattice towers and prey upon the animals on the ground, but when ascending, collided with the spinning blades, which earned the nickname "condor Cuisinarts." During a three-year period, the Alamont Pass turbines killed more than 33,000 threatened gold eagles and seventy-five other raptors (such as red-tailed hawks), establishing the popular notion that wind turbines are deadly for bird and bat populations. *See* Brisman, *supra* note 9, at 70-73; *see also* "Wind Energy and Wildlife: Lessons Learned," Ifnotwind.org – a website of the AWEA, *available at* http://www.ifnotwind.org/wildlife/wildlife-lessons.shtml (last visited 05/20/2008) (discussing the Alamont Pass wind farm and modern avian impact methods); John Ritter, *Wind Turbines Taking Toll on Birds of Prey*, USAToday.com, Jan. 04, 2005, *available at* http://www.usatoday.com/news/nation/2005-01-04-windmills-usat_x.htm (last visited 05/20/2008).

[53] Many of these developments in turbine spacing and blade length are also, fortunately, more efficient for the production of wind energy. *See* Wind Farm Area Calculator, National Renewable Energy Laboratory: Power Technologies Energy Data Book, *available at* http://www.nrel.gov/analysis/power_databook/calc_wind.php (last visited 04/09/2008).

[54] These mitigation studies monitor the presence of local and migrating bird and bat populations, determine rates of avian mortality, and sometimes assess fines upon the owners of the wind farm for each bird or bat killed. *See*

[55] Brisman, *supra* note 9, at 71-72.

[56] *See* Eric Rosenbloom, *A Problem with Wind Power*, in Opposing Viewpoints: Global Resources, Gale, 2007, *available at* http://www.aweo.org/ProblemWithWind.html (last visited 05/20/2008).

height limitations on structures, which effectively prohibit the construction of wind turbines.[57] Thus, wind developers typically lobby for a permits, variances or zoning changes to build their projects.[58] The zoning board public hearing has become a battleground for wind farm developers confronted with angry local residents who vehemently oppose their projects.[59]

In a residential setting, especially in rural or historical neighborhoods, neighbors may feel that a small turbine detracts from, or alters, the character of the community. The Supreme Court of Vermont upheld the denial of a permit for a small wind turbine in a rural area, [60] because the property owner had failed to explore alternative suitable sites on his property that would mitigate the turbine's detrimental impact upon neighbors' view of the Green Mountains. [61] The court distinguished this case from another where the zoning board had approved a "very visible" residential wind turbine, because that turbine was "not out of character with the less rural surroundings which included: residences, barns, silos, farm machinery, tall telephone poles and other large working structures."[62] The subjective, *ad hoc* nature of aesthetic judgments involving wind turbines introduces uncertainty into the time- and capital-intensive process of wind energy development, which may "chill" a landowner's desire to install a turbine.

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[57] *See* Johnecheck v. Bay Township, 119 Fed.Appx. 707, 708 (6th Cir. 2004) (affirming township's legitimate interest in regulating the location and size of 300-foot wind turbines within its agricultural district, despite plaintiffs' assertion that "wind farming" qualified as a specialized type of farming).

[58] Roberts v. Manitowoc County Bd. of Adjustment, 295 Wis.2d 522, 528 (Wis. App. 2006) (discussing the Manitowoc County Wind Energy System Ordinance, which requires wind energy developers to obtain a conditional use permit for their projects).

[59] *See* Alberti, *supra* note 15 ("The local permitting process is the most risky and the most political.")

[60] In re Hanlon, 811 A.2d 161 (Vt. 2002).

[61] *Id.* at 162-63,165. The Court applied the two-pronged "Quechee test," which first asks whether a project will have an adverse impact on aesthetics and the scenic and natural beauty an area because it would not be in harmony with its surroundings, then determines whether the adverse impact would be "undue."*Id.* at 163. Hanlon's turbine would have stood 100 feet tall, with blades twenty-three feet in diameter, 450 feet from a neighbor's residence and well above the tree line.

[62] In re Blittersdorf, CPG NM-11 (May 26, 2000), *cited in* Hanlon, 811 A.2d at 165. Additionally, the turbine in Blittersdorf was situated 1300 feet from the nearest neighbor and only marginally disturbed his view of the Adirondack Mountains. *Id.* at 166.

When faced with proposals from wind developers – or in anticipation of them – some towns have altered their zoning ordinances to expressly facilitate the development of wind farms. Mason City, Iowa passed a zoning ordinance specifically intended for wind projects, which seeks to "balance the need for clean, renewable energy resources [with] the necessity to protect the public health, safety and welfare of the community."[63] The ordinance is the first in Iowa to allow wind turbines in commercial, residential and industrial areas.[64] In May 2001, the city of Oakland, CA enacted an expedited-permit wind zoning ordinance in response to rolling blackouts.[65] Yet other towns have used zoning ordinances or moratoria to prohibit wind turbines outright.[66]

Towns may also use their tax system to channel wind development geographically, through property tax reductions and production credits. Flint Hills, Kansas is home to approximately two-thirds of the United States' remaining four percent of original tallgrass prairie.[67] To preserve the prairie without wasting Kansas' wind resources, the state collaborated with Flint Hills municipal authorities to designate 4,760 square miles of prairie – the "Heart of Flint Hills" - as especially worthy of preservation.[68] A Kansas Senate bill proposed that, should

[63] Tricia Sandahl, Mason City Iowa: Zoning For Wind Energy Conversion Systems, 12-33-1 (February 21, 2006).
[64] Judy Keen, *Windmills are sprouting on hillsides across the Midwest, but this city is encouraging the use of electricity-producing wind turbines everywhere — even in homeowners' backyards*, USA Today, Feb. 23, 2006, *available at* http://www.usatoday.com/tech/news/2006-02-23-windmills-midwest_x.htm (last visited 04/09/2008). To balance local and commercial interests, the ordinance sets a maximum height of 350 feet for large wind turbines and 100 feet for small turbines – which may only be located in "rear yards" - while prohibiting the development of "commercial wind energy development systems," defined as those which produce energy for use primarily off-site (rather than on-site). *See* Tricia Sandahl, *id*, at 12-33-1, 12-33-3, 12-33-5, 12-33-6.
[65] Peter Asmus, *Local Governments Key to Distributed Renewable Technology Successes*, Local Government Commission, Nov/Dec. 2001, *available at* http://www.lgc.org/freepub/energy/newsletter/nov_dec2001/page02.html (last visited 05/20/2008). The ordinance limited review of solar PV and small wind turbine systems to five days, and waived application fees of $397 to $1,088. *Id.*
[66] *See* Ecogen, 438 F.Supp.2d at 162 (upholding Town of Italy's moratorium on wind turbine construction).
[67] Brian Dietz, *Turbines vs. Tallgrass: Law, Policy, and A New Solution to Conflict Over Wind Farms in the Kansas Flint Hills*, 54 U. Kan. L. Rev. 1131, 1133 (May 2006).
[68] *Id.* at 1138.

the federal PTC expire at the end of 2007, the state would provide an identical income tax credit to all wind farms except those located in the "Heart of Flint Hills."[69]

Part II: Community Wind

A. How Community Wind Works - the Nuts & Bolts

Community wind is an alternative to traditional models of wind energy production, in which turbines are owned by – and primarily benefit – corporations or individual landowners. In community wind, projects of any size are partially or wholly owned by local residents, enabling them to earn benefits beyond simply tax revenues and lease payments, as well as diversifying local economies.[70] Participants in community wind projects include farmers, investors, businesses, schools, utilities, and other public or private entities.[71] For residents who don't own a stake in the project, community wind creates skilled, long-term employment by training locals to operate and maintain the turbines.[72] Local materials and equipment are used whenever possible to stimulate the community's economy and reduce wear on roads.[73] Additionally, the electricity generated by community wind projects is typically directed to local uses or sold to third parties at a premium rate, with profits directed into a public fund. Because local citizens have a greater stake in the ownership and benefits of community wind projects, this model facilitates education

[69] *Id.* at 1161.
[70] *See Minnesota Community Wind Handbook*, *supra* note 18, at 7-8; *see also* Arne Kildegaard & Josephine Myers-Kuykindall, *Community vs. Corporate Wind: Does it Matter Who Develops the Wind in Big Stone County, MN?* 21, Research Report Prepared in Fulfillment of IREE Grant No. SG P4c 2004, Sept. 2006 (concluding that community wind has "5 times the economic impact on local value added, and 3.4 times the impact on local job creation, relative to a corporate-owned development").
[71] *Id.* at 7.
[72] *Id.* at 8.
[73] Daniels, *supra* note 17.

and consensus-building, which is crucial in a growing industry repeatedly stunted by public outcry and lawsuits.[74]

A key component of community wind projects is net metering, which enables electricity producers to "credit" their production toward their net electricity consumption when paying their utility bills.[75] By allowing producers to "bank" energy credits until they are needed, net metering compensates for the intermittent nature of wind resources.[76] Under Section 210 of the federal Public Utilities Regulatory Policy Act (PURPA), individual energy producers can receive full retail value for energy they produce and use personally, but if they produce a surplus of energy, the utility will repurchase it at wholesale prices, rather than higher retail prices.[77] A new application of net metering, called "virtual metering," would permit towns to produce renewable energy in one location, then direct those credits to any municipal electricity account.[78] Through virtual metering, municipalities could more precisely allocate the power generated by community wind projects.[79]

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[74] *See Minnesota Community Wind Handbook*, *supra* note 18, at 9.
[75] "What are 'Net Billing' and 'Net Metering'?", American Wind Energy Association: Wind Energy FAQ, *available at* http://www.awea.org/faq/netbdef.html (last visited 04/11/2008) (hereinafter *Net Billing*).
[76] *Id.*
[77] Public Utility Regulatory Policies Act of 1978 (PURPA) §210, 16 U.S.C. §824a-3 (2000), *amended by* The Energy Policy Act of 2005 (EPAct 2005), Pub. L. No. 109-58, § 1253(a), 119 Stat. 594 (2005); *see also* New PURPA Section 210(m) Regulations Applicable to Small Power Production and Cogeneration Facilities, 18 CFR Part 292, U.S. Federal Energy Regulatory Commission (issued Jan. 19, 2006), *available at* http://www.ferc.gov/whats-new/comm-meet/011906/E-3.pdf (last visited 05/21/2008). Currently, thirty states require at least some utilities to offer a form of net metering to owners of small wind systems. *Net Billing*, *supra* note 75; *see also* "Net Metering Programs By State," U.S. Department of Energy: The Green Power Network, *available at* http://www.eere.energy.gov/greenpower/resources/maps/netmetering_map.shtml (last visited 04/12/2008). Some cities have also passed net metering laws. In 1996, the city of Ashland, Oregon committed itself to purchasing up to 1,000 kWs of excess energy per month – at full retail price, not wholesale prices – from small wind or solar generation resources. *See* "Local Net Metering Laws," Database of State Incentives for Renewables & Efficiency, *available at* http://www.greenpowergovs.org/wind/Ashland%20net%20metering.html (last visited 04/11/2008).
[78] Matt Auten & Jim Seveny, *The Power of Community Wind*, *available at* http://www.projo.com/opinion/contributors/content/CT_auten23_03-23-08_AL9E7BK_v16.39c7df5.html (last visited 04/12/2008).
[79] For example, the nearly-completed 1.5MW wind turbine at Portsmouth High School in Rhode Island, which will generate more electricity than the school uses, could apply its surplus power to the utility bills of the fire station. *Id.*

The economic structures of community wind projects range from simple to highly complex. Municipalities may simply install a wind turbine on municipal property, such as a school, then direct its electricity to a municipal use or sell it to a local utility.[80] In 2001, the town of Hull, Massachusetts installed a 660kW wind turbine near the local high school.[81] The turbine is owned and operated by the Hull Municipal Light Plant, which funnels the power generated directly into the community grid. Residents gain both tangible[82] and intangible benefits[83] from the turbine, which paid for itself in less than five years.[84] In May 2006, Hull installed a second, larger turbine (1.8 MW) on a closed municipal landfill.[85] Currently, Hull plans to install four offshore wind turbines by 2009, which would supply the remainder of the town's energy needs.[86]

A more complex, but increasingly popular, economic structure for community wind projects is the "Minnesota flip" structure, which involves a partnership or LLC formed by corporate investors and local developers. As limited partners, the investors provide the bulk of the initial capital, which enables them to collect federal tax credits under the PTC; in contrast, the general partners (local developers) contribute very little capital, perhaps only one percent.[87] However, at the end of ten years – when the PTCs expire - majority ownership of the project

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[80] Kildegaard & Myers-Kuykindall, *supra* note 70, at 3. This model also provides a unique educational opportunity for residents, particularly when the turbine is located near a school.
[81] *See* Manwell et. al, *Wind Turbine Siting in an Urban Environment: The Hull, MA 660kW Turbine* 4, Renewable Energy Research Laboratory, University of Massachusetts at Amherst, *available at* http://www.ceere.org/rerl/publications/whitepapers/AWEA_Hull_2003.pdf (last visited 05/21/2008).
[82] Because of the turbine, the Municipal Light Plant was able to "cancel" the town's bill for streetlights *Id.*
[83] Annually, the turbine offsets 1,200 tons of carbon dioxide, seven tons of sulfur dioxide and five tons of nitrogen oxides. Andrew Stern, Presentation: Community Wind Panel, *at* Financing Wind Power: The Future of Wind Energy (May 9, 2008).
[84] *Id.* This feat was accomplished through a combination of energy savings and financial incentives. *Id.*
[85] *See generally* Hull Wind, *available at* www.hullwind.org/history.php (last visited 05/20/2008). This turbine was financed by a ten-year Renewable Energy Credit deal between Hull and Harvard University. To date, the two turbines in Hull have generated 9,910,964kWh and 7,488,305 kWh of electricity, respectively. *Id.*
[86] *See id., see also* Stern, *supra* note 83.
[87] If a project has more than one owner, Section 45(e)(3) of the Internal Revenue Code provides that PTCs will be shared by the owners in proportion to their respective ownership interests in the gross electricity sales of the facility. James Duffy, *supra* note 19.

"flips" to the local developers.[88] According to Internal Revenue Procedure 2007-65, "flip" transactions may receive an audit "safe harbor" if they comply with certain provisions to verify their legitimacy.[89]

States have instituted a vast array of financial incentives to develop renewable energy, including: rebates, grants, loans, bonds, production incentives, and modifications to personal, corporate, property, and sales taxes.[90] In fifteen states, "systems benefit charges" (SBCs) redistribute funds from traditional energy consumers to promote innovation in, and production of, renewable energy.[91] For example, in Oregon, a state Energy Trust charges customers of public utilities an extra three percent SBC, which it uses to cover the difference between renewable energy rates and those of traditional energy sources – the "green tag."[92] Many states also promote renewable energy through Renewable Portfolio Standards (RPS), which are legislative mandates that require electricity suppliers to draw a certain percentage of their power from renewable energy sources.[93] When combined with legislation restructuring the state's electricity market, as in Texas, an RPS can significantly increase the participation of major

[88] *Id.*; *see also* Kildegaard & Myers-Kuykindall, *supra* note XXX, at 6-7. The "flip" date may also be contingent upon the investor achieving a targeted yield, and may result in an option for the developers to buy the investor's interest (rather than a straightforward transfer of ownership). *Id.*

[89] James Duffy, *supra* note 19; *see also* Forrest Milder & Michael Goldman, *Safe harbor for structuring wind PTC deals*, Nixon Peabody LLP - Renewable Energy Alert (Dec. 2007). The criteria for Rev. Proc. 2007-65, effective Nov. 5, 2007, include that the developer have at least a one percent interest in each item of the partnership income, gain, loss, deduction and credit throughout the duration of the partnership. An investor's credit must "flip" to no less than five percent of its initial interest. Also, at least 75 percent of the sum of the investor's fixed investment plus his/her reasonably anticipated contingent investment must be a fixed and determinable obligation that is not contingent or uncertain. *Id.* Thus, Rev. Proc. 2007-65 rewards stable projects and stable investors.

[90] Financial Incentives for Renewable Energy (table), Database of State Incentives for Renewables & Efficiency, *available at* http://www.dsireusa.org/summarytables/financial.cfm?&CurrentPageID=7&EE=0&RE=1 (last visited 04/11/2008). Of the fifty states, only West Virginia and Arkansas offer no financial incentives for renewable energy. Rebates are the most popular incentives; California and Indiana lead the way, offering thirty-three and twenty-five different rebate programs, respectively. *Id.*

[91] Benjamin K. Sovacool & Christopher Cooper, *State Efforts to Promote Renewable Energy: Tripping the Horse With the Cart?*, 8 Sustainable Dev. L. & Pol'y 5, 6 (Fall 2007).

[92] Gail Kinsey Hill, *Wind power, downsized*, The Oregonian, August 24, 2006, p.D01. Although most RPS laws don't specifically target community wind, they encourage the general production of renewable energy and ensure that customers have the option of purchasing electricity generated through renewable, rather than traditional, means. *See* Sovacool & Cooper, *supra* note 77, at 6.

market players in wind energy production.[94] Together, SBCs and RPS laws have contributed enormously to the development of the wind energy industry in the United States.[95]

Whereas many states have instituted financial incentives and zoning changes that facilitate wind energy development generally, Minnesota and Massachusetts have implemented programs that specifically foster community wind projects. Minnesota statute 216B.1612 requires utilities expanding their energy capacity to first consider whether their needs could be met by a community-based energy developer (C-BED).[96] To qualify as a C-BED, a wind project must "demonstrate that at least 51 percent of the gross revenues from a power purchase agreement [with a utility, to purchase electricity generated] . . . will flow to qualifying owners and other local entities."[97] Minnesota also funds Clean Energy Resource Teams (CERTs), which provide education, guidance and limited financial assistance for community wind projects.[98] In Massachusetts, a state agency administers the Community Wind Collaborative (CWC), which offers technical assistance, wind monitoring equipment, and data analysis to prospective community wind developers.[99] The CWC has participated in fifty-one community wind projects in more than thirty towns.[100] Programs such as these are crucial for educating communities about

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[94] Real de Azua, *supra* note 2, at 515-17.
[95] *Id.*
[96] Minn. Stat. 216B.1612(5), Community-Based Energy Development, Tariffs (2007); *see also* "Community-Based Energy Development," Minnesota North Star, *available at* http://www.state.mn.us/portal/mn/jsp/common/content/include/contentitem.jsp?contentid=536908320 (last visited 04/12/2008).
[97] Minn. Stat. 216B.1612(2)(g)(2). Additionally, the developer of a C-BED must offer each property owner hosting a portion of the project's transmission line, an opportunity to invest in the project. Minn. Stat. 216B.1612(6).
[98] *See generally* CERTs: Clean Energy Resource Teams, *available at* http://www.cleanenergyresourceteams.org/ (last visited 04/12/2008). The Minnesota Next Generation Energy Act of 2007 not only expanded financing for CERTs, but also established an aggressive renewable energy standard: twenty-five percent by 2025. *See*
[99] *See* "Overview: Community Wind Collaborative," Massachusetts Technology Collaborative, *available at* http://www.masstech.org/renewableenergy/Community_Wind/index.htm (last visited 04/12/2008); *see also* Mike Koehler, *Developing Wind Power Projects in Massachusetts: Anticipating and Avoiding Litigation in the Quest to Harness the Wind*, 12 Suffolk J. Trial & App. Advoc. 69, 75 (2007).
[100] *See* "Community Wind Collaborative: 51 projects," Massachusetts Technology Collaborative, *available at* http://www.masstech.org/project_list.cfm?init=44 (last visited 04/12/2008).

community wind, and once interest is piqued, for linking farmers with investors and guiding participants through the complex federal and local incentives for wind energy production.

B. How Community Wind Overcomes Common Obstacles to Wind Development

Community wind is capable of altering local residents' views toward wind energy, thus potentially reducing their aesthetic and cultural objections to wind turbines. Traditional wind projects reinforce, rather than challenge, these objections, because their benefits are concentrated with landowners or corporate investors, while their costs are heaped upon local communities.

Through collaboration with local citizens, community wind redistributes the benefits of wind energy and alters residents' perception of the turbines themselves. When local citizens share ownership of a wind project, the turbines become another part of the resident's land, rather than a mechanical juggernaut deposited upon it for a fee.[101] When the electricity generated by a community wind project flows into local facilities rather than a corporate utility, the turbines produce direct, functional effects rather than indirect economic gains.[102] When the wind that makes your flag ripple is the source of the heat that cooks your dinner, you recognize the natural harmony of clean, renewable energy, and traditional coal and oil plants seem alien and toxic by comparison. As the community's conception of "aesthetically pleasing" absorbs these potential benefits, turbines may begin to seem clean, functional, harmonious, *and thus* appealing.[103]

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[101] *See Wind farms can be a welcome asset in the right community, K-State researcher says*, Kansas State University: M2 Presswire, Sept. 7, 2006 ("To these farmers, turbines are just another piece of farm machinery . . ."). When farmers participate in community wind projects – particularly those involving outside investors and "flip" ownership – they guarantee themselves a stable source of capital that may buffer the swings of the volatile agricultural market. *See Minnesota Community Wind Handbook*, *supra* note 18, at 8.

[102] *See* Kildegaard & Myers-Kuykindall, *supra* note 70, at 21.

[103] *See* Int'l Energy Agency, *supra* note 43 ("Deployment experience has shown reduced perception of visual amenity impacts where the local community can see the benefits of a scheme, either from directly using the wind energy or from seeing existing fossil fuel stations displaced."), *quoted in* Brisman, *supra* note 9, at 80

Part III: Community Wind in the Homeowner's Association

The community wind model has flourished in the agricultural and municipal spheres.[104] However, neither of these sectors encompasses associations of private citizens who are not farmers, but who may reside in more suburban areas. The proliferation of residential-scale wind turbines indicates that wind resources exist in these communities, but abundant evidence of opposition to such turbines suggests that aesthetic and cultural preferences in these regions are frequently at odds with the production of wind energy.[105]

In my proposal, I imagine an application of community wind that uses the homeowner's association as a vehicle to transport wind energy production into suburban and urban environments. Small-scale wind projects could become a component of the bargaining apparatus through which developers and municipalities plan and manage growth. By exposing a larger and more diverse array of residents to the realities of wind energy production, this model could broadly transform aesthetic and cultural attitudes toward wind projects.

A. Why Homeowner's Associations?

The homeowner's association (HOA) is a unique structure which features several elements, internal and external, that could easily adapt to the community wind model.

[104] *See* Kildegaard & Myers-Kuykindall, *supra* note 70, at 3-7.
[105] *See e.g.*, Paul J. Weber, *The trouble with turbines*, The Virginian-Pilot (Norfolk, VA), May 29, 2007, P.D4; *Zoning rules stymie backyard windmills*, Grand Rapid Press (Michigan), June 10, 2007; Nancy Rivera Brooks, Setting Up a Windmill in County Is Almost Quixotic, Builders Say; *Though a state law encourages backyard turbines, homeowners find themselves jousting with tough local requirements*, Los Angeles Times, Feb. 1, 2003.

1. Internal features

The defining feature of an HOA is its governance structure. Unlike most developments, which are governed only by restrictive covenants established by the developer, HOAs are governed by bodies of individual residents who meet on a regular basis and constantly evaluate the needs of the HOA community.[106] The corporate structure of HOA governance is compatible with the needs of community wind projects: education, outreach and consensus. HOA meetings provide a forum for community wind proponents whose job is to link investors with local residents. The HOA board could participate in educational presentations and discussions, hold public hearings, then disseminate its knowledge through regular shareholders' newsletters.[107] Through the shareholder voting structure, the HOA could gauge the reactions of its members and gain the consensus to build a community wind project.[108] Because HOAs emphasize a communitarian ethic and mutual recognition of shared goals,[109] they are likely to appreciate the benefits of shared ownership that the community wind model offers.

[106] *See* Edwin McDowell, *Looking For a Few Good Board Members*, N.Y. Times, May 10, 2002, at §11, p.1, *cited in* Robert C. Ellickson & Vicki L. Been, Land Use Controls: Cases and Materials 583 (Aspen Publishers: 3rd ed. 2005).

[107] Because community wind proponents work so closely with local residents and investors, the local citizenry becomes more thoroughly educated about wind energy. This education may translate into smoother permitting processes, fewer nuisance lawsuits, and ultimately, more welcoming zoning ordinances. *See* Manwell et. al, *supra* note 107, at 3 ("Difficulties with other permitting issues were minimized on account of the deliberate process of involving the town in the decision making.").

[108] *See generally* Stewart E. Sterk, *Minority Protection in Residential Private Governments*, 77 B.U. L. Rev. 273 (1997) (discussing statutes governing the structure and operation of associations), *cited in* Ellickson & Been, *supra* note 106, at 590.

[109] *See e.g.*, Robert D. Putnam, Bowling Alone: The Collapse and Revival of American Community (2000) ; Robert Jay Dilger, Neighborhood Politics: Residential Community Associations in American Governance 131-44 (1992). *But see* Paula A. Franzese, *Does it take a village? Privatization, Patterns of Restrictiveness and the Demise of Community*, 47 Vill. L. Rev. 553 (2002) (arguing that, by focusing on formal rules rather than informal social norms, HOAs weaken – rather than build – social connectedness among their members). All sources cited in Ellickson & Been, *supra* note 106, at 605-06.

The physical structure of many HOAs is also conducive to wind projects. Increasingly, modern HOAs use cluster zoning to create dense, self-sufficient communities.[110] Cluster zoning enables many HOAs to create enclaves of open space within their communities, even though the surrounding municipality is highly developed.[111] With their small footprint, wind turbines could inhabit these unlikely open spaces in suburbia without compromising their recreational uses.

2. External features

When planning a HOA, developers need not restrict themselves to the provisions of the town's existing zoning ordinances. Many HOAs defy traditional Euclidian zoning by mixing various residential and commercial uses within a small area. Approval for these complex projects, called planned unit developments (PUDs), [112] requires a specialized two-step legislative process. First, developers sketch their plan for a PUD and draft the necessary zoning provisions. Next, the zoning board undertakes a comprehensive review of the developer's plans. Based on this review, the board approves or denies an amendment to existing zoning ordinances that designate special provisions to apply within the PUD.[113] The zoning process for PUDs thus enables HOA developers to begin with a blank slate, which allows for an unusual degree of latitude and creativity – a fertile environment for community wind.

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[110] In cluster zoning, developers alter the minimum lot-area, setback, and frontage requirements to increase the density of residential units while retaining the same overall density for the parcel of land. Thus, instead of a project full of single-family detached homes with no open space, a development that uses cluster zoning may contain multifamily townhomes or apartments alongside open space. *See* Ellickson & Been, *supra* note 106, at 329.

[111] *Cf.* Stephen E. Barton & Carol J. Silverman, Common Interest Communities 20-27 (1994) (profiling residential communities in California in 1987 and determining that 92 percent provided open space or lawns), *cited in* Ellickson & Been, *supra* note 106, at 584.

[112] *See* "Planned Unit Development," Wikipedia, *available at* http://en.wikipedia.org/wiki/Planned_Unit_Development (last visited 05/21/2008); *see also* Ellickson & Been, *supra* note 106, at 329.

[113] 2 Kenneth H. Young, Anderson's American Law of Zoning § 11.15 (4th ed. 1996), *cited in* Ellickson & Been, *supra* note 106, at 329.

When HOA developers present their plans to the zoning board for review, they engage in a political bargaining process that also creates opportunities for community wind projects. Large HOAs may introduce hundreds of new residents into a municipality, placing an enormous burden on the town's existing infrastructure and public resources. Thus, when considering whether to approve the necessary zoning amendment, the zoning board has leverage to bargain with the HOA developer for exactions to absorb or manage the needs of this new population. Exactions may be physical (onsite or offsite) or monetary.[114] If a municipal zoning board could accept a community wind project as a worthwhile physical exaction, then wind turbines could become a part of the bargaining toolbox in urban and suburban zoning negotiations.

Finally, HOAs are well suited for community wind because they typically market a unified image of themselves to potential residents.[115] Currently, many Americans are embracing the trend of environmentally conscious building, which includes "green" architecture and sustainable living – often at a premium price.[116] An HOA seeking to attract the Toyota Prius® generation could use a community wind project to justify and market its environmentally-conscious identity. By attracting a "certain type of person," the HOA assembles a group of individuals with common interests, which facilitates the consensus-building necessary for community wind projects.

[114] Vicki L. Been, *"Exit as a Constraint on Land Use Exactions: Rethinking the Unconstitutional Conditions Doctrine*, 91 Colum. L. Rev. 473, 474-83 (1991), *in* Ellickson & Been, *supra* note 106, at 635.
[115] "Homeowner's Association," Wikipedia, *available at* http://en.wikipedia.org/wiki/Homeowners_association (last visited 05/21/2008).
[116] *See* Jacquelyn Ottman, *Sometimes, consumers will pay more to go green*, Marketing News, July 06, 1992, p. 16.

B. How it Could Work: Two Models

1. Internal model

In this self-contained model, an HOA seeking a "green" identity (or simply energy savings) could propose a community wind project involving one turbine erected on the HOA's open space. In new construction, the developer could include the turbine as part of its initial PUD plan, and the zoning amendment could include the height and use allowances necessary for a wind turbine. Using its corporate governance structure, the HOA board could hold public hearings, solicit member approval through shareholder's letters, and work with community wind proponents to govern the specifics of the project. The HOA could allocate the benefits of the project to members in two ways: (1) by distributing the cost savings to each resident, thus offsetting a small portion of their energy bills; or (2) by using net metering to apply the wind power to the electricity needs of an HOA facility, thus reducing a small portion of each member's HOA dues.[117] The HOA could establish a power purchasing agreement (PPA) with a local utility to buy back any excess wind energy, at wholesale (or preferably, full retail) prices.

Because this model operates within the internal structure of the HOA, the benefits and costs are mostly internal as well. HOA members benefit through reduced utility bills or HOA dues. By establishing itself as a "green" community, the HOA acquires a market-savvy identity that attracts positive publicity and an active, mostly affluent demographic.[118] The costs of the project would fall primarily on the HOA itself, but due to cluster zoning, few HOA residents would actually live in close proximity to the turbine. Only a small percentage of the HOA's open space would be occupied by the turbine's footprint.

[117] Many HOAs operate energy-intensive facilities like gyms or day care centers, whose utility bills could be significantly reduced by a community wind turbine.
[118] I imagine the development adopting the image of the wind turbine as its logo.

The disadvantage of this model is that the turbine – particularly a large, commercial one - would impose aesthetic costs upon residents who live near the HOA's open space, and these residents would receive no benefits. However, the HOA could use setback requirements to ensure that the turbine was situated a certain distance from nearby residences. If necessary, the HOA could use virtual metering to apply a credit to the utility bills of those residents within a certain radius, who would bear the brunt of the turbine's visual impact.

2. External (exactions) model

My proposal for an external model operates chiefly through physical exactions, a key component of the bargaining process between municipalities and developers. In this model, an HOA developer proposing a PUD plan to a local zoning board would offer to construct a wind turbine be to owned by the town, for the benefit of the town. [119]

For maximum net benefits to the town, the turbine could be located on the HOA's open space (which absorbs most of its aesthetic impact), but the electricity it generates could be sold to the local utility and used for municipal purposes, similar to the turbine-street light relationship in Hull, Massachusetts.[120] If housing in the HOA is generally high-income, the turbine's proceeds could be applied (through virtual metering) to the utility bills of an affordable housing unit, thus lowering the cost of living for its residents and offsetting the HOA's influx of high-cost housing into the area. This model risks allocating all of the costs of a turbine to HOA

[119] The external model relies less heavily upon the specific mechanism of the HOA; most aspects of this proposal would work for any residential development. However, particularly for projects that would situate a turbine on the development's property, certain features of the HOA would make this model more feasible. First, the unified identity of the HOA model produces a degree of self-selection which would facilitate a consensus toward the turbine and discourage dissenters. Second, the governance structure of the HOA includes an internal grievance procedure, which would serve as a procedural buffer between dissenting HOA members and local zoning boards.
[120] *See* Manwell et. al, *supra* note 81, at 4.

members, who receive none of the benefits. Thus, an exaction that divides the turbine's electricity between HOA and municipal facilities would effect a more balanced distribution of costs and benefits.

Another, simpler method for distributing the costs and benefits of a community wind project would be an offsite, rather than onsite, exaction. The HOA could construct a wind turbine for the municipality in another location, such as a school or fire station.[121] Alternatively, the HOA could outfit an affordable housing unit with its own wind turbine.[122] Although environmental justice advocates may protest the imposition of a turbine's aesthetic costs upon low-income residents, in this context, the potential for financial savings would probably overcome aesthetic objections. Moreover, wind turbines generate fewer safety and health hazards than the coal and oil plants that municipalities typically dump upon low-income regions.[123]

3. Foreseeable Problems

Both these internal and external models could be crippled by a municipality's unwillingness to allow any wind turbines, whether inside or outside HOA property. Towns like Ecogen, Italy have imposed moratoria on wind energy development, and these persistent objectors are unlikely to recognize the potential benefits of community wind (versus traditional

[121] Many communities have built wind turbines near schools to offset the enormous energy demands of the facility while providing an educational opportunity for students. *See* Portsmouth Wind Power, PEDC Sustainable Energy Committee, *available at* http://portsmouthrienergy.com/ (last visited 05/21/2008).
[122] A recent New York Times article highlighted a Chicago housing project for homeless citizens by architect Helmut Jahn; the building features a network of wind turbines and solar panels on its roof, which generates about fifteen percent of the structure's energy requirements. *See* Robert Sharoff, *Social Improvement with Architecture*, The New York Times, Nov. 5, 2006, *available at* http://www.nytimes.com/2006/11/05/realestate/05national.html?_r=1&oref=slogin&emc=eta1&pagewanted=all (last visited 04/12/2008).
[123] *See* Brisman, *supra* note 9, at 122.

models).[124] Similarly, an HOA may refuse to construct a turbine on its open space, particularly if the system's proceeds are directed elsewhere. Municipalities may find that a community wind project is an insufficient exaction, as compared to road construction or monetary exactions. Local utilities are required to offer net metering under Section 210 of PURPA,[125] but they may decline to compensate HOAs or municipalities at rates that would make the project more financially attractive.

4. Goal: Changing Perceptions

These proposals seek, not only to situate wind turbines in urban and suburban environments overlooked by most wind developers, but to actually alter the cultural perception of wind turbines among residents of these areas. As mentioned earlier, perception is not inherent; it is heavily influenced by social norms about what "belongs" within a community. Residents of urban and suburban areas who oppose wind energy projects probably have little exposure them, or may regard them as strictly a "rural" phenomenon. For these populations, the most effective form of education about wind energy is simply living near a wind turbine.[126] In Europe and the United Kingdom, which have well-developed wind energy sectors, multiple public opinion

[124] *See generally* Ecogen, 438 F.Supp.2d 149 (upholding the town of Italy's one-year moratorium on wind turbine construction, despite the enthusiasm for wind energy development in the neighboring down of Prattsburgh, NY).
[125] Public Utility Regulatory Policies Act of 1978 (PURPA) §210, 16 U.S.C. §824a-3 (2000).
[126] *See* Dennis Wagner, *Homeowners face fight over Wind turbines*, The Arizona Republic (Phoenix), April 29, 2008 (quoting a residential wind turbine manufacturer: "We manage to get these things installed in schools and public institutions around the country," he says. "It hasn't been there before, so people are hesitant. But, once they see it, they say, 'Oh, that's what you mean..'").

surveys indicate that public support for wind projects increased once they were installed.[127] As one consultant noted, "The reality of a wind farm is much better than the prospect of it."[128]

Shifting the cultural perceptions of HOA residents regarding wind turbines could have beneficial side effects as well. The self-governance structure of HOAs, and their tendency to provide expensive housing, attracts middle- to upper-middle-class residents who are active in their communities. Without exposure to wind turbines, these individuals would potentially be a wind project's loudest and most influential opponents.[129] Community wind could transform these activists from critics to consumers, then potentially to advocates.[130] By expanding the potential class of wind energy and producers and challenging existing assumptions about wind turbines, community wind in HOAs could galvanize wind energy in the United States.

Conclusion

The development of wind energy facilities in the United States faces daunting financial obstacles (the uncertain nature of the federal Production Tax Credit) and logistical challenges

[127] "Tilting at Windmills: Public Opinion Toward Wind Energy," Wind-Works.Org, *available at* http://www.wind-works.org/articles/tilting.html (last visited 04/12/2008).

[128] *Id.*, quoting Andrew Garrad, a consultant with the British firm Garrad Hassan. New technologies in wind energy may facilitate this cultural shift by engineering technology that reduces the aesthetic and environmental costs of traditional turbines. The Windspire®, a new 1 kW wind turbine design by Mariah Power, is a vertical column measuring thirty feet tall and only two feet wide – well within the height restrictions of most residential zoning ordinances. This "home energy appliance" has no propellers, thus virtually eliminating the risk to birds and bats, as well as the noise associated with conventional turbines. Capable of generating energy using winds as low as eight miles per hour, the Windspire could operate even in urban environments with somewhat obstructed wind access. *See* "Windspire overview," Mariah Power, *available at* http://mariahpower.com/index.php?option=com_content&task=view&id=13&Itemid=35 (last visited 04/12/2008); *see also* "WindSpire: An Attractive Wind Turbine For The Home," Metaefficient, April 23, 2007, *available at* http://www.metaefficient.com/renewable-power/windspire-an-attractive-wind-turbine-for-the-home.html (last visited 04/12/2008).

[129] In Cape Cod, wealthy residents have mounted strong opposition, in the courts and in the media, to a proposed large-scale offshore wind project in Nantucket Sound. *See* Mike Koehler, *Developing Wind Power Projects in Massachusetts: Anticipating and Avoiding Litigation in the Quest to Harness the Wind*, 12 Suffolk J. Trial & App. Advoc. 69, 75 (2007).

[130] After experiencing the benefits of wind energy, wealthy HOA members may even invest in the wind industry.

(the lack of transmission lines to many areas well-suited for wind generation). However, in considering these large-scale issues, wind energy advocates must not forget about smaller – yet often surprisingly successful – sources of opposition: local residents. When wind projects are proposed, citizens of host town(s) often voice concerns about the turbines' impact on local culture and scenery, bird and bat populations, and noise levels. Traditional wind projects have few incentives to offer these residents, because their allocations of burdens and benefits favor corporate and individual interests over those of the community. Despite educational efforts by wind developers, many of these communities' gut aesthetic and cultural perceptions of wind turbines go unchallenged.

Community wind has proven successful in many towns and rural areas, because it redistributes the benefits of wind energy to local residents, thus making the burdens more palatable. By collaborating with local communities and encouraging shared ownership, community wind fosters a sense of pride, rather than resentment, toward local wind projects. Gradually, this pride transform residents' perceptions of wind turbines from ugly intrusions to appealing sources of revenue, jobs, education and clean energy. I propose that HOAs apply the community wind model to their own developments, either internally or as part of negotiations with municipal zoning boards. The political processes and zoning practices of HOAs are uniquely compatible with the community wind model, which favors outreach and consensus-building. By experiencing community wind projects in HOAs, on affordable housing units, or beside schools, urban and suburban residents may eventually develop aesthetic preferences and local cultural values that embrace the presence of wind energy systems.