Opposing Wind Energy Landscapes: A Search for Common Cause

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Although wind power is local, sustainable, affordable, and carbon free, mounting public opposition to the landscape changes it produces threatens its expansion. In an era when many countries are looking to renewable energy as an answer to questions about national security and the risks of climate change, it is important to explain the sources of this reaction. This article looks for similarities in public resistance to wind developments in four diverse settings: Palm Springs, California; Cape Cod, Massachusetts; the Isle of Lewis, Scotland; and Oaxaca State, Mexico. Despite the natural and cultural diversity among these places, there are five common threads in the opposition that has been experienced: immobility, the site specificity of the resource; immutability, an expectation of landscape permanence; solidarity, the close relationship between people and the land; imposition, a sense of marginalization; and place identity, a loss of security. Considering more deeply the relationship between land and life, in advance of the development of renewable energy resources, will help smooth the otherwise bumpy road toward a more sustainable future.

Key Words: landscapes, place, wind energy.

Aunque la energía eólica es local, sustentable, barata y libre de carbono, la creciente oposición pública que se le hace por los cambios que aquélla produce en el paisaje está amenazando su expansión. En un tiempo en el que muchos países se encuentran buscando fuentes de energía renovable como respuesta a cuestiones de seguridad nacional y a los riesgos del cambio climático, es importante explicar las fuentes de esa reacción. Este artículo busca similitudes en la resistencia pública por desarrollos eólicos en cuatro escenarios diferentes: Palm Springs, California; Cabo Cod, Massachusetts; la Isla de Lewis, Escocia; y el Estado de Oaxaca, México. A pesar de las diferencias naturales y culturales entre estos lugares, existen cinco hilos comunes en la oposición que se ha experimentado: inmovilidad, la especificidad de sitio del recurso; inmutabilidad, una expectativa de permanencia del paisaje; solidaridad, la cercana relación entre la gente y la tierra; imposición, un sentido de marginación; e identidad de lugar, una pérdida de seguridad. Si se considerara más profundamente la relación entre tierra y vida, antes del desarrollo de recursos energéticos naturales renovables, ayudaría a limar lo que de otro modo sería camino lleno de asperezas hacia un futuro más sostenible. Palabras clave: paisajes, lugar, energía eólica.

Most visions of a sustainable future foresee a turn toward renewable energy, but it is a change that will not come without a fight. Wind energy is a case in point; in many places, reservations are mounting about how wind turbines change landscapes and our relationship with them. It is not a concern of small import; wind power is expanding faster than any other renewable energy resource, and it already has a significant presence in dozens of countries from Denmark to China. Growing at a yearly rate of 38 percent, by June 2010 wind installations reached a global capacity of about 175,000 megawatts (MW). These installations generate in excess of 340 terrawatt-hours (TWh) of electricity annually, about as much as forty-five large nuclear power plants (World Wind Energy Association 2010). Given its leadership position, the study of wind power might yield some clues as to what is in store for other renewable energy prospects as they begin to expand (Maloney 2008). In the case of many, as with wind, the central issues tend to revolve
around land use conflicts, and geographers have been diligently trying to sort it all out (Pasqualetti 2001a, 2001b; Wolsink 2007a; van der Horst and Toke 2009; Devine-Wright and Howes 2010; Swofford and Slattery 2010; Warren and McFadyen 2010).

Wind's attraction stems from its wealth of advantages. It generates electricity carbon free and with no long-term wastes, cooling water is unneeded, turbines are simple to install on a variety of terrain, and the successful operations produce electricity both reliably and profitably. Despite these attributes, plans to increase wind power's share of the energy portfolio are encountering unexpected opposition. Consternation over the energy landscapes from hydro, nuclear, and fossil fuels have persisted for decades (centuries for coal), and now such misgivings are spreading to substitute fuels as they grow in popularity and importance. Taking wind power, for example, we find hundreds of antiwind groups of various stripes and intensities, turbines being burned in effigy in Scotland, rock-throwing resistance in Mexico, and people being killed during protests over wind projects in China (Ang 2005; Davies 2007; Hawley 2009; Bohn and Lant 2009; Penicuik Environment Protection Association 2010).

Responding to public disquiet over wind projects can take several forms, but several inexpensive and simple modifications are already common. For example, turbines are now routinely painted to blend in and be less noticeable in their environments, busy lattice towers have been giving way to sleeker monopoles, and various technical adjustments have reduced noise. These changes, however, will never appease everyone for a simple reason inherent in the resource: Whatever we do to make the wind turbines less conspicuous, we can do nothing to make them invisible. That, in a nutshell, is the problem. People see them, hear them, and even feel them, and in response they often reject them, a reaction that has become more common with their proliferation and their increasing size (Pasqualetti, Gipe, and Righter 2002; Agterbosch, Meertens, and Vermeulen 2007; Aitken 2010). Moreover, these reactions do not change with location, culture, economy, history, geography, or jurisdictional boundaries (Hinshelwood 2001; Pasqualetti 2001b; Pasqualetti, Gipe, and Righter 2002; Ang 2005; Szarka, 2007; Wolsink 2007a, 2007b; Wüstenhagen, Wolsink, and Bürer 2007; Eltham, Harrison, and Allen 2008; Graham, Stephenson, and Smith 2009; Moses 2009; Phadke 2010; van der Horst and Toke 2010; Wolsink 2010).

What causes such reactions? Motivations are not always clear, but sophisticated methods are being developed to identify them (Devine-Wright 2005a, 2005b; Ellis, Barry, and Robinson 2007; Torres-Sibille et al. 2009; Graham, Stephenson, and Smith 2009). The most popular explanation is NIMBY (not in my backyard), although this is increasingly considered too simplistic (Wolsink 2000; Devine-Wright 2005a; Ek 2005; van der Horst 2007). In some places, the focus of attention has been the impacts of wind turbines on birds and bats (Johnson et al. 2004; Saito 2004; Blum 2005; De Lucas, Janss, and Ferrer 2007; Kunz et al. 2007; National Research Council 2007; Lilley and Firestone 2008; National Wind Coordinating Collaborative 2008). Other times the concern has centered on potential interference with visual aesthetics, radar operations, property values, tourist attractions, and a sense of serenity (Moller 2006; Whitcomb and Williams, 2007; Ciardi and Crum 2009; Hoen et al. 2009; Lilley, Firestone, and Kempton 2010). Resistance in many communities accompanies the perception that wind projects are being imposed on them by outsiders (Hinshelwood 2001; Wolsink 2007a, 2007b).

This article seeks to identify principal explanations for public resistance to wind power developments by melding a review of the literature with brief case studies from four diverse settings. Of the four, the first two are relatively familiar: the California desert adjacent to Palm Springs, a two-hour drive east of Los Angeles; and the shallow waters between Cape Cod and Nantucket Island, Massachusetts, sixty miles southeast of Boston. The third study highlights a wind project proposed for peat-rich Isle of Lewis, Scotland, remotely located about 200 miles northwest of Glasgow. The fourth and last study is taken from the agricultural lands of coastal Oaxaca in southern Mexico, on the Pacific side of the Isthmus of Tehuantepec. Considered collectively, they should hold clues to the common causes for public resistance to wind energy landscapes.

**Wind Turbines in Four Settings**

A large part of the appeal of wind power is that it is in many ways environmentally benign, especially compared with its nonrenewable associates. This attribute often makes wind power attractive, particularly in countries that have committed themselves to reduce greenhouse gases. Add to these motivations that wind power offers other bonuses such as reliability and profitability and the attraction to the technology is no mystery.

Despite environmental and business advantages, however, public resistance to wind energy continues. The pattern began in California when large clusters of turbines were first installed there in the 1980s. Among
such installations were those in San Gorgonio Pass, immediately north of the resort city of Palm Springs. Once in place, the nearby machines were impossible to miss or abide (Pasqualetti 2001b). With hundreds of them concentrated along the principal routes into the city, business owners and public officials fretted that they would be considered eyesores by visitors seeking the calm, restful, and sophisticated lifestyles that their desert oasis tries to sell. Media attention rose quickly, lawsuits ensued, and research studies were commissioned (Pasqualetti and Butler 1987). All this attention came as a bit of a shock to wind developers, who considered the windy sites at the east end of San Gorgonio Pass so prone to sandstorms as to be inhospitable. Most presumed that no one would complain when the turbines went up.

That presumption might have been valid in other locations but not near Palm Springs. Sheltered from winds by the mass of Mt. San Jacinto to the west, the city is generally immune to blustery conditions. It is a place with beds of flowers lining the streets and snow-capped peaks serving as backdrop to over 100 nearby golf courses that extend eastward down the Coachella Valley. There are spas and healing centers, oases of palm trees, clear-water streams, world-class museums, and celebrities in number. From November to April, throngs arrive ready to relax, rejuvenate, and escape the cold that molds their lives back home. Given this setting, the last thing community leaders wanted was an industrial landscape that could interfere with the enjoyment of the visitors who were the backbone of the local economy (Pasqualetti and Butler 1987; Pasqualetti 2001b; Figure 1).

Opposition to wind landscapes near Palm Springs helped establish a pattern of public response that would show up elsewhere, most notably at the equally affluent recreational areas of the Eastern seaboard near Cape Cod. A 420-MW project called Cape Wind would install 130 turbines in the waters between the Cape and Nantucket Island. Indefatigable opposition surfaced early, and it has persisted much longer, over nine years at last count. The controversy has prompted innumerable meetings, protests, broadcasts, reports, articles, and books that chronicle the long tug-of-war between developers and preservationists (Kempton et al. 2005; Firestone and Kempton 2007; Whitcomb and Williams 2007; Firestone, Kempton, and Krueger 2009).

The primary objection to Cape Wind continues to be the visual change it would produce and the impact of such changes on the local economy. Save Our Sound (SOS), the leading opposition organization, has summarized its objections this way: “Occupying 25 square miles, an area the size of Manhattan, the Cape Wind project would be highly visible both day and night from Cape Cod and from the islands of Nantucket and Martha’s Vineyard. The plant would dramatically alter the natural landscape” (SOS 2010; Figure 2).
The location of the Cape Wind project near popular and prosperous communities has stimulated heightened attention, attention that at times has come from unexpected directions. For example, even Robert F. Kennedy, Jr., an ardent environmentalist, has expressed displeasure with the project (as did his late uncle, U.S. Senator Edward Kennedy), arguing that developers are “trying to privatize the commons” (Kennedy 2005). Despite the predominant concern about visual impacts, many other arguments have also been thrown into the mix, including threats to the health of marine life and birds, navigational safety, water quality, and infringement on ancient Indian burial sites. Indeed, just about any possible impact is accepted if it helps slow or defeat the project. Eventually, after long debate, the decision came across the desk of U.S. Interior Secretary Ken Salazar, who, in April 2010, ruled in favor of Cape Wind (Corcoran 2010).

The saga of Cape Wind has been tracked closely by both adherents and opponents of wind development (Agterbosch, Glasbergen, and Vermeulen 2007; Snyder and Kaiser 2009; Gee 2010; Meyerhoff, Ohl, and Hartje 2010). SOS, among other groups, is determined to fight on, hoping for a reversal. Part of their motivation is the fear that a successful Cape Wind project might open the floodgates to similar developments along the entire Atlantic Coast and the Gulf of Mexico (Wind Energy Systems Technology 2010). One such place is the Isle of Lewis. Wind development would seem an ideal use for Lewis and not just because of its ample resource. Despite 8,000 years of habitation, it has a sparse population of only about 25,000, giving developers a lot of open land to work with and not many people to please. It is often rainy and cold, the growing season is short, and it is a long way out in the Atlantic Ocean, as close to southeast Iceland as to southeast England. Given these isolated conditions, one might justifiably assume that a proposal for wind projects there would attract little attention. As the title of the protest group Mòinteach gun Mhuileann (Moorland without Turbines) suggests, however, that is not the case (Lewis Wind 2010).

One reason prospective wind projects on Lewis draw public ire is the worry that they will bring about a weakening of the cultural roots and conservative lifestyles that people have established there. It remains a simple place where livestock until recently commonly slept in the same house as their owners; where residents practice a fundamentalist form of Presbyterianism; and where Gaelic continues in use, alongside English. As with those following similar lifestyles elsewhere, residents of Lewis tend to instinctively resist change—especially blatant change—to the appearance of the land.

Resistance to the wind proposals on Lewis is tied in part to its large scale. The initial project would build 181 turbines with a total capacity of 651.6 MW, making it the largest wind installation in Europe, roughly twice the size of the mature wind complex near Palm Springs. Each 3.8-MW turbine intended for Lewis would reach a total height of 140 m (460 ft) and a rotor diameter of 107 m (358 ft), roughly equivalent to the wingspan of a 747 jetliner. In addition, the installation would require 200 transmission pylons and conductors, several new roads, and many construction platforms (Figure 3). As a reflection of its size, the project would generate up to 7 percent of Scotland’s energy, enough to meet the average needs of 1 million people. In addition, it would satisfy 36 percent of Scotland’s original 2010 renewable energy target of 18 percent electricity from renewable sources (Lewis Wind 2010). This, plus the profit motive,
provides ample motivation to see the project through to full operation.

The controversy over the wind farms on Lewis followed hard on the heels of its initial announcement, and it continues to take many forms, just as it has in Cape Cod and Palm Springs. In addition to visual changes, opponents point out that it would have negative impacts on the economy, ruin the peat bogs, and threaten the integrity of some of the most impressive megaliths in Europe, the Callanish Standing Stones (Gray 2009; Figure 4). The other objection to the project, perhaps an overriding one, is that local residents hold little stake in its success (Ittmann 2005; Warren et al. 2005; Vidal 2006; Fisher and Brown 2009; Warren and McFadyen 2010). To those on the island and to many people elsewhere in the United Kingdom, the entire project seems inappropriate.

By April 2008, the Scottish political authority charged with making the final decision announced that they had received 10,924 letters of opposition and 98 letters of support. This overwhelming sentiment influenced the decision to deny the petition, although the official reason was the serious damage the project would cause to the Lewis Peatlands Special Protection Area, an area that is designated under the European Commission Birds Directive and protected under the EC Habitats Directive (“Lewis Wind Farm Refused” 2008; Fisher and Brown 2009). For those who reviled the intrusion of wind energy on their landscape, the rejection was more a reprieve than a victory, however; less than two years later, an amended—somewhat more modest plan—was submitted for regulatory approval (Lewis Wind 2010). No decision has yet been handed down. Resistance continues.

Although public resistance to wind energy landscapes has been attracting wide attention in many locations, similar resistance in the Pacific Lowlands of Oaxaca has been getting little notice (Figure 5). Such obscurity will not last. Planned development there would create the largest concentration of wind turbines in the world. More than 5,000 hectares of land have been reserved already in the windy municipalities of Juchitán de Zaragoza, Union Hidalgo, El Espinal, and San Dionisio del Mar. By 2012 the generating capacity proposed for these locations would total 2,500 MW (Secretaría de Energía 2009). This is roughly equivalent to the entire installed capacity in California, a mark that required twenty-five years to reach.

The Isthmus of Tehuantepec creates perfect conditions for wind projects. After crossing the open waters of the Gulf of Mexico, the winds come onshore and concentrate their power as they funnel through the narrowing topography on their move southward.
places like La Venta, they spread out across a broad area of farmlands that are ideal for the erection of turbines (Figure 6).

The largest city in the area is Juchitán. Its history informs some of the reactions to the wind projects. Founded in 1486, it is now home to approximately 75,000, mostly Zapotecs and Huaves. It is also the seat of the Coalition of Workers, Peasants, and Students of the Isthmus, an influential popular movement that matured in the 1970s to meld into a single group of local socialists, peasants, students, and indigenous people. Favorable conditions for an agricultural economy and the relative autonomy that its location offers from the political influences of Mexico City have contributed to the formation of a long and close relationship between the people and the land (O’Connor and Kroefges 2008).

Oaxaca has a history of political unrest and activism. A revolt took place there in 1834. Life was again disrupted by the Mexican-American War in 1847. Less than twenty years on, the people of Juchitán defeated the French. When Porfirio Díaz was vying for a leadership position in Mexico, he populated his army mostly with citizens of Juchitán. In 1910, natives of the town organized in support of the revolutionaries Villa and Zapata. By 1980 the area again gained attention by electing a left-wing, prosocialist municipal government, the first Mexican community to do so in the twentieth century. In February 2001, Juchitán welcomed a caravan of the Zapatista Army of National Liberation.

Given their activist predilection, it is little surprise that those working the local communal farms (ejidos) do not welcome the proposals for large-scale wind development there. Initially, the nearby population held little understanding of what the projects would bring, but once the first phase of installations was completed, complaints started. Rather quickly, the penchant for activism evolved into clashes that have become increasingly frequent between locals and the plans to seed the fields with whirling machines of fiberglass and steel.
### Table 1. Summary of wind sites and their areas of concern

<table>
<thead>
<tr>
<th>Location &amp; Primary Characteristics</th>
<th>Visible Impacts</th>
<th>Focus of Economic Vulnerability</th>
<th>Lasting Economic Benefits</th>
<th>Significant Challenges to Cultural Values</th>
<th>Sense of Victimization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palm Springs, California—Desert winter resort, affluent present use &lt; 100 years</td>
<td>Yes, desert scenery</td>
<td>Recreation &amp; tourism</td>
<td>Small</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Cape Cod, Massachusetts—Shoreline summer resort, affluent, present use &lt; 100 years</td>
<td>Yes, shoreline scenery</td>
<td>Recreation &amp; tourism</td>
<td>Small</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Isle of Lewis, Scotland—Remote, quiet lifestyle with long occupancy, present use &gt; 500 years</td>
<td>Yes, cultural artifacts</td>
<td>Tourism (minor)</td>
<td>Small</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Lowlands of Oaxaca, Mexico—Agrarian, long occupancy, political activism, present use &gt; 500 years</td>
<td>Yes, non-specific</td>
<td>Farming</td>
<td>Small</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Note: The two remote and more traditional sites (Lewis and Oaxaca) have greatest vulnerability to a sense of intrusion from wind power than the two more urban ones.

As with many energy projects, local development does not mean local benefit. Among the grievances is that people who live and work in the fields will receive meager lease payments from the projects, perhaps $125 per hectare per year for a single turbine (Sanchez 2007). Other estimates of compensation have been lower, from $98 to $117 per hectare (Hawley 2009). In comparison, U.S. wind turbines typically return $3,000 to $5,000 per year. Such perceived inequities helped prompt the formation of opposition organizations such as the Grupo Solidario de la Venta.

Now alert, local farmers and others are posing sharp questions to developers, regional politicians, national government officials, and representatives of the Comisión Federal de Electricidad (CFE), the federal electricity provider. At a public meeting in Juchitán in late May 2009, they asked why they are paid so little. A similar question was asked by a reporter from USA Today at

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**Figure 6.** Wind turbines at La Venta development within the preexisting agricultural fields. Photo by the author, June 2009.
a public presentation at the Benjamin Franklin Library in Mexico City less than a week later (Hawley 2009). In both places, there was an evident awareness that residents in the area of La Venta were being expected to accept, with little compensation, historic changes to their familiar natural and cultural surroundings.

National Wind Watch, a public advocacy organization, explains the reservations of the local residents by suggesting that “the growing resistance to wind farm construction in southern Oaxaca ... is based on local landowners’ negative negotiating experiences with the CFE, discomfort with the broad freedoms seemingly granted to multinational corporations and an increasing concern about the possible environmental consequences of the wind farms themselves” (Sanchez 2007, 1). Judging by the complaints so far expressed, tensions have resulted, at least in part, from insufficient consultation between developers and the communities, an oversight that—as in other locations such as those described earlier—often leads to conflict (Walker et al. 2010).

Reactions have been more than words. Protestors have barricaded roads leading to the wind sites and have displayed antiwind banners (Figure 7). There have been incidents resulting in minor injuries. A local leftist farm group known as the Assembly in Defense of Land has complained about the treatment the campesinos have been receiving from wind power promoters, saying, “They promise progress and jobs, and talk about millions in investment in clean energy from the winds that blow through our region, but the investments will only benefit businessmen; all the technology will be imported ... and the power won’t be for local inhabi-

tants” (Associated Press 2009). The group has called on its supporters to “defend the land we inherited from our ancestors” and say “no to the wind energy megaprojects in the isthmus that desecrate our lands and cultural heritage” (Sanchez 2007, 1).

Conclusions

This article has summarized public opposition to wind energy developments in four diverse settings (Table 1). Although in the aggregate the list of complaints against wind projects can be long, relatively few issues stand out consistently. The case studies presented here identified five.

The first core issue is immobility. Wind energy is site specific and must adjust to existing natural, cultural, and social conditions within a very narrow range of spatial options. The siting of turbines cannot be adjusted to less contentious sites without sacrificing productivity.

The second core issue is immutability. It is part of the human condition to believe that the landscapes with which we are most familiar, those that provide both our livelihoods and our greatest comfort, will not change over time. Such faith in “landscape permanence” is common in all cultures, as Jackson (1994) often reminded us, but few energy projects change a landscape as quickly and as fundamentally as a large collection of wind turbines.

The third core issue is solidarity. Knowing the intensity of the landscape changes that wind projects produce, development planning should integrate deeper understanding of the ties between land and life. The landscapes themselves can help tell the story if people stop long enough to “read” them. This suggests that those proposing to change landscapes long tilled and held dear should incorporate the advice of Mitchell (1994), who proposed that we think of them as more than just unoccupied swaths of nature. Rather, we should consider landscapes in terms of what they can tell us about the human condition. We should “be shifting the notion of landscape from an object to be seen or a text to be read to a process by which social and subjective identities are formed” (1).

The fourth core issue is imposition. It stems from the belief that such wind projects are someone else’s idea, for someone else’s benefit, and for someone else’s profit. To one degree or another, local residences from desert to coastline, from Scotland to Mexico, were asked to bear costs for the production of something that would not flow to them directly and would not be in their
best interest to support. In the instances of the Isle of Lewis and lowland Oaxaca, where life is simpler, the prices being levied is greater still because of the wide gap between traditional ways of the past and unknown ways of the future. This gap broadens into a chasm when, as in Oaxaca, residents have no stake in the project planning or its success, and where they perceive that the entire intrusion is a continuation of their business-as-usual marginalization.

The fifth core issue is place. Wind energy projects, more than most others, are considered threats to place identity, something that is not only apparent in the four case studies presented here but is being identified elsewhere as well (Devine-Wright and Howes 2010). Ruptures in the composure of places of wind power development originate in an interference with place attachment, an attachment that originates from the accumulated affection and comfort people feel in maintaining their investment in the way the land is but not in the way it might become. When we look at these four wind energy projects, they remind us of an uninvited guest who plants himself in our favorite easy chair; not only are we put out, but we feel a loss of balance. Yet the disaffection we might experience is more than a new example of a “machine in the garden,” to use Marx’s (1964) phrase. It is also more than a reaction just to the landscapes that wind turbines reshape. It is a response to the threat they pose to the way we fashion how we live. Although conflicts over wind development and renewable energy projects will not cease, considering more deeply the relationship between landscapes and the people who occupy and value them, in advance, will help smooth the otherwise bumpy road toward a more sustainable future.

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Note

1. This meeting in Juchitán in May 2009 was among local residents, government and utility-company officials, representatives of the U.S. Embassy, and the author.

References


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