



# WIND POWER IN VIEW

ENERGY LANDSCAPES IN A CROWDED WORLD

martin j. pasqualetti, paul gipe, robert w. righter

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**IN A CROWDED WORLD**

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EDITED BY  
**MARTIN J. PASQUALETTI**  
**PAUL GIPE**  
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*MJP*  
*PG*  
*RWR*

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PART

I

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INTRODUCTION

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# A LANDSCAPE OF POWER

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MARTIN J. PASQUALETTI, PAUL GIPE,  
AND ROBERT W. RIGHTER

To the pundit who said “there is no such thing as bad publicity,” we offer wind power as an exception to the rule. Although it is now blossoming into the fastest-growing energy resource in the world, wind has also been labeled a competitor. Despite its several attributes, it has been dogged by the criticism that it interferes with aesthetic values, that it changes the surroundings too much for comfort, and that it transforms natural landscapes into landscapes of power.

Such a reservation should not be surprising, for it is at the center of the perennial question of how to live in greater balance with our environment. To what degree are we willing to give up landscape quality for qualities of life? Do we want forests or firewood? Green hills or black coal? Rivers to admire or dams to provide us the electricity to run our cities? Is there a way to blend these two needs? We are not asking anything new; rather, it is a question of how to best balance the nature we want with the energy we need.

Although this dilemma is not new, we are facing it more frequently because populations are growing and the amount of open land is shrinking. Is there room enough to meet both needs, or will we have to choose? Those with the low standard of living common in most parts of the world always favor energy supply, but in the United States and Europe people are prosperous enough to be genuinely stymied by the choice they face. Ironically, in this newest version of an old choice, we are focusing not on a

fuel such as coal with a dirty reputation, but on an alternative energy resource with a benign image. It is renewable and releases no pollutants; it can be installed in small, affordable increments; and the potential contribution it can make in industrialized and developing countries is impressive. What is there not to like? The answer to that question is simple: wind turbines are unavoidably visible, even intrusive. They interfere, some argue, with local landscape aesthetics.<sup>1</sup> In the final analysis, despite wind power's many advantages, its potential contribution, and its prospects for rapid growth, by the mid-1990s it had become obvious that its "landscape problem" was here to stay. The time was right for a focused discussion of wind energy landscapes.

In an effort to facilitate this discussion, the Rockefeller Foundation made available its conference center on Lake Como, Villa Serbelloni, for a 10-day period of intense dialog among an international group of wind power experts from several disciplines, including geography, engineering, landscape architecture, history, industrial design, the visual arts, and philosophy. The villa itself overlooks the picturesque, northern-Italian village of Bellagio, a popular holiday locus since the time of Pliny the Younger. Its grounds include an Italianate garden of ordered olive trees and red-tiled stone buildings and are bordered to the north by a dark forest, replete with hidden grottoes. From the villa are views of the gardens and steep-walled valleys of Lago di Como and Lago di Lecco. The only blemish on this bucolic scene is the urban pollution that sometimes wafts northward from the Po River Valley and blots out the sparkling lakes. The juxtaposition of visible industrial waste and the crisp natural beauty at Bellagio made it an ironically ideal place to consider the edgy relationship between the charisma of landscapes and the costs of technology.

Although wind power has provided motive force for centuries, its large-scale application to generate electricity has occurred only in the past two decades. During that period this use has spread most quickly in Europe and the United States, and understandably the competition for space has as well. For example, staffers of Denmark's largest environmental organization are encouraging the placement of machines out to sea so they "won't be seen."<sup>2</sup> To the southeast, the German Association for Landscape Protection has become increasingly strident in its efforts to shield landscapes from wind power's "depredations."<sup>3</sup> Also in Germany, no-nonsense books about the social costs of wind power are increasingly available, including Otfried Wolfrum's *Wind Energy: An Alternative It Isn't*.<sup>4</sup> To the west, wind power's landscape intrusion has been reported as the most important factor in the opposition it is receiving in the Nether-

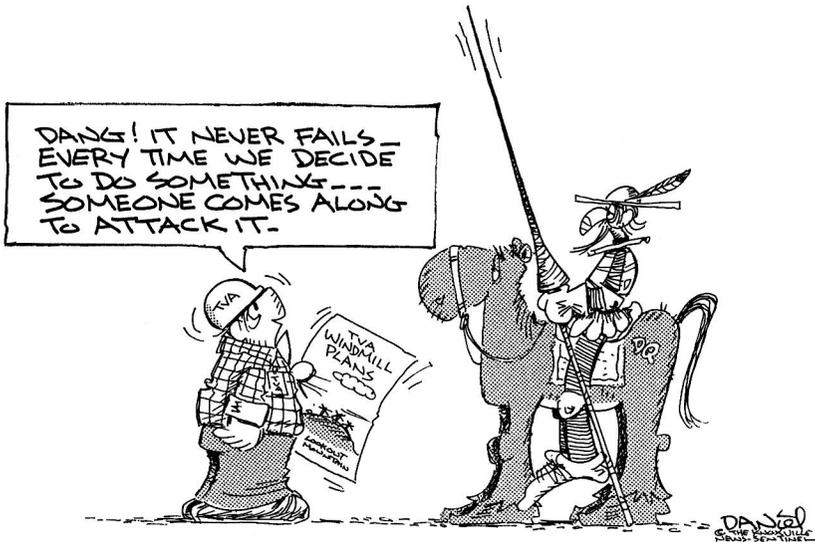


FIGURE 0.1 Cartoon illustrating public reaction to a proposal by the Tennessee Valley Authority to erect wind turbines on Lookout Mountain above Chattanooga, Tennessee. (Reprinted with permission of the *Knoxville News-Sentinel* Company.)

lands. Across the Channel, opponents in England have labeled wind turbines “lavatory brushes in the sky.” And in the United States, objections to wind power have included determined opposition in Wisconsin, legal suits in Palm Springs, angry confrontations north of Los Angeles, and sardonic cartoons in Tennessee (Figure 0.1).

Part of the increasing attention paid to the environmental impacts of wind power development is resulting from its quickening pace and growing contribution. By 2001, wind turbines around the globe were generating 30 terawatt-hours (TWh) of electricity.<sup>5</sup> About one-fifth of that was being produced in North America (Figure 0.2). By 2002, worldwide wind generating capacity was expected to exceed 25,000 megawatts (MW), with the lion’s share installed in Europe (Figure 0.3, Table 0.1).<sup>6</sup> The European Wind Energy Association hopes to install 40,000 MW by the year 2010, enough to supply electricity to about 50 million people. With growth of new installations booming, principally in Denmark, Germany, and Spain, they will likely meet that target.

One of the most important factors in the accelerated interest in wind power stems from its growing economic force. More than US\$6 billion of new wind turbines are expected to be installed worldwide in 2001, and