

## Wind Power Project Permitting

### **DEMONSTRATING THE NEED FOR CLEAN POWER AND EVALUATING THE ECONOMIC AND WILDLIFE IMPACTS OF WIND FARMS**

[Jeffrey A. Thaler, Esq.](#) | December 6, 2007

Al Gore wins the Nobel Peace Prize. “Climate Change” and “Global Warming” are now topics of daily news articles, web debates, and dinnertime conversations. Many states are not waiting for the federal government, and instead are undertaking initiatives to reduce greenhouse gas emissions. The most efficient and available clean energy source across the U.S. at this time – wind power – is drawing the attention not only of American energy companies and developers, but also from those around the world who seek to build wind farms in the U.S. Yet proposed wind projects, including one represented by this article’s author, still often face fierce local opposition from certain environmental groups claiming unreasonable biological, economic, or scenic impacts.

As with climate change, there has been a growing volume of objective empirical data over the past few years assessing not only the need for clean renewable energy, but also the economic and environmental benefits of such energy sources as wind power. This article can only briefly touch on some of the results, and guide the way for the reader to find additional detailed information and reports.

### **MODEL WIND POWER FRAMEWORK AND THE NEED FOR WIND POWER IN MAINE AND NEW ENGLAND**

In May 2007 Maine Governor John Baldacci created a Task Force on Wind Power Development in Maine to completely review and overhaul the regulatory process for review of proposed wind power projects. Although Maine has one of the largest on-and-off-shore wind resources in United States, it has very little installed wind capacity—only one wind farm with 42 MW of installed capacity from 28 turbines.<sup>1</sup> The Task Force and interested parties have been compiling data and studies from across the country about all aspects of wind power development, and conducting hearings on the topics.<sup>2</sup> Several consulting firms were retained by some

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<sup>1</sup> As of December 2007 there are three proposed wind farms that have received some regulatory review, totaling 243 MW. Studies suggest there is significantly more wind capacity developable in Maine, and of course many more times that across the United States.

<sup>2</sup> The Task Force web site has a wealth of information, including a number of presentations, can be found [here](#).

environmental groups to prepare and recently present a model wind power framework for Maine and New England, including analysis of such data as regional renewable energy demand targets, on- and off-shore wind potential, a regional supply curve, and the likely or necessary quantities and locations of future wind power development over the next 20 years.<sup>3</sup>

Presently, wind projects proposed in Maine's rural areas (the "unorganized territories") must demonstrate a need for the project in the community, area, and state. Since the July 2006 developer hearing presentations coordinated by the author, proof of such need generally has focused upon not only the traditional benefits of tax payments and jobs, but also such factors as: (a) decreasing the state's over-reliance on fossil fuels, thus reducing the cost and price volatility of electricity; (b) assisting the state in meeting its environmental targets to increase its renewable energy portfolio and reduce greenhouse gas emissions; and (c) providing health benefits to local and state residents by decreasing air pollution. Maine has the largest renewable portfolio standard in the country, and a recent law requiring an additional 10 percent of its energy to be generated from renewable energy sources by 2017.

#### **CLIMATE CHANGE AND GREENHOUSE GAS INITIATIVES**

Like many states, Maine has a Climate Action Plan. Maine has also implemented a greenhouse gas initiative by legislation and by entry into the Northeast's Regional Greenhouse Gas Initiative (RGGI), which involves all states from Maine south to Maryland with the exception of Pennsylvania. The RGGI is a market-based cap and trade program designed to reduce carbon dioxide emissions from electric power plants. It will be fully launched on January 1, 2009, affecting electric plants generating more than 25 megawatts that were on-line before 1/1/05 and whose fuel inputs are 50 percent or more from coal, natural gas, or oil; for post-1/1/05 plants, RGGI applies if fossil fuel makes up 5 percent or more of the annual heat input. The RGGI goal is that by 2018, each state's emissions budget will be 10 percent below its initial CO<sub>2</sub> emissions. Reduced emissions (through using clean, renewable energy like wind) help states meet their RGGI goals.<sup>4</sup>

On a more global basis, Al Gore's 2007 co-Nobel Laureate was the Intergovernmental Panel on Climate Change (IPCC), which has been busy issuing a number of detailed reports for several years. In November 2007 the IPCC issued its "Synthesis Report," intended to create for policymakers a single unified picture of the science, impacts, and mitigation of climate change. The report reaffirms that global warming is a scientific fact; that it is largely caused by human activities; that without immediate intervention measures over this century, there will be many serious changes including more droughts and intense storms, sea level rise, and habitat loss; and that developing many more clean, renewable energy sources is a necessary step in the effort to avoid ecological catastrophes for our children's and grandchildren's generations.<sup>5</sup>

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<sup>3</sup> The October 30, 2007 presentation can be found [here](#).

<sup>4</sup> A recent presentation by Maine DEP Commissioner David Littell summarizing wind power and its greenhouse gas and air quality benefits can be found [here](#).

<sup>5</sup> [Click here](#) to visit the IPCC website. A summary of the Synthesis Report can be found [here](#).

## **CLIMATE CHANGE IMPACTS ON MAINE AND THE NORTHEAST**

Application of the IPCC's research to Maine and the Northeast was recently completed in the form of The Northeast Climate Impacts Assessment (NECIA), a collaborative effort between the Union of Concerned Scientists (UCS) and a team of independent experts.<sup>6</sup> Their peer-reviewed studies and predictions focused both on the region itself as a whole and on the individual Northeastern States, and warned of dramatic and damaging changes to our weather patterns, coastlines, forests, wildlife, public health, and lifestyles. As Maine's DEP Commissioner said in response to the report: "Global warming is the largest threat facing our environment today. The ecological and human health impacts are potentially devastating to Maine's character and quality of life." The same could be said for the region, the country, and the world.

The NECIA report on impacts on Maine's forests, wildlife, and economy<sup>7</sup> mirrors predictions made nine years earlier by the Environmental Protection Agency's "Climate Change and Maine".<sup>8</sup> Sea level rise, changes in forest, bird, and pest species, and resultant economic dislocations to the forest products and other business sectors were predicted in 1998 and again in 2007—only now, the pace of climate change has been moving more rapidly than anyone expected.

## **ECONOMIC IMPACTS OF WIND FARMS**

Although some opponents of wind power claim that turbine visibility will harm local tourism and property values, recent studies show neutral to positive impacts on tourism and no adverse effects on real estate markets. For example, a 2004-5 federal government report reviewed more than a dozen wind projects across the United States, from New England to the West Coast, and found that wind power has a positive effect on rural economies.<sup>9</sup>

Likewise, many studies focusing on property values have shown no adverse effects on property values from wind farm development. For example:

- A January 2007 report by a certified real estate appraisal firm focusing on property sales from 1998 to 2006 near two utility-sized Wisconsin wind farms found they caused no measurable differences to home values.<sup>10</sup>
- An April 2006 Bard College study of a 20-turbine wind project in Madison County, New York analyzed 280 single-family residential sales from 1996 to 2005 within five miles of the turbines. There were "no measurable effects of

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<sup>6</sup> [Click here](#) to view the NECIA report. [Click here](#) to access individual state reports.

<sup>7</sup> [Click here](#) to view the Maine-specific report.

<sup>8</sup> [Click here](#) to view the EPA report.

<sup>9</sup> "Analysis: Economic Impacts of Wind Applications in Rural Communities", National Renewable Energy Laboratory and M. Pedden.

<sup>10</sup> Poletti and Associates, Inc. Real Estate Study

windfarm visibility on property transaction values...even when concentrating on homes within a mile of the facility.”<sup>11</sup>

A 2003 study by the Renewable Energy Policy Project of 25,000 property sales within view of ten wind farms in seven states, including states in New England, concluded that “the statistical analysis does not support a contention that sales within the view shed of wind developments suffer or perform poorer than in a comparable region. For the great majority of projects in all three of the cases studied, the property values in the view shed actually go up faster than values in the comparable region.”<sup>12</sup>

#### KEY WILDLIFE IMPACTS OF WIND FARMS

In order to address concerns of regulatory agencies and wind power critics, many studies have been conducted on actual and potential impacts of wind farms on wildlife (particularly migratory birds) and, more recently, bats. A summary of known avian collisions with wind turbines outside of California (which had older, more poorly-designed turbines) indicates a fatality rate of 1.83 per turbine per year.<sup>13</sup> More recently, a study at the Maple Ridge Wind Farm in New York estimated fatalities of between 3-9 birds/turbine/season (season being about 125-152 days).<sup>14</sup>

To compare approximately 2-4 birds/turbine/year with fatality events reported at other types of tall structures, such as tall communication towers and buildings, one can look at the following table to see that mortality at wind energy projects is many orders of magnitude lower than mortality from these and other sources:<sup>15</sup>

Structure/Cause	Total Bird Fatalities
Vehicles	60-80 million
Buildings and windows	98-980 million
Power lines	10,000 – 174 million
Communications Towers	4-50 million
Agricultural Pesticides	67 million
Housecats	100 million
Wind Generation Facilities	10,000 – 40,000

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<sup>11</sup> [Click here](#) to view the study.

<sup>12</sup> [Click here](#) to view the study.

<sup>13</sup> Erickson, W.P. et al, “Avian Collisions with Wind Turbines”, 2001.

<sup>14</sup> [Click here](#) to view the study.

<sup>15</sup> [Click here](#) to view the National Research Council’s 2007 “Environmental Impacts of Wind Energy” study (based upon Mid-Atlantic Highlands region). Also see generally Erickson *et al.* 2001; Klem 1991; Pimental and Acquay 1992; and Coleman and Temple 1993.

There have been few studies on bat mortality. Most have focused on Virginia and West Virginia where there are more caves as well as largely deciduous forest habitats. Outside of a study at Searsburg, Vermont (P. Kerlinger 2002), which failed to document any bird or bat mortality, there are currently no published studies of bat mortality for wind power facilities in New England. For facilities located on temperate forest ridges in the Southeast and Mid-Atlantic, fatality rates range from 15.3 to 41.1 bats per megawatt (MW) of installed power, per year.<sup>16</sup> Bat fatalities appeared to be greater at turbines nearer to wetlands (Jain *et al* 2007). Wind turbines on higher, more windy and sub-alpine ridgelines are expected to have far fewer bat fatalities.

The primary reason for very low rates of bird and bat mortality is that they migrate at altitudes well above the rotor-swept area. All post-2004, published (59) and unpublished (72) studies to date have consistently documented that birds and bats fly well above (i.e., 1000 to 2000 feet above) the turbine blades during migration periods.

## **CONCLUSIONS**

Not only environmental lawyers, but all concerned decision-makers and citizens must confront the largest threat to our public's environment, health, and property in decade: climate change from global warming due to greenhouse gas emissions. This century's realities require prompt and decisive action on many fronts, only one of which is the expedited permitting and construction of clean, renewable, and indigenous sources of power for our homes and businesses. It is critical that we help advocate not only for individual projects, but also for modernized policy- and decision-making that balances traditional environmental wildlife concerns with the new threats to wildlife, forest, coastal habitats, and our way of life. The need is urgent. The time is now.

*Jeffrey A. Thaler is a shareholder at the law firm of Bernstein Shur. [Click here](#) to view additional information on the author, including contact information.*

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<sup>16</sup> Kunz *et al.* *Frontiers in Ecology and the Environment* Issue 6, Vol. 5: August 2007.