Wind Energy Myths

Wind Powering America Fact Sheet Series

1 Wind energy is more expensive than conventional energy. Wind's variability does increase the day-to-day and minute-to-minute operating costs of a utility system because the wind variations do affect the operation of other plants. But investigations by utility engineers show these costs to be relatively small—less than about 2 mills/kilowatt-hour (kWh) at penetrations under 5% and possibly rising to 5 mills at 20% penetration. In fact, when the Colorado Public Service Commission issued a ruling in 2001 on the 161-megawatt (MW) wind project in Lamar, Colorado, the commission determined that wind energy provided the lowest cost of any new generation resource submitted to an Xcel Energy solicitation bidding process (except for one small hydro plant). The commission also noted that unlike the other generation resources considered, the Lamar project avoided the risk of future increased fuel prices.[1] And in a recent landmark study of wind integration into the New York State electric power system, a 10% addition of wind generation (3,300 MW of wind in a 34,000-MW system) actually projected a reduction in payments by electricity customers of $305 million in one year.[2]

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When the Colorado Public Service Commission issued a ruling in 2001 on the 161-MW wind project in Lamar, Colorado (pictured above), the commission determined that wind energy provided the lowest cost of any new generation resource submitted to an Xcel Energy solicitation bidding process (except for one small hydro plant).

2 Wind energy requires a production tax credit (PTC) to achieve these economics. True, but every energy source receives significant federal subsidies; it is disingenuous to expect wind energy to compete in the marketplace without the incentives enjoyed by established technologies.[3]

3 The production tax credit and accelerated depreciation are helpful only to big, out-of-state developers. The economic benefits aren't local, and rural electric cooperatives and municipal utilities can't receive the same benefits. It's true that only entities that pay federal taxes can use the tax credits to reduce their tax liability. But those tax credits result in lower wind energy costs for the benefit of all electricity customers. However, if local entities assume equity positions in wind plants, then they can receive the tax credit benefits. Whether or not the wind-plant equity is locally held, wind plants result in jobs for the local community and the need for local services—both during construction and during operation. Additionally, the added county and state taxes and the landowner lease payments directly benefit the local and state economies. And to the extent that debt financing comes from local sources, debt-service payments stay within the local community.

Also, in some cases farmers have joined together in a cooperative arrangement to build and own wind plants. In aggregate, their tax liability can be sufficient to make full use of the tax credits.[4]

4 Wind energy is unpredictable and must be "backed up" by conventional generation. No power plant is 100% reliable. During a power plant outage—whether a conventional plant or a wind plant—backup is provided by the entire interconnected utility system. The system operating strategy strives to make best use of all elements of the overall system, taking into account the operating characteristics of each generating unit and planning for contingencies such as plant or transmission line outages. The utility system is also designed to accommodate load fluctuations, which occur continuously. This feature also facilitates accommodation of wind plant output fluctuations. In

Denmark, Northern Germany, and parts of Spain, wind supplies 20% to 40% of electric loads without sacrificing reliability. When wind is added to a utility system, no new backup is required to maintain system reliability.

5 If wind energy displaces energy from existing coal plants, then rates will go up. Rates for electricity from wind plants being installed today are comparable to wholesale electric power prices of 2.5¢ to 3.5¢/kWh. The incremental cost of wind power, if any, will be negligible when distributed among all customers. A number of studies have examined the rate impacts of wind and have considered the costs of various renewable portfolio standard percentages from 5% to 10%, and average residential bill impacts are predicted to range from a savings to a premium of 25¢/month. In fact, some studies predict the accompanying decrease in demand for conventional fuels will reduce fuel prices enough to fully compensate for slightly higher costs for renewables. In the New York study mentioned above, wind displaced energy from both coal and natural gas plants. Rates decreased, and harmful emissions from the coal and gas plants were reduced as well.[5]

6 New natural gas power plants provide cheaper energy than wind plants. This is not likely with today's rising gas prices. At $3/MBTU, the fuel cost alone is 2.5¢ to 3¢/kWh, and capital and O&M costs add a similar amount. Today, gas prices have risen to more than $6/MBTU, yielding a fuel cost alone in the 5¢ to 6¢/kWh range. And gas prices have spiked to more than $10/MBTU in past years. Betting on low gas prices over the foreseeable future is highly risky, while energy costs from wind plants will be relatively stable over time. In a recent study, Lawrence Berkeley National Laboratory found that the natural gas "hedge value" of wind could be conservatively estimated to be 1/2 cent/kWh.[6,7]

7 Large, utility-grade wind turbines can't be installed on the distribution grid without expensive upgrades and power-quality issues. In situations with weak distribution grids (long lines with thin wires and few customers—maybe even single-phase), this can be true. However, in many cases wind generation can be connected to the distribution system in amounts up to about the rating of the nearest substation transformer. One study of a rural Midwestern county estimated that several tens of megawatts of turbines could be installed on the local distribution grid with a minimum of upgrade expense and minimal power-quality impacts. A number of single wind turbines and clusters of turbines are currently connected to the distribution system.[8]

8 Small projects that might be suitable for co-ops or small municipal utilities are not economical. Small projects generally have a higher cost per megawatt than larger wind plants, as would be expected. However, the incremental costs on customers' bills are likely to be small. The energy premium for a small project is unlikely to exceed 50%. If the project provides a small portion of the community's needs—say 2%—then the premium is reduced to about 1% if distributed among all customers. Some communities view this premium as a worthwhile investment to obtain local environmental benefits and experience with wind power.

9 Wind turbines kill birds and thus have serious environmental impacts. Bird kills have caused serious scientific concern at only one location in the United States: Altamont Pass in California, one of the first areas in the country to experience significant wind development. Over the past decade, the wind community has learned that wind farms and wildlife can and do coexist successfully. Wind energy development's overall impact on birds is extremely low (<1 of 30,000) compared to other human-related causes, such as buildings, communications towers, traffic, and house cats. Birds can fly into wind turbines, as they do with other tall structures. However, conventional fuels contribute to air and water pollution that can have far greater impact on wildlife and their habitat, as well as the environment and human health.

10 Wind turbines are noisy. Modern wind turbines produce very little noise. The turbine blades produce a whooshing sound as they encounter turbulence in the air, but this noise tends to be masked by the background noise of the blowing wind. An operating modern wind farm at a distance of 750 feet to 1000 feet is no more noisy than a kitchen refrigerator.

You can find more information on wind energy myths at www.eere.energy.gov/windandhydro/windpoweringamerica/pdfs/wpa/34600_misconceptions.pdf

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1 www.eere.energy.gov/windandhydro/windpoweringamerica/pdfs/xcel_wind_decision.pdf

2 www.nyserda.org/publications/wind_integration_report.pdf

3 For more on energy subsidies, visit www.earthtrack.net

4 Mark Bolinger, A Survey of State Support for Community Wind Power Development (http://eetd.lbl.gov/ea/EMS/cases/)

5 www.nyserda.org/publications/wind_integration_report.pdf

6 http://eetd.lbl.gov/ea/ems/reports/56756.pdf

7 Alan Greenspan, Federal Reserve Chairman, testimony at Senate committee hearing, July 10, 2003

8 Distributed Wind Power Assessment, National Wind Coordinating Committee, February 2001, available at www.nationalwind.org

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Myths and Facts About Wind Energy and Birds in the Altamont Pass

The wind industry is committed to, and has demonstrated, continual innovations leading to greater protection of the environment and wildlife. Modern wind turbines are far less harmful to birds and other wildlife than plate-glass windows, vehicles, pesticides and even house cats. And unlike fossil fuel power plants and other industrial processes, wind energy power plants do not emit any harmful emissions that threaten wildlife. Wind energy is clean energy, with no air pollution, no water pollution, no greenhouse gases, and no waste. The regional, national and global benefits of obtaining more of our electricity from the wind would be enormous.

Still, one of the first wind projects installed in the United States does impact local raptors. The Altamont Pass remains the only wind development area in the U.S. that experiences significant bird deaths (with "significant" defined as deaths of individuals of particular species that are numerous enough to possibly impact local populations of those species). While the industry recognizes that this situation represents a real problem, it is largely limited to this one area and is not widespread. Unfortunately, media coverage about Altamont often gives the impression that all wind power projects are harmful to birds, despite overwhelming evidence to the contrary. In part, this is due to myths about wind energy that are often repeated. Left unchallenged, these myths become accepted as true. The following information attempts to provide a more balanced view and debunk the most common myths about the Altamont Pass.

Myth: The raptor deaths seen in the Altamont Pass are indicative of a problem with all wind farms across the U.S.

Fact: Wind projects normally do not significantly impact birds. The Altamont Pass is unique in the U.S. Studies conducted at a dozen other wind projects across the country have found low impacts on birds. These impacts are dramatically lower than other human-related sources of mortality for birds (for example, cars, buildings, and communications towers),

Myth: The wind industry is simply studying the problems at the Altamont Pass and not taking any action.

Fact: Wind businesses have implemented many strategies to reduce bird impacts at the Altamont. Over the years, wind companies have painted blades, reduced rodent populations, added "perch guards" to prevent perching on turbine towers, and tested raptors' hearing, vision and avoidance capabilities to learn how to reduce bird impacts. One particularly successful strategy greatly reduced raptor electrocutions. Based on earlier research, project owners modified their equipment by insulating wires, covering some exposed electric components on poles, and relocating overhead powerlines to protect raptors. The industry is continuing today to test new measures to reduce bird kills, and to put into effect those that are helpful. One of the most promising of these is to replace older, smaller turbines with fewer new, large turbines, often referred to as "repowering".

Recently, project owners in the Altamont Pass announced an "aggressive adaptive" management plan to cut raptor mortality by 35%. Project owners will shut down some turbines in the winter, relocate or permanently remove about 100 of the highest risk turbines, remove some of the older non-operating infrastructure, and continue their commitment to repowering.

Myth: Strategies to reduce bird impacts in the Altamont Pass are relevant to other wind projects.

Fact: The Altamont Pass is unique in the U.S. No other wind project combines a similar topography, raptor population, and old turbine technologies. Bird mortality, especially raptor mortality, at other wind sites is already quite low, so most management techniques are not likely to be applicable elsewhere.

Myth: Raptors are killed in the Altamont Pass because the site is in a migratory flyway.

Fact: A wind project in a migratory flyway does not necessarily pose a threat to birds. The San Gorgonio wind resource area, about 400 miles south of the Altamont Pass, is in the same migratory flyway as the Altamont Pass. 25 million birds pass through San Gorgonio every year, but there is no significant raptor or bird mortality at that site. The presence of birds in an area does not connote risk, nor is building a wind plant in a migratory flyway a risk to birds. Raptors are most likely killed in Altamont Pass because it has a high year-round raptor population, an abundant prey base, and many smaller turbines that are sited relatively closely together.

Myth: The wind turbines in Altamont Pass are very dangerous to birds in general.

Fact: The annual number of birds killed by collisions with wind turbines in Altamont Pass is about one bird for every five turbines. This is probably less than the number killed each year by the average house cat. Altamont is important not because it is dangerous for birds in general, but because of the number of raptor kills. This is a key distinction, because the rate of raptor deaths at other wind sites is much lower.

Myth: Tens of thousands of birds have died because of the wind turbines in Altamont Pass.

Fact: This is actually true . . . when looking over 20 years (22,000 birds). But that number should be viewed in context. In the U.S. during that same time:

- 2 billion to 20 billion birds were killed in collisions with buildings;
- 1.2 billion to 1.6 billion in collisions with autos and trucks; and
- 100 million to 600 million in collisions with communications towers.

And the Altamont Pass wind project provided 100,000 California homes with clean, emissions-free electricity.

The implication that Altamont Pass is dangerous to birds in general is false.

Myth: The evidence of raptor deaths at Altamont Pass means that wind energy cannot coexist with birds and other wildlife and new wind development should therefore be halted.

Fact: Wind projects around the nation have been shown to pose minimal risks to birds and other wildlife. The wind energy industry has worked hard over the past decade to reduce the impact of wind turbines on wildlife such as birds and bats. Those efforts have largely been very successful - wind turbines and wildlife can and do coexist successfully.

The wind industry welcomes scrutiny of, and comparison with, all of the impacts of all sources of power generation. Many extensive studies of avian collisions at wind farms – most of them funded by project owners - have been carried out, a fact that contrasts greatly with the lack of a systematic effort to monitor bird deaths resulting from fuel mining/extraction, emissions, pollution and habitat loss associated with other energy sources. Any public or private research effort, regulatory effort, or legislative proposal designed to quantify the impact of power generation on birds, bats, and other wildlife should encompass all power sources, not just wind.