

## Wind Energy in Oklahoma: A Costly Solution in Search of a Problem - Executive Summary\*

Robert Michaels

As Oklahoma's legislature debates ending the state's tax incentive for wind-generated power, arguments continue to be made that wind is good for the state's electricity consumers as well as for the state's economy. This paper examines the impact of wind on the state. It finds:

- Today, Oklahomans enjoy the benefits of an excess supply of electrical energy. There does not appear to be the need for construction of new generation facilities of any type in the near future.
- The construction of wind turbines in Oklahoma has been driven by the federal production tax credit, not any Oklahoma state policy.
- Oklahoma reached its *voluntary* renewable portfolio standard some time ago.
- Wind power does not provide environmental benefits to the state.
- Wind power does not provide significant financial resources to K-12 schools.
- The Oklahoma Zero-Emissions credit presents significant risk to the state's fiscal outlook.

The strongest arguments to support the claim that wind is a boon to the economy are that wind, as a form of energy, is free, and that wind power producers often offer their power at a zero or even negative price. But wind's true economic impact is so blurred by state and federal tax and energy policies that it is nearly impossible for a casual observer to put together an accurate picture of wind's impact. This paper is an attempt to sharpen the picture with the hope that policy decisions will be improved. The bottom line, however, is stated in Chapter 2, where the analysis strongly suggests that "the utility-scale wind industry will not survive in competitive power markets unless it is subsidized."

Wind Power is currently subsidized through state and federal tax policy. At the state level, new wind producers are effectively paid \$5 for every megawatt-hour they produce for ten years. This is in addition to the \$23 per megawatt-hour the federal government pays these producers for ten years (though the federal subsidy is being phased down). At the wholesale level, the federal subsidy alone is sufficient, under some circumstances, to allow wind producers to pay, rather than receive payment, to load their generated power onto the electrical grid. Properly understood, this economically unsustainable practice alone makes it clear that low prices for wind-generated power, made possible by government interference, obfuscate the real cost wider society is actually paying for that power.

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This paper, in its entirety, can be found at [www.1889institute.org/corporate-welfare.html](http://www.1889institute.org/corporate-welfare.html).

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Economists have long shown in a variety of ways, theoretical and empirical, that a free-enterprise system, where government plays only referee and regulator of last resort, yields the greatest possible benefits from mankind's natural urge to exchange with one another. Active government interference through misguided and excessive regulation, direct subsidies, unequal tax treatments, and generous legal rules only for the privileged, make society poorer than it could otherwise be. Per Bylund, an OSU entrepreneurship professor, reinforces this point in a separate essay provided in the paper. In fact, Bylund argues that government attempts to stimulate innovation often actually reduce innovation.

The primary author of this work, economist and energy expert Robert Michaels, shows that wind power is much more costly than often thought. Michaels' argument can be summed up as follows. Once a basic, but thorough, understanding is gained of how modern electrical grids work and how important it is that energy sources be highly reliable, it becomes clear that wind-generated power has little, if any, cost advantage over other power sources, despite appearances to the contrary. What's more, the main advantage wind has, which is to reduce carbon emissions, is not clear at all, given wind's intermittent nature and the need for fossil-fuel backup power plants. This last point is reinforced by an essay included in the paper from climate expert, Paul Knappenberger.

Chapter 1 provides an overview of electric power in the United States and Oklahoma. It describes how the mix of electrical power sources has changed over time, as well as the regulatory and legal frameworks within which power generators operate. It also points out that there are laws of nature that must be taken into account in order to maintain a stable electrical grid that reliably provides power. Part of what makes this possible for Oklahoma is the Southwest Power Pool (SPP), a large, multi-state electrical network of which Oklahoma is only a part, which is described. Finally, a basic explanation is provided of how power flows within the SPP, and how it is that this somewhat artificial but remarkable market, with its many mandates and regulators, insulates us from some of wind power's worst potential effects.

In Chapter 2, Dr. Michaels explores whether wind power is actually economically valuable, given its intermittency (i.e., that the wind does not blow steadily 100 percent of the time), using methodology developed by a Brookings Institution economist. The fact is that a wind plant rated to produce a given maximum amount of electricity can only be counted on to produce a fraction of that amount over time. Even that fraction, however, cannot be reliably expected to be delivered as needed. This is because wind, even that as seemingly reliable as Oklahoma's, is not reliable enough as a source of power to produce the constant voltage needed on a modern electrical grid. Wind cannot reliably be instantly called up to cover unexpected loads, grid interruptions, or unexpected power interruptions from other generators.

Yet, because of the far-flung nature of the SPP and the ability of that market to accept nearly any power source that bids low enough and is willing to pay to be admitted onto the grid, wind has been integrated into the system. Nevertheless, this has happened at a cost as the SPP has had to create a special side market to keep subsidized wind's artificially low prices from destabilizing the grid. What's more, Dr. Michaels shows that when wind replaces older fossil-fuel generation, it often does not produce the value (in reduced fuel and capital costs) or even the reduction in CO<sub>2</sub> emissions that more modern fossil fuel technologies often accomplish since wind does not always blow and reserve generation must therefore be maintained.

In Chapter 3, the fact that wind might have helped to lower electricity prices in Oklahoma is acknowledged, but only on a short-sighted, short-term basis. It is also argued that there is a hidden cost to these lower rates. As already noted in Chapter 2, much of this cost is in reserve generation, not to mention the impact on Oklahoma's tax revenue picture. There has also been a large investment in new grid extensions and upgrades of the current SPP grid, partly to accommodate wind. Wind's low prices are, in no small part, made artificially possible by mainly federal, and to a much smaller degree, state tax subsidies. Ultimately, given that SPP gives wind generation only 5 percent credit as part of its reserves that can be called up when needed, it would take 10,000 megawatts of wind generation to replace only 500 megawatts of, say, coal units. Wind can only be absorbed as a generator up to a very limited point.

Chapter 4 argues that given the costs of its absorption and the federal subsidies wind has received, it is arguable that the future of wind is higher costs, not lower, for consumers. At best, wind power has made a very limited contribution to property tax revenues and is not likely to make a large contribution in the future. Instead, wind presents a significant risk to Oklahoma's future state revenue outlook due to the subsidies.