



Written Comments of Michael Goggin

Thank you for the opportunity to appear today to talk about a topic that is critical for Kansas's economy, consumers, and energy security: the benefits of putting Kansas's world-class wind energy resources to use. Wind energy is playing a valuable role in Kansas by creating jobs, keeping electricity prices low, and allowing Kansas to export another energy product, among other benefits.

Wind energy has emerged as an important contributor to the nation's energy mix, accounting for 35% of all newly installed generating capacity over the last four years. Kansas has been at the forefront of that success.

Kansas is fortunate to possess one of the best wind energy resources in the country, second only to Texas. In fact, the National Renewable Energy Laboratory conservatively estimates that the state has over 950,000 MW of developable wind energy resources. To put that in perspective, that is enough to meet over 90 times the state's current electricity needs, which is around 11,000 MW at peak, or enough to provide more than two-thirds of the electricity used in the entire United States.

Kansas is leading the way in wind energy development, with 1,274 MW of wind energy installed at the end of 2011, enough to power 430,000 typical homes. 8.3% of the state's electricity came from wind energy in 2011, a more than three-fold increase from the 2.3% the state obtained from wind in 2007. Kansas leads the country with 1,388 MW of wind energy to be installed in 2012, more than double the state's installed generation. The state's Renewable Portfolio Standard (RPS) is an important driver for the continued growth of wind energy and wind turbine manufacturing in the state.

Jobs and Economic Development

Wind energy plays an important role in Kansas's economy, a role that is likely to increase as the state works towards achieving its wind energy potential. In 2010, Kansas had between 500 and 1,000 direct and indirect jobs supported by the wind industry. With the completion of new manufacturing facilities since then, that total is almost certainly higher today. For example, Siemens completed its \$50 million wind turbine nacelle factory in Hutchinson, Kansas, at the end of 2010. This facility alone added 400 employees to the state's wind energy industry. As of the end of 2011, at least seven facilities in Kansas currently manufacture for the wind industry, and an additional four new facilities have been announced. Kansas is poised to benefit from more than \$3 billion in new wind energy investment in 2012 and thousands of new construction jobs and over a hundred permanent operations jobs.

Because many of the most valuable parts of a wind turbine are quite large, like blades, towers, and nacelles, there is a significant benefit to building these components near where they will be deployed. In addition, the labor of building, operating, and maintaining a wind project must be done on-site. As a result, states with significant wind energy deployment are likely to receive a significant share of the economic benefits of that development.

A strong state RPS is also critical for attracting wind energy manufacturing. Companies looking to invest in wind energy manufacturing facilities are discouraged by uncertainty, and RPSs greatly reduce that

uncertainty by creating a long-term, stable policy environment. Wind energy brings a number of other economic development benefits, in addition to jobs. For example, wind energy currently brings \$3.8 million per year in lease payments to Kansas landowners.

A study from Charles River Associates examined the impact of building 14,000 MW of wind power and the associated needed transmission in the Southwest Power Pool, a region that includes Kansas.ⁱ The conclusion: the investment would provide consumer savings of around \$1.1 billion per year, or net benefits of around \$700 million per year. CRA estimated that 5,600 MW of that wind power would be built in Kansas, and \$196 million of the consumer savings would accrue to Kansas ratepayers. Kansas would receive the largest share of the job creation and economic development benefits as well, with more than 4,000 jobs and \$500 million in direct earnings created during the wind energy construction phase, and \$1.8 billion in total economic activity created. After construction the wind projects would continue to create jobs, with almost 2,000 wind project operating jobs yielding \$75 million in direct earnings annually and \$180 million in total economic activity annually.

Consumer Benefits

Wind energy helps keep electricity prices low by providing a free, fixed-cost fuel for 20 years. Adding wind power to the grid displaces the most expensive and least efficient power plants first, so even modest additions of wind power can greatly reduce power prices. In addition, wind energy protects consumers from price volatility.

Department of Energy data, bolstered by many economic analysts support the conclusion that wind energy is helping to keep consumers' electricity prices low. Consumers in the top wind energy producing states have seen their electric rates increase at around half the rate of consumers in states that produce little or no wind energy:

| Ranking for wind power | Electric. price increase, 2005-2010 |
|---------------------------------|--|
| Bottom 30 wind power states | 26.74% |
| Top 10 wind power states | 10.94% |
| Top 20 wind power states | 15.72% |

Many factors influence the price of electricity, so this isn't necessarily proof that states with more wind power will always have smaller electricity price increases. What is clear is that the data stands in strong opposition to those who have tried to make unsupported claims that more wind energy will drive up electricity prices.

Utilities and state regulators have also embraced wind energy for its role in keeping electricity prices low and protecting consumers from price volatility. In early 2012, American Electric Power subsidiary Southwestern Electric Power Co. (SWEPCO) signed long-term power purchase agreements for a total of 358.65 MW from wind projects in Texas, Oklahoma and Kansas. SWEPCO said in a news release that the purchase would lower its consumers' electricity costs by an estimated 0.1 cents per kilowatt-hour over a 10-year period starting in 2013.

In Colorado, in a late-2011 order approving a wind power purchase by Xcel Energy, the state Public Utilities Commission (PUC) stated that "the contract will save ratepayers \$100 million on a net-present-value basis over its 25-year term under a base-case natural gas price scenario" while providing the opportunity to "lock in a price for 25 years."ⁱⁱ

In 2011, Alabama Power, a subsidiary of Southern Company, made its first wind power purchase. In signing off on the contract, the Alabama Public Service Commission noted that the "price of energy from

the wind facility is expected to be lower than the cost the company would incur to produce that energy from its own resource ... with the resulting energy savings flowing directly to the Company's customers."

Similarly, a 2009 analysis for the New York State Energy Research and Development Authority (NYSERDA) found that each megawatt-hour of renewable energy produced resulted in \$100 worth of consumer savings on electric bills.ⁱⁱⁱ

Wind power also provides long-term stability by allowing utilities to lock in electricity prices for 20-30 years and insulating utilities and their ratepayers from volatile fuel price shifts. Wind offers the same peace of mind a fixed rate mortgage gives homeowners. As the Colorado PUC said in its Xcel Energy decision: "a utility with a long-term wind power purchase agreement in hand knows exactly how much it will cost to meet its customers' power needs for the next several decades."

Wind energy costs have fallen dramatically in recent years. Today, an average wind turbine has a nameplate capacity seven times larger than a typical turbine in 1990 and produces 15 times more electricity. More efficient U.S.-based manufacturing is saving on transportation costs, while creating good American jobs and technology improvements are making turbines better and more efficient. 60% of a wind turbine is U.S.-made now, compared to around 25% in 2005.

A January 2012 study from the Lawrence Berkeley National Laboratory shows that it costs between 24 and 39 percent less to produce wind energy on a per-kilowatt-hour basis today than it did in 2002-2003.^{iv} A fall 2011 report from Lawrence Berkeley National Laboratory found that "On a \$-per-kW [kilowatt of installed nameplate capacity] basis, wind turbine prices in the U.S. have declined by nearly one-third on average since 2008," attributed to factors such as larger and taller wind turbines yielding greater energy production.^v

Wind energy benefits consumers in ways other than by reducing electricity prices. The DOE's 2008 report, "20% Wind Energy by 2030," found that producing 20% of the nation's electricity from wind energy by 2030 would reduce consumers' natural gas costs by a cumulative \$150 billion by reducing electric sector demand for natural gas and thus reducing the price for all natural gas consumers.^{vi} Since natural gas is widely used throughout our economy for home heating and manufacturing processes like fertilizer production, the fuel savings benefits of wind energy benefit nearly every sector of the economy.

Putting Wind Energy to Work for Kansas

Kansas is fortunate to possess world-class wind energy resources that are yielding enormous benefits for the state's workforce and consumers. Kansas's Renewable Portfolio Standard has played an important role in drawing wind energy development and manufacturing activity to the state, strategically positioning Kansas to help lead the way in developing the energy technologies of the 21st Century.

ⁱ http://www.crai.com/uploadedFiles/RELATING_MATERIALS/Publications/BC/Energy_and_Environment/files/Southwest%20Power%20Pool%20Extra-High-Voltage%20Transmission%20Study.pdf

ⁱⁱ Colorado Public Utilities Commission, Decision No C11-1291

ⁱⁱⁱ <http://www.nyserda.ny.gov/en/Page-Sections/Energy-and-Environmental-Markets/Renewable-Portfolio-Standard/~media/Files/EDPPP/Energy%20and%20Environmental%20Markets/RPS/RPS%20Documents/rps-evaluation-final.ashx>

^{iv} "Recent Developments in the Levelized Cost of Energy from U.S. Wind Power Projects," Lawrence Berkeley National Laboratory, February 2012

^v "Understanding Trends in Wind Turbine Prices Over the Past Decade," LBNL, October 2011

^{vi} www.nrel.gov/docs/fy08osti/41869.pdf