NEBRASKA POWER ASSOCIATION

LR 83 White Paper Topic 6

"The financial benefits and risks that will affect Nebraskans due to the expansion of wind energy for consumption and export and how the benefits could be maximized while at the same time minimizing the risks to ratepayers and taxpayers."

Assumptions

When evaluating the financial risks and benefits of exporting wind power from Nebraska, several assumptions are made--some of which are made with considerable uncertainty.

The cost for constructing 7,800 MW (nameplate rating) of wind would be approximately $16 billion in 2009 dollars, based on a construction cost of $2,100 per kilowatt. This does not include the cost of any transmission.

Legislative Resolution 83 suggests construction of 7,800 MW of wind generation between now and 2030. Considering the NPA's state-wide load projection for 2028 of 9,070 MW, Nebraska would need to add about 2,850 MW at 40% capacity factor, in addition to current renewable resources. This leaves the remaining 4,950 MW for sale to others outside the state.

The operational model to be used for planning, constructing, and maintaining the project(s) needed to provide the wind generation resource could include private ownership and development, public power ownership or a combination of these two. The private ownership model is the most likely, due to reasons to follow in this paper. Legal and regulatory concerns need to be addressed to allow for private "merchant" type projects to exist in Nebraska.

Benefits

Market for Wind Energy - Wind resource availability could bring revenue into Nebraska. Wind energy has value in offsetting carbon dioxide (CO_2) emissions from fossil fuel generation. CO_2 emission costs are expected to rise via federal regulations. A market for wind energy and "CO_2 attributes" or Green Tags will then develop to be applicable to existing and new Renewable (electricity) Portfolio Standards (RPS). Since some neighboring states also have high wind potential, thousands of miles of additional transmission will be necessary. One of the drivers to this resolution is to provide wind energy to states without this resource.

Job Creation - Wind farms can have an economic impact through job creation. The creation of jobs can be categorized into three different areas: direct, indirect and induced. Direct jobs are the on-site or immediate jobs created by the new wind project (e.g., the contractors and crews hired to construct the plant). These jobs will be temporary, rather than permanent. Indirect jobs are created as a result of the wind project (e.g., bankers, legal counsel, electrical part manufacturers, other suppliers, etc.). Induced jobs are created as a result of the economic activity generated by the direct and indirect workers associated with the new wind project. These jobs are created at project area businesses that provide food, clothing, professional services and other related goods and services.

In addition, manufacturing jobs may be created in the state of Nebraska as a result of the wind energy industry. In Iowa, wind turbine related manufacturing is producing 1,000+ jobs and positive economic impacts. Some wind tower manufacturers have located in Nebraska. Their strategy was to locate close to the wind sites to reduce transportation costs and time. Schooling and training would be needed to provide personnel for a large wind development. Some of this training has already been added to offerings at Nebraska community colleges and technical schools, but more may be needed.

Nebraska's experience with wind turbine operation has required about one permanent on-site job per 10 MW. This experience implies the need for 780 full-time permanent on-site workers to maintain the 7,800 MW of turbines. There is also potential to add to the existing green manufacturing jobs in Nebraska. Nebraska's location is central to the primary wind regimes in the country which provides significant potential for increasing the number of manufacturers of wind energy equipment.

The benefits of job creation can be maximized for Nebraskans by mandating use of Nebraska labor for construction, providing business incentives for construction of manufacturing plants in the state and various other methods. A recent report by the Pew Charitable Trusts indicates that Nebraska ranks second in the country in "green" job growth even though Nebraska lags other states in wind energy development.

Landowner Income - Nebraska's economy would see a boost in economic activity from construction-related activities between 2011 and 2030. Annual land-lease payments to Nebraska landowners during operations of 7,800 MW are estimated to range from $19 million to $39 million. This helps to diversify the agriculture business in the state. There would also be an increase in property tax revenue for the State.

Risks

Stranded Investment – Nebraska utilities need to be mindful to avoid the cost obligations of stranded investments. With possibly three years for transmission construction, transmission investment needs to begin before wind turbine construction. There is the possibility of a wind development being cancelled after some transmission has been completed. Another concern is the possibility of energy sales being cancelled before the transmission investment has been recovered. This leaves the transmission owner with stranded transmission assets. Also, wind technology continues to improve and turbines may become obsolete before their full cost recovery is complete. Replacement parts could become scarce later in life rendering some machines inoperable. Public power utilities could minimize these risks by using a "buy model" where they would buy energy from wind resources developed by private companies.

Wind Energy Costs – According to the NPA's Statewide Coordinated Long-Range Power Supply Plan (available at www.nepower.org), the cost of wind energy is higher than fossil fueled resources. There are no fuel costs other than maintenance. Capital costs are affected by the lower capacity factor of wind (30% to 40%) which pushes up the cost per kilowatt-hour produced. The life of wind turbine generators and blades is typically 20 years, requiring capital costs to be recovered faster than for a coal plant with an expected 30 year life before being renewed or decommissioned. Generally, a 20% RPS would boost Nebraska's electric rates initially.

Financing - Construction of public power generation and transmission can be funded by federal income tax exempt bonds when the facilities are built to meet the needs of Nebraska customers. It is uncertain how the IRS would rule on borrowing by public entities for renewable energy production primarily for export.

Bond ratings are based on the level of risk the utility poses. A wind energy development may increase the risk from the rating agencies' point of view. Reduced bond ratings due to risk may lead to higher interest costs for the wind development and other utility capital projects.

At the present time, the credit markets are not functioning as in the past. It is possible that borrowing for wind generation and transmission will be more expensive if lenders perceive wind investments to be risky. This may change with time. Wind project debt may need to be guaranteed or secured by other assets to compete in the bond market. Here again public power utilities could minimize risks by buying energy from private developers.

The economics of wind generation development by public power utilities could be improved significantly with state and federal incentives similar to those available to private, investor-owned utilities. Public power utilities are not eligible for the federal Production Tax Credits (PTCs). The federal program available to public power utilities is the Renewable Energy Production Incentive (REPI) program, but it has never been fully funded by Congress and the Department of Energy has zeroed out the REPI program as part of President Obama's 2010 fiscal budget. A number of states have enacted tax credits or other incentives on the state level for wind energy development, but Nebraska has not implemented any such incentives for public power.

Transmission - Typically, wind farms are located far from load centers which require substantial investment in transmission lines and facilities. The amount of wind contemplated in LR 83 will require significant investment in major new transmission infrastructure from Nebraska throughout the region in order to deliver the wind energy generated to the export markets.

The cost of transmission needs to be recovered from the transmission users, not the utilities' ratepayers. The acquisition process for transmission corridors has changed dramatically over the past ten years. "Not in my backyard" issues have led to more than doubling the cost of siting these facilities. There are fewer and fewer land owners willing to allow power facilities to be placed on their property. This forces the utility to increase their offering in order to obtain the land or the rights they need to place the facilities along their chosen route.

Potential Risk to Nebraska's Public Power Status - Partnering with private entities to establish additional wind farms is considered a favorable option in order to reduce the cost to our customers. There are tax credits available to private entities that are not available to Nebraska utilities. Capturing these credits allows the project costs to be more acceptable and justifiable in order to pursue this renewable energy source. All options must consider the current public power status in the state.

Other Issues

Backup Capacity - By its nature, wind is an intermittent resource which means it is variable with limited dispatchability. Wind farms in Nebraska have shown capacity factors up to 43%. Non-firm energy from wind resources requires firm support from other resources. The output of wind resources varies seasonally, with most energy available other than during the summer months when it is needed most due to the summer peaking nature of Nebraska loads. Variations in energy production must be addressed by local utilities. A cost allocation system must be developed to protect Nebraska's consumers from rising bills due to wind energy exports. Any impact on costs for utilities needs to be offset by the benefits.

Potential Inability to Pay Debt on Wind Facilities - As with all other investments, it is prudent to evaluate potential risks, and not invest in assets of limited future value. Investment must not exceed the market for the energy. There is some danger that the rush to build renewable generating facilities will lead to another asset bubble similar to that of ethanol industry in the plains states. A large number of ethanol plants were built because of federal gasoline additive mandates and state ethanol subsidies to its use as a motor fuel. Many plants then became uneconomical because of changing gasoline and corn prices and overcapacity. Long-term power purchase agreements will be necessary to minimize risk.

Land and Land Right Acquisition Issues - Building wind facilities will require land to be purchased or leasing rights to the land be obtained. This will require negotiations with current land owners. The popularity among landowners to this leasing has gained due to increased media coverage regarding the issue. This in turn has led to a substantial increase in the cost of the acquisition of the land or land rights because the land owners are aware of a higher demand for their space. Wind energy developers are also offering more to entice landowners to participate.

Current Laws - Currently laws favor entities which pay income taxes with investment tax credits, production tax credits and accelerated depreciation. Companies that don't pay income taxes cannot use the tax credits. Congress has provided Renewable Energy Production Incentives (REPI) to provide public power an incentive equivalent to the Production Tax Credit. However, REPI has never been adequately funded. The level of appropriations from Congress and the growth of renewable generation have not kept pace with REPI demands. An alternative to REPI, Clean Renewable Energy Bonds (CREB) does not provide public power with an equivalent incentive as compared to Production Tax Credits for investor-owned utilities.

In May 2007, the Nebraska Legislature passed LB629 and other legislation to provide Community-Based Energy Development (C-BED) projects with state sales tax exemption. These laws provide public power the ability to contract away their right of eminent domain during construction of wind projects. Through this mechanism, public power utilities may be able to purchase wind energy at a lower cost than they could produce on their own.

Leaders of Nebraska's public power industry formed the Nebraska Power Association in 1980 to address industry-wide concerns and interests. This voluntary association represents all segments of the public power industry in Nebraska: municipalities, public power districts, public power and irrigation districts, rural public power districts and rural electric cooperatives engaged in generation, transmission or distribution of electric energy in the state.