2009-10 Energy Policy for Montana

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Part II of IX "Integrating wind energy"

Governor Schweitzer's Energy Policy statement on wind:

"Our agricultural and other resource strengths mandate that the State of Montana aggressively promote the development of wind generation, ethanol, biodiesel, biomass and other renewable forms of energy."

ETIC Energy Policy statement: (This is a DRAFT statement that has not received ETIC approval. It is meant ONLY as a starting point for ETIC discussion)

Findings

Montana law requires utilities to develop a diverse resource base that includes renewable energy, such as wind. Wind, however, is an intermittent resource, and when large amounts of wind are integrated the variable power output must be offset with other resources to maintain the power grid.

Wind integration costs can be driven by the market and flexibility available to a utility. Utilities operating in control areas with limited flexibility for managing loads face wind integration costs that are largely a function of market prices. It also must be noted that the Federal Energy Regulatory Commission has primary regulatory jurisdiction over transmission and is working to find ways to better accommodate wind.

Significant new wind facilities have been built in Montana over the last five years, and as many as 50 wind projects with a total of 4,000 megawatts of wind are on the drawing board.[1] Smaller locally owned or community-owned wind farms are also under development in various areas of the state.

ETIC recommendations: ?

Recommendations (Examples from other state energy policies):

Idaho (During the 2006 session, the Idaho Legislature passed House Concurrent Resolution No. 62, directing the Legislative Council Interim Committee on Energy, Environment and Technology to develop an integrated state energy plan. Idaho ranks 23rd in existing wind capacity [146 MW], and 13th for potential capacity.[2])

Idaho recommendations and policies:

☐ Increased investments in local renewable energy resources such as wind energy and biofuels would also provide economic benefits, particularly in rural areas of the state, while representing an environmentally friendly source of energy. Third, the Committee finds that conventional resources such as oil, coal, natural gas or nuclear power will

[1] Powerpoint presentation, Evan Barrett, Governor's Office, July 2009, ETIC.

[2] American Wind Energy Association, http://www.awea.org/projects/Projects.aspx?s=Idaho.

continue to be needed to meet Idaho's energy demand; however, the Committee would like to encourage suppliers to invest in the most environmentally sound methods of extraction, production and delivery of conventional energy.

- ☐ Wind power is a mature technology that can produce electricity at a generally low cost relative to other renewable resources. However, wind power is an intermittent power source that introduces complexities and costs.
- ☐ System planners must assure that there is sufficient capability in the rest of the electric system to provide reliable service when the wind power output drops. In addition, the variability of wind resources can cause overall system dispatch costs to increase. These "system integration" issues generally limit projections of wind power expansion.
- ☐ The Idaho Public Utility Commission should establish uniform policies for interconnection and net metering that promote investment in customer-owned renewable energy facilities. Idaho's municipal and cooperative utilities should work together to develop a uniform policy for municipal utilities and rural electric cooperatives.

Iowa ("Charting our own course: Today's challenges, tomorrow's opportunities" -- Iowa Energy Independence Plan produced by the Office of Energy Independence in December 2008. The Iowa Power Fund Board, which includes legislative representatives, also review the plan. Iowa ranks 2nd in existing wind capacity [2,883 MW] and 10th in potential capacity.[3])

Iowa recommendations and policies:

- ☐ It is likely that Iowa will begin exporting greater amounts of power created by wind to other states, requiring more transmission to be built. New policies should emphasize the real need for new transmission capacity to transport emerging and future wind generation as well as power from current sources.
- ☐ The newly-created Governors Windpower Coalition seeks to match the model and success of the Biofuel Coalition in the coming year by fostering interstate collaboration and influencing federal and regional wind energy policy.
- ☐ Continued investment in wind power generation and biofuels development has placed Iowa at the forefront of renewable fuel generation. However, much work and investment remains.
- ☐ Iowa should promote and ensure the long-term growth of large utility-scale wind. From financing incentives to load management to rights-of-way that may be needed for transmission corridors, regional planning is essential to ensuring Iowa is ready to become the national leader in large-scale wind energy generation and manufacturing. With this in mind, the Office of Energy Independence endorses the U.S. Department of Energy (DOE) report recommending that 20% of energy nationally come from wind energy by 2030.

Background

[3] American Wind Energy Association, http://www.awea.org/projects/Projects.aspx?s=Iowa.

Montana ranks 19th in existing wind capacity [272 MW] and 5th in potential wind capacity.[4] Montana's wind resource is rated number one in the nation for class 3 wind and above.

The last two years have brought major advancements in wind in Montana. In 2008 Montana saw 126 megawatts of new wind generation come online, bumping its total to 271.5 megawatts.[5] In early 2009 Montana State University-Great Falls College of Technology also received a $2 million federal grant to carry out its wind turbine program and develop wind energy programs at other campuses around the state. Great Falls shares the $1.97 million grant from the U.S. Department of Labor with Montana State University-Northern in Havre, Montana State University-Billings College of Technology, and Montana Tech in Butte. Curriculum has been developed for a wind energy technical program at each campus.

In Montana, state law, the renewable portfolio standard, requires public utilities and competitive electricity suppliers to procure a minimum of 5% of the retail sales from renewable resources through 2009, 10% between 2010 and 2014, and 15% starting in 2015. Cooperative utilities are responsible for implementing their own renewable standards.

As many as 50 wind power projects are in various stages in Montana. Projects include a proposed 300 megawatt wind farm northeast of Martinsdale on private and school-trust land. The 58-megawatt first phase will include seven to 15 turbines on state land, plus additional turbines on adjacent private land. Construction on the wind farm is expected to begin in 2010. A 52.5-megawatt expansion to Judith Gap has been discussed, if Invenergy is able to secure contracts to sell the additional power. With the construction of the 230-kilovolt Montana Alberta Tie Line, up to 300 megawatts of power could come online. Because a collection of wind developers have secured capacity on the line, the majority of the new power on the new line is expected to be wind.

The 2007-08 Energy and Telecommunications Interim Committee reviewed the costs and benefits ratepayers could see if the state invests in further development of wind power. Integration is a term used in describing the economic impact wind has on a utility because of variability and uncertainty. Wind integration can lead to additional utility costs because additional generation capacity that is controllable is added to manage the incremental variability of wind. The uncertainty is attributed to operations planning required to accommodate wind. Utilities purchase regulatory reserves to balance out the variability of wind. The Federal Energy Regulatory Commission (FERC) sets generation integration rules that require a utility to balance supply and demand.

Wind's variability can increase the day-to-day operating costs of a utility system. With rising coal and gas prices, however, wind is becoming a competitive player. Concerns abound that large, utility-grade wind turbines can't be installed on the distribution grid without upgrades, resulting in higher costs being passed on to ratepayers. The cost of wind integration also can grow as the percentage of wind increases on the interconnected system. Overall, however, the economics of wind energy are largely a function of a project's size, the wind resource, policy

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[4] American Wind Energy Association, http://www.awea.org/projects/Projects.aspx?s=Montana.

[5] "2009 may be good year for wind power", *Great Falls Tribune*, Karl Puckett, January 4, 2009.

incentives, and financing. Cost recovery can be a threshold issue that varies among areas and utilities.

The Utility Wind Integration Group coordinated with trade associations, investor-owned utilities, public utilities, and cooperatives in creating a recent report about wind integration. The review found that:

- "Wind resources impacts can be managed through proper plant interconnection, integration, transmission planning and system and market operations
- System operating cost increases caused from wind variability and uncertainty amount to about 10% or less of wind energy's wholesale value.
- A variety of tools, such as commercially available wind forecasting, can be employed to reduce costs.
- In many cases, customer's electricity costs can be reduced when wind is added to the system because operating-cost increases are offset by savings that arise from displacing fossil fuel generation."[6]

There are a number of factors that contribute to the costs of wind energy on a utility-scale size. Wind integration costs are often driven by the need to "secure additional operating flexibility on several time scales to balance fluctuations and uncertainties in wind output."[7]

The costs associated with wind can be reviewed in two areas. One is wind integration, or the impacts of adding wind into a utility's operations. A second is the cost of wind as it relates to marketing that product or having adequate transmission to get it to market. From many utility operator's point of view the cost of integration or ancillary costs are critical. From the production perspective, the importance of increasing transmission lines and the ability to get wind power, or any source, to market is key.

Wind brings additional costs related to integration and transmission. A study by the Department of Energy, Energy Efficiency and Renewable Energy division finds that at least two recent studies show wind integration costs are about $5/MWh, or less, for wind capacity penetrations up to 15% of the peak load where the power is delivered.[8] However, there is debate about whether average or "typical" integration costs can truly be determined. Some states and utilities have completed or are in the process of completing wind integration studies to determine individualized costs.

Energy production from wind continues to help meet NorthWestern Energy's overall electric portfolio requirements. Wind generation in 2008 provided about 8.5% of the electricity NorthWestern needs to serve its customers. The 135-MW Judith Gap Wind farm, which came online in 2006, is the primary facility that sells wind generation to NorthWestern. However, in

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[6] American Wind Energy Association, "How Utilities Integrate Wind Energy", Jeff Anthony, June 2009, http://www.renewableenergyworld.com/rea/news/article/2009/06/how-utilities-integrate-wind-energy

[7] *The Northwest Wind Integration Action Plan*, March 2007, page 27.

[8] *Annual Report on U.S. Wind Power Installation, Cost, and Performance Trends: 2006,* U.S. Department of Energy, Energy Efficiency and Renewable Energy, May 2007, page 20.

total, NorthWestern has about 148 MW of wind contracts and received more than 509,000 MWh in 2008. In 2008 the amount NorthWestern supply paid for regulation resources specifically to integrate wind generation into its electric supply portfolio was $2.6 million. This is at about $5.19 of regulation cost per MWh of wind generation. [9] In 2008 NorthWestern Energy, along with several other partners, completed a wind integration study with the assistance of Phoenix Engineering, a wind engineering firm with offices in Alberta, Canada and Texas. The $110,000 wind integration study provided a high level understanding of the amount of additional regulation resources necessary to integrate large quantities of new wind generation sited at different locations throughout Montana.

Wind Energy Taxation and Incentives

15-6-157, MCA taxation

Wind generation facilities with a nameplate capacity greater than 1 megawatt are generally class fourteen property taxed at 3% of market value.

15-24-3004, MCA impact fees.

Owners and operators of wind generation facilities for commercial purposes are subject to an initial local government and local school impact fee for the first 3 years after construction begins. The fee may not exceed .5% of the total construction cost.

15-32-2-1, MCA tax credit

Provides an income tax credit for individual taxpayers who install in the taxpayer's principal dwelling an energy system using a recognized nonfossil form of energy generation. The credit may not exceed $500.

15-6-224, MCA tax exemption

Provides for the appraised value of a capital investment in a nonfossil form of energy generation to be exempt from taxation for 10 years on $20,000 in a single-family residential dwelling or $100,000 in a multifamily residential dwelling or nonresidential structure.

15-32-402, MCA tax credit

Provides for an investment tax credit to any individual, corporation, partnership, or small business corporation that makes an investment of $5,000 or more for a commercial system or net metering system that generates electricity by means of an alternative renewable resource. With certain limitations, a credit against individual or corporate income tax of up to 35% of the eligible costs of the system may be taken as a credit against taxes on taxable net income produced by certain specified activities related to alternative energy. If this tax credit is claimed, other related tax credits and property tax reductions may not apply.

15-6-225, MCA property tax exemption

New generating facilities built in Montana with a nameplate capacity of less than 1 megawatt and using alternative renewable energy sources are exempt from property taxes for 5 years after start of operation.

Title 15, chapter 24, part 14, property tax reduction

[9] Information provided by NorthWestern Energy, August 2009.

Generating plants using alternative fuels that produce at least 1 megawatt are taxed at 50% taxable value during the first 5 years after the construction permit is issued.

75-25-101, MCA alternative energy revolving loan program

Provides loans to individuals, small businesses, units of local government, units of the university system, and nonprofit organizations to install alternative energy systems that generate energy for their own use or for capital investments for energy conservation purposes when done in conjunction with alternative energy systems.

Title 69, chapter 8, net metering

NorthWestern Energy must allow net metering if a customer chooses to generate his or her own energy using solar, wind, or hydropower to offset customer requirements for electricity. Its generating capacity can't be greater than 50 kilowatts. Cooperatives also offer net metering.

Title 69, chapter 3, part 20, RPS

"The Montana Renewable Power Production and Rural Economic Development Act" requires that public utilities and competitive electricity suppliers procure a minimum of 5% of their retail sales from eligible renewable resources through 2009, 10% between 2010 and 2014, and 15% starting January 1, 2015. Cooperative utilities with 5,000 or more customers are responsible for implementing their own renewable standards.

Title 90, chapter 4, part 12, bonding

"The Montana Clean Renewable Energy Bond Act" authorizes Montana local governmental bodies and tribal governments to participate as qualified issuers or qualified borrowers under the federal Energy Tax Incentives Act of 2005 to better access financial investments for community renewable energy projects or alternative renewable energy sources.

Title 15, chapter 24, part 31, "Clean and Green"

The "Jobs and Energy Development Incentives Act" approved during the 2007 May Special Session, provides tax incentives for development of clean and renewable energy.

Energy Promotion Division

During the May 2007 Special Session, legislators provided funding to establish an Energy Infrastructure Promotion and Development program. The money is allocated to the Department of Commerce, Community Development Division. The division, now known as the Energy and Promotion Division, works "with private industry, local and regional economic development organizations, as well as with state, federal, and tribal governments to facilitate, promote and develop clean and green energy projects throughout Montana."

HB 645, 2009 Legislature, Energy Development and Demonstration grant program

Entities including, units of the Montana university system, agricultural research centers, private entities or research centers can apply through the DEQ for grants up to $500,000 to advance the development and utilization of energy storage systems, to develop systems specifically designed to store energy generated from eligible renewable resources, to promote the efficiency, environmental performance, and cost-competitiveness of energy storage systems, and to advance the development of alternative energy systems.

HB 529, 2009 Legislature, permitting

The scope of environmental review under the Montana Environmental Policy Act for certain energy projects on state lands is limited. If more than 33% of the total land occupied by

an energy development project is state land then the environmental review includes the total land area, including federal and private land.

Montana Wind Projects					
Name	**Location**	**Capacity (MW)**	**Units**	**Owner**	**Power Purchaser**
Glacier Phase I	Ethridge	106.5	71	NaturEner	San Diego Gas and Electric
Glacier Phase II	Ethridge	103.5	71	NaturEner	
Diamond Willow Phase I	Baker	19.5	13	MDU	MDU
Diamond Willow Phase II	Baker	10.5	7	MDU	MDU
Horsehoe Bend	Great Falls	9	6	United Materials	
Judith Gap	Judith Gap	135	90	Invenergy	NorthWestern Energy
Refurbished Projects	Martinsdale Two Dot	1.43	22	Dave Healow	NorthWestern (and others)

Source: American Wind Energy Association

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