# Final Report and Recommendations <u>Wind Energy Task Force</u>

2009 Wyoming Session Laws, Chapter 159, Section 348

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# **Position Statement**

The Wind Energy Task Force believes there are significant benefits to Wyoming from the responsible development of a substantial wind energy industry. Wind energy development could help bring Wyoming from a transitional phase to a transformational stage in energy development. Wind energy development could help maintain Wyoming's status as one of the energy capitals of the United States. The Task Force believes that Wyoming must work to diversify its energy portfolio in response to a market which is placing increasing value on energy supplies created by renewable sources. Mindful of the benefits of wind energy development, the Task Force recognizes that a lack of appropriate regulation may impact Wyoming's quality of life and its wildlife and environmental resources. Wind development in Wyoming should be promoted and regulated in a way that maintains the fledgling industry's competitiveness, which promotes job opportunities and economic development and which addresses its impact on Wyoming's communities, wildlife and landscapes.

# Wind Energy Task Force Background

2009 Session Laws, Chapter 159, Section 348 created a Wind Energy Task Force to study the current status of wind energy development, including regulation, taxation, siting, public service commission authority, county zoning, federal policies and authorities, funding and the decommissioning of facilities. The Task Force was directed to report its findings and recommendations to the Governor, the State of Wyoming Legislature and the citizens of Wyoming no later than November 1, 2009. The Task Force's findings and recommendations will further the knowledge of the state and provide information to legislators and industry for consideration during the 2010 Budget Session.

#### **Task Force Membership**

The Task Force was comprised of nine members; two appointed by the Governor, three appointed by the President of the Senate and four appointed by the Speaker of the House. The Task Force selected Senator Jim Anderson as its chairman. Other members of the Task Force were Senators Marty Martin, Drew Perkins, Representatives Rodney "Pete" Anderson, Seth Carson, William "Jeb" Steward, Tim Stubson and at large private sector members Kent Connelly and William "Bill" Miller.

#### **Task Force Tasks**

The 2009 Session Laws, Chapter 159, Section 348 outlined and specified the following:

(c) The Task Force shall study the following, as they relate to the regulation and taxation of the wind energy conversion industry;

(i) Statutes relating to the authority of the industrial siting division of the department of the environmental quality;

(ii) Statutes relating to the authority of the public service commission;

(iii) Statutes relating to county zoning;

(iv) Any relevant federal statutes that may preempt or limit state or county authority; and

(v) Other issues relating to the wind energy conversion industry the Task Force may determine to be relevant, including the appropriate agency, or agencies as may be necessary, to regulate the industry, how such regulation of the industry should be funded, the process for decommissioning of facilities, and wind generation tax policies, avoiding duplication of conflicting requirements and effects on state trust lands.

#### **Task Force Activities**

The Task Force met May 20th, August 26-27th and October 12th, 2009. The minutes for each of these meetings are included in the appendix to this report and are available on-line at http://legisweb.state.wy.us. At all meetings, the public was invited to provide public comment, address issues and provide information. At the first meeting in May, the Task Force organized itself, identified the relevant issues and designed an action plan. The second meeting in August consisted of one and one-half days of informational presentations by state and federal agencies. industry experts, interest groups and concerned citizens. The schedule for this meeting included considerable time for public comment. During the last half of the second day, the Task Force assigned members individual research assignments and asked the members to prepare proposed recommendations for the third meeting. The third meeting was October 12, 2009. During this meeting, the Task Force received additional information and public comment. The Task Force then received reports from its members regarding the topics to which they were assigned and their proposed recommendations. Upon hearing the presentations and proposed recommendations, the Task Force formulated formal recommendations and voted to adopt or reject those recommendations. At the end of the third meeting, the Task Force had adopted by a majority vote of its members the recommendations contained in this report.

In completing its study of wind energy development, the Task Force received valuable assistance from a number of people and organizations. The Task Force would specifically like to recognize the Governor's Office for providing valuable technical and logistical support to the Task Force and thank the state agencies that provided information and testimony. In addition, the Task Force would like to thank the University of Wyoming for providing significant support and research for the Task Force's studies. Specifically, the Task Force recognizes the efforts of the University of Wyoming Law School, the School of Energy Resources, the Ruckelshaus Institute and the Economics Department. Finally, the Task Force would like to thank the wind energy industry for providing helpful information, research, testimony and access to its wind farm facilities.

### The Market for Green Energy

The demand for wind generated electricity and other forms of renewable energy is increasing across the United States and the world. This increased demand for renewable energy is generated, in part, by state and federal energy policies that are focused on reducing America's dependence on fossil fuels, managing carbon outputs and addressing the increasing demand for electricity.

Numerous states are implementing renewable energy portfolio standards which dictate the proportions of their energy portfolios which must come from renewable energy. In addition to

state renewable energy standards, there is the possibility of the federal government adopting a nationwide renewable energy standard and implementing regulations. Demand for wind generated electricity likely will increase in the future because of these standards and because wind energy presents an attractive renewable energy technology which is available to supplement traditional energy sources and provide increased generation capacity.

# Wind Resource Information

Wyoming has some of the nation's best wind resources. The Western Governors Association in partnership with the National Renewable Energy Laboratory (NREL), in its report entitled "*Western Renewable Energy Zones – Phase 1 Report,*" found that over 50% of the developable Class 5 and above wind sites in the west are located in southern Wyoming. NREL estimates that there are 116,670 MW of developable Class 5-7 winds in Wyoming and that Wyoming has over two-thirds of the developable Class 7 wind and over one-half of the developable Class 6 wind located onshore in the United States. The American Wind Energy Association (AWEA) ranks Wyoming 7th in terms of its future wind potential, with 85,200 MW of potential capacity. When considering Class 6 & 7 developable wind, Wyoming ranks 1st in the U.S. **Figure 1** provides a detailed map of the different classes of wind resources available in Wyoming.

#### Figure 1: Wyoming Wind Power Resource Estimates



Figure provided by Janelle Wrigley's presentation See Appendix No. [4].

Note that Figure 1 does not indicate which resources are developable. Testimony before the Task Force indicated that it may not be economically or environmentally feasible to construct wind turbines in certain portions of Wyoming.

According to the Wyoming Wind Collector and Transmission Task Force, it is important to recognize that lower air densities found at higher elevations in Wyoming will reduce the production capacities of all wind resources in Wyoming. Testimony before the Task Force indicated that elevation could impact production capacities, also known as "capacity factors," as much as 20% to 25% when compared to the same turbine located in the same wind class at sea level.

# Status of Wind Development in Wyoming

Wyoming's wind development can be assessed and predicted by several indicators. Current wind development leases on in-state federal lands, state lands and private estates is one measuring gauge. The Task Force, however, received no data indicating the total wind development acreage leased in Wyoming. A second indicator of the wind industry's future is overall wind class acreage available and which is located in areas that are suitable for development. A critical third indicator is transmission and collector system availability.

According to the American Wind Energy Association, there is 985MW of installed nameplate wind energy capacity in Wyoming. This ranks Wyoming 11<sup>th</sup> nationally, with a national installed total of 31,109MW as of June 2009.

Several groups have estimated the potential and realistic build out of Wyoming's wind energy. According to National Renewable Energy Laboratory ("NREL"), there are roughly 116,670MW of Class 5-7 winds developable in Wyoming. The American Wind Energy Association ranks Wyoming 7<sup>th</sup> in terms of its 85,200 MW of future potential wind capacity. The Western Renewable Energy Zones initiative, under the wing of the Western Governors Association, estimates that about 14,239 MW of Class 5+ winds will be developed, but identifies 3.5 wind energy zones or "hubs" in Wyoming with a potential of 49,104MW.

There is approximately 12MW of planned transmission expansion in Wyoming. According to estimates from the Department of Energy, one 2 MW wind turbine has a 1-2 acre development footprint. Consequently, a build out of 12,000 MW would result in less than 20 square miles of permanent land use, or roughly the footprint of the City of Cheyenne. Under this scenario, less than 1% of Wyoming's total land would be developed for wind energy. Of course, such development might have impacts beyond its physical footprint. Those impacts could include changes to local view sheds and wildlife impacts.

With regard to federal BLM lands, testimony indicates that roughly one-quarter of the 1.5 million acres leased for wind measurement and testing could reach the development phase, totaling as much as 375,000 acres. As of August 2009, there are 91 test and measurement applications filed, 34 of which have been approved. Six full development applications are pending BLM approval, not including the Chokecherry and Sierra Madre wind energy projects which comprise 98,477 total acres, roughly half of which are BLM lands.

Of the 3,574,487 acres of Wyoming state lands, a total of 19 wind development projects, on 45,052 acres, have been approved by the State Lands and Investment Board. Of these projects,

four are in operation, one is under construction and 14 are in the planning stages. These projects are located across 10 counties. 33 lease applications are in negotiation stages, totaling 271,496 acres.

When considering the development estimates above, caution must be exercised for lands which have been identified by the state as "core population areas" for the Greater Sage-Grouse. As discussed later in this report, development in these areas is potentially limited. Further, according to the Wyoming Wind Collector and Transmission Task Force, the amount of wind that actually will be developed in Wyoming is far lower than estimates provided by NREL or AWEA, due to a mix of environmental and economic factors. The Wyoming Wind Collector and Transmission Task Force estimates a realistic estimated build out of 10,000-15,000MW, based on planned transmission capacity additions. The Western Renewable Energy Zones initiative estimates that about 14,200 MW of Class 5 and above wind resources will likely be developed in Wyoming. The Task Force did receive testimony that the realistic build out of installed additional transmission capacity likely will be only 3,000-5,000MW by 2016.

# **Current Regulation of Wind Energy in Wyoming**

Regulation of the wind energy industry can be divided into three major areas. The first area is regulations that control how wind energy can be developed on federal land. There is a substantial amount of federally owned land in Wyoming that has the potential to be developed for wind energy. A number of federal agencies are involved in permitting on federal land but the Bureau of Land Management (BLM) serves as the lead agency in consultation with other federal agencies. The BLM manages two major types of right-of-way applications and grants for wind energy development. The first is the Site Testing and Monitoring Right-of-Way Grant which allows a company the use of the land to determine development potential. These grants are generally for a three year term and allow activities such as the erection of meteorological towers.

The second is the full field development right-of-way which gives the developer the long-term (30-35 years) ability to develop the land for use as an operating wind energy generation project. It should be noted that any transmission lines that cross federal land must also receive a right-of-way grant.

Prior to granting any rights-of-way on federal lands, federal agencies must perform an environmental analysis pursuant to the National Environmental Policy Act (NEPA). This environmental analysis may include an environmental impact statement ("EIS") to determine the impacts of a proposed development. In addition to complying with NEPA, wind energy projects must also comply with other federal laws including the National Historic Preservation Act and the Migratory Bird Treaty Act.

The second major area of wind regulation is at the state level. State regulation of wind energy is conducted by the Department of Environmental Quality, Industrial Siting Council ("ISC") and the Public Service Commission ("PSC"). The ISC is responsible for permitting processes and the PSC regulates wind energy producers who provide and sell wind electricity directly to Wyoming consumers. The PSC's jurisdiction is limited because the Task Force is aware of few wind energy producers in Wyoming who sell energy directly to Wyoming customers. If a majority of future wind energy producers sell their power at the wholesale level, then a majority of the wind energy industry will not be regulated by the PSC.

The ISC provides the state permitting function for wind energy projects if they are of a size sufficient to trigger the ISC's jurisdiction. Projects must be \$173.2 million or larger to trigger the ISC permitting process. The ISC also provides permitting for electric transmission lines over 500 kV. Other state agencies and regulators provide information and recommendations through the ISC process, including the Game and Fish Department, the Department of Health, The Office of State Engineer and the Wyoming State Geologist.

County regulation is the most localized level of wind energy regulation. Currently, seven counties have wind development approval standards, including Albany, Natrona, Platte, Laramie, Sweetwater, Park and Carbon counties. Although many counties have chosen to regulate and analyze similar issues under their regulations, there is considerable variance in the standards applied and there are no statewide minimum standards in place.

# **Issues Identified as Relevant to Wind Energy Development**

In its work, the Task Force identified a number of issues that impact the development of a wind energy industry in Wyoming. Without placing them in any specific order of importance, these issues included:

#### Sage Grouse

Wyoming is home to approximately 54% of the world's Greater Sage-Grouse ("sage grouse") population. While Wyoming currently enjoys robust populations of sage grouse in its sagebrushsteppe habitat, sage grouse populations have been declining in the western United States. As a result of the declining populations, the U.S. Department of Interior has been petitioned to list the sage grouse as a threatened or endangered species under the Endangered Species Act. The U.S. Fish and Wildlife Service is scheduled to make their decision regarding the listing of the sage grouse in February of 2010.

The listing of the sage grouse as a threatened or endangered species might have a significant adverse affect on Wyoming's economy. Listing of the sage grouse would remove Wyoming's authority to manage the species, would threaten both future and existing industry in Wyoming and could significantly curtail Wyoming's ability to generate revenues from its state lands. The majority of Wyoming's energy industry is located within sage grouse habitat. This over-lap of sage grouse habitat is not limited to wind energy development and includes virtually every facet of Wyoming's energy production, including transportation/transmission, oil, coal, natural gas, uranium and other minerals. In addition, the listing could have a material effect on Wyoming's ranching, farming and recreation industries and on communities throughout Wyoming.

In response to declining sage grouse populations and the overlap of development and habitat, the Governor's Sage Grouse Implementation Team has developed a "Core Population Area" strategy. The U.S. Fish and Wildlife Service has responded to a review request and stated that the core population area strategy "is a sound framework for a policy by which to conserve the greater sage grouse in Wyoming." **Figure 2** is a map showing the location of Wyoming's core areas as most recently determined by the Implementation Team. Testimony before the Task Force indicates that the location of core areas may be modified as additional information becomes available.



**Figure 2: Greater Sage-Grouse Population Core Areas** 

Figure provided by Bob Budd presentation. See Appendix No. [12].

Figure 3 demonstrates the overlap between sage grouse core areas and wind energy resources in Wyoming.





Figure provided by John Emmerich presentation. See Appendix No. [11].

**Figure 4** shows the overlap of potential and existing wind energy development in Wyoming with core areas.



Figure 4: Core Areas and ISD, G&F, OSLI, and BLM Wind Projects

Figure provided by Todd Parfitt presentation. See Appendix No. [19].

As a result of the overlap between Wyoming's energy industry and sage grouse population core areas, and the need for Wyoming to proactively manage sage grouse populations to prevent the federal government from taking over their management, the Governor issued Executive Order 2008-2. A copy of that executive order is included as **Exhibit 1**. The Governor's order substantially limits new development within core areas.

# <u>Transmission</u>

The Task Force received considerable testimony and information concerning the transmission issues that surround the development of wind energy in Wyoming. Much of this information is included within the report offered to the Task Force by its transmission sub-committee, comprised of Senator Martin and Mr. Miller. [See Exhibit 2.] According to testimony received by the Task Force, wind energy potential in Wyoming exceeds current total electricity sales in Wyoming by a factor of 220. Further, the existing electrical transmission system in Wyoming is filled to capacity. As a result, industry has indicated that the development of transmission capacity is one of the top, if not the top, challenge facing wind energy development.

Wyoming would need additional transmission capacity of between 10,000 megawatts and 15,000 megawatts to handle the likely commercial-scale development of wind energy. This capacity would need to come both in the form of high voltage interstate transmission lines, capable of

carrying Wyoming wind energy to load centers in the west, south and south-west, and an intrastate collector system to connect wind generation projects to the interstate system. Currently, six (6) large interstate projects are in development to provide export capacity from Wyoming to places where renewable energy demand exists. **Figure 5** shows the approximate locations of these projects.

#### Figure 5: Proposed Interstate Electric Transmission Lines



Figure provided by Steve Ellenbecker presentation. See Appendix No. [7].

The installation of all the projects mapped in Figure 5 is not certain. The Task Force received testimony that the realistic build out of installed additional transmission capacity likely will be only 3,000-5,000MW by 2016.

To funnel electricity into these interstate systems, a significant collector infrastructure is necessary. According to information provided to the Task Force by its transmission subcommittee, a comprehensive collector system might consist of up to ten (10) 500kV lines with up to forty (40) 230kV lines connecting widely dispersed wind generation facilities. The collector system, alone, might require investments in the magnitude of \$5 billion. The six large capacity, interstate transmission lines would cost significantly more.

Information provided to the Task Force indicates that the planning and installation of this transmission system will be expensive and complex. If each project is developed independently and without coordination, the benefits of economies of scale will be limited and the system likely

will be less efficient and less reliable. Further, there is a need to plan a long-term, coordinated system that will avoid chaotic or environmentally unacceptable development.

There are various means for achieving this goal. The Task Force heard testimony about the Wyoming Wind Collector and Transmission Task Force, a collaborative effort to promote a regional approach to transmission development. Various regulatory schemes also exist. Presently, transmission line permitting is subject to state and local regulators. Developers must comply with county zoning regulations as well as the requirements of the Wyoming Industrial Siting and Development Act, if their lines exceed 500kV. Developers must negotiate rights-of-way and easements for the placement of their lines, but are granted the power of eminent domain under specified circumstances See W.S. 1-26-815. When transmission line developer can be required to work with state land boards and the federal land management agencies (Bureau of Land Management, Forest Service, Fish and Wildlife Service, National Park Service, Bureau of Reclamation) to site and permit their projects. These agencies oversee applicable regulatory schemes, including the National Environmental Policy Act, the Endangered Species Act, the Migratory Bird Treaty Act and various state laws and regulations.

If a well-planned transmission system can be developed in Wyoming, it will benefit not only the wind energy industry, but could provide significant ancillary benefits and help Wyoming strengthen its energy portfolio. These benefits include substantial capital investment in Wyoming and the increased economic activity associated with construction. Wyoming's traditional energy providers also may benefit from having a new pathway for exporting electricity. For example, increased electrical transmission capacity could ease depressed local natural gas prices by allowing natural gas producers a way to export their natural gas in the form of electricity. Further, because the intermittent nature of wind requires wind energy producers to provide supplemental, intermittent electricity support, wind energy development may create additional demand for traditional energy sources.

#### **Landowners**

During its study of wind energy development, the Task Force took testimony from many land owners. The Task Force heard few landowners who are opposed to all development. There were suggestions that no development occur within pristine scenic areas and mountainous areas. Many landowners support wind energy development if it is conducted in an environmentally sensitive way that fully compensates them for the burdens and benefits associated with the development. Landowners strongly favor an approach to development which preserves their individual rights to negotiate the uses of their land. Some landowners consider wind energy development to be a means of preserving their way of life by making their lands economically productive. Landowners do tend to support siting regulations and laws which require wind farm set-back requirements and view-shed requirements.

The Task Force did receive copies of petitions signed by many landowners who live in or near the Laramie Range, expressing opposition to wind energy development and transmission line siting on or near their properties. The Task Force also learned of specific instances of land owner objections which have impacted the development of wind farms and transmission line projects. For this reason, industry has suggested exploring development corridors for transmission lines and better avenues for efficiently considering all landowner issues within one forum. Industry

expressed its concern that the current system represents a fragmented process that increases the cost and time necessary for development without a corresponding benefit to landowners' ability to vet their concerns.

#### **Regulatory Certainty**

The clearest message from industry during the Task Force's study was the fact that industry needs certainty in order to fully develop Wyoming's wind energy potential. Certainty must include both an established regulatory pathway, as well as uniformity between entities which have regulatory authority. Industry strongly encourages the Task Force to consider the benefits of consolidating and streamlining regulatory authority to prevent the uncertainty and increased costs associated with having to comply with multiple regulatory schemes in front of multiple regulatory bodies. The certainty sought by wind energy developers also includes certainty in taxation. Without both regulatory certainty and certainty over tax treatment, businesses do not believe that they have the facts necessary to engage in appropriate business planning and risk assessment. Regulatory certainty and consolidation, combined with settled tax policy, will encourage wind development in Wyoming and would reduce the costs associated with such development, making the developers' product more competitive in the renewable energy marketplace.

#### **Community Impact**

Commercial-scale development of wind has substantial impacts on the communities near where wind farms are constructed. The impacts can include positive benefits like increased economic activity, jobs, increased property tax revenues and increased sales tax revenues. The Task Force received testimony indicating that these benefits might be substantial given the large capital investments and substantial work forces needed to construct wind farms and transmission systems.

There also can be negative community impacts associated with wind development. These impacts can include the costs born by counties and cities who may be responsible for maintaining roads that service wind farms and who experience increased costs associated with medical and ambulance services, housing, law enforcement, schools and the provision of other services. Some of these costs may continue after the construction of a wind project and during the long-term operation and maintenance phases. However, with regard to the construction of wind farms, testimony before the Task Force indicated that the community impacts likely are not as great as they are for some other types of development, including natural gas development. Preliminary studies indicate that wind farms are constructed in relatively short bursts of intense construction, employing mostly out-of-state laborers who perform their jobs and then leave. Construction of a typical 100MW wind project can require more than two hundred (200) workers. Ongoing operation and maintenance of a 100MW wind project can create approximately ten (10) permanent jobs. Preliminary studies indicate that large-scale wind projects enjoy economies of scale and do not hire proportionately more employees.

Part of the impact costs are covered by property taxes paid by wind energy companies. However, the testimony of several Wyoming county commissioners indicated that the depreciation schedules followed by wind energy developers significantly depreciate their taxable property within a short time. The commissioners' testimony indicated that property taxes, after as little as five (5) years, do not cover continuing impact costs. The Commissioners also expressed concern over the lag time associated with a county's receipt of property tax payments. In addition, because

the bulk of property taxes are used to support education, property tax revenues are not all available to offset the costs that may be associated with development.

Impact assistance payments, available for projects permitted by the Wyoming Industrial Siting Council, also can help local governments cover the costs of development impacts. These payments are, however, based on increases in sales tax collections once construction has commenced. Currently, wind energy projects enjoy an exemption from sales tax which will not continue after 2011. Further, despite industrial development in the state, the current nation-wide economic downturn has significantly decreased Wyoming sales tax receipts. As a result of these factors and the formula used to calculate impact assistance payments, counties have experienced significant decreases in impact assistance payments with no corresponding decrease in impact costs.

#### Wind As A Property Right

The contours of the legal right to the wind are not specifically defined in Wyoming. In considering the nature of wind as a property right and the question of who owns the right to develop wind resources, the Task Force benefited from the assistance of both private attorneys and an extensive research paper drafted by the University of Wyoming Law School. A more complete discussion of this issue is contained within the legal memorandum and reports included in the appendix. [See John MacPherson Memorandum; UW Law School report Defining Wind Rights in Wyoming: A Practical Solution, drafted by Benjamin A. Kinney and Brian Marvel.]

There are two primary issues involved. The first is the fundamental question of whether wind can be considered a property right. The testimony before the Task Force indicated that wind generally is treated as a property right attached to the surface estate and which runs with the surface estate. See W.S. 10-4-301 and 34-20-102. However, the Task Force considered whether wind might be statutorily assigned rights similar to those of water or of diffused surface water. The testimony suggested that the Legislature consider providing certainty by statutorily defining the right to wind.

The second question follows from the first and asks whether, if wind is a legal right associated with a legal estate, is it severable from that estate? Although the answer to this question is not clear, wind rights in Wyoming, to the extent they exist, already have been contractually severed. Various companies have entered into contractual arrangements with land owners for the development, or eventual development, of wind energy projects. Further, development has begun to occur on state lands and the State Lands and Investment Board has adopted a process for leasing these lands for the specific purpose of wind energy development. In considering this issue, and despite the existing treatment of wind, the Task Force recognizes that there are broad-reaching legal and policy concerns with potential unintended consequences. The Task Force recognizes that there may be substantial benefit from defining wind rights in Wyoming, but equally recognizes the complex questions involved and the consequences which might attend an uninformed rush to provide certainty.

#### **Taxation**

During its study, the Task Force heard considerable testimony concerning taxation of the wind energy industry in Wyoming. The question has been posed, "What's in it for Wyoming." Clearly,

one of the answers is a diversified tax base. However, taxation of the wind energy industry is complex both in determining the means of taxation and in determining the rate.

Wind energy projects currently pay property taxes and, after 2011, likely will pay sales and use taxes on renewable energy equipment. The Task Force considered various additional tax schemes that could be applied to the wind industry. Among others, these schemes could include treating wind energy production like a severance and applying a severance tax, imposing a power generation tax or allowing payment in lieu of taxes. The Task Force heard considerable testimony about the merits and challenges of imposing a power generation tax on all power producers, but which would prevent an additional tax on those who already pay severance taxes by allowing tax credits.

In considering the appropriate tax burden to place on the wind energy industry, the Task Force is aware of a variety of factors that must be considered. In addition to the questions of fundamental fairness that must accompany any tax policy analysis, the Task Force is aware that a tax imposed on the wind industry should not defeat the industry's competitiveness in the national market in which it must compete. It is possible to tax the wind energy industry out of Wyoming. At the same time, the industry should bear it's burden and promote the economic well being of Wyoming's people. Determining the balance of these two factors is difficult.

Wyoming enjoys wind resources that are among the best in the nation. As a result, Wyoming wind energy producers will enjoy some level of production from their wind turbines which will be incrementally higher than the same turbine placed in a state with less quality wind resources. The Task Force heard no testimony which quantified this advantage. The Task Force did hear testimony explaining the reduced efficiencies caused by Wyoming's higher elevations and the costs associated with transporting Wyoming's wind energy long distances to demand centers.

The Task Force considered substantial testimony from wind energy developers indicating that taxation will play a significant role in wind energy development. Industry leaders strongly encouraged a taxation policy which is based on an accurate and comprehensive understanding of the costs and burdens faced by the industry, as well as the direct and indirect benefits that will be realized by Wyoming from wind energy development.

# TASK FORCE RECOMMENDATIONS

Having studied the issues required and having expended its full appropriated budget, the Task Force is prepared to make recommendations. These recommendations do not purport to address every issue related to wind energy development. Rather the Task Force has focused its recommendations on the issues to which it gave considerable attention and the issues upon which the Task Force gained an understanding and expertise necessary to make a recommendation. The Task Force believes that these recommendations are consistent with the Position Statement of the Task Force

#### State-Wide Standards for Wind Energy Development

The Task Force recommends that the Wyoming Legislature pass legislation adopting state-wide minimum standards which local governments must follow when regulating the siting of wind energy facilities. The standards should not interfere or replace existing regulatory schemes, but should simply assure that there are minimum standards below which no regulatory authority may

drop. The specific recommendations of the Task Force are represented within Representative Stubson's proposed recommendations, included here as **Exhibit 3**. Although Representative Stubson's proposed recommendations include two standards for the decommissioning of and financial assurances for wind farms, the Task Force affirmatively voted to adopt a specific approach. The Task Force recommends that the Wyoming Industrial Siting Council be given statutory authority to promulgate rules and regulations establishing decommissioning standards and financial assurance requirements for all wind farms, whether under local or state-wide regulatory jurisdiction. Consistent with Representative Stubson's recommendations, such rules and regulations would not be applied to utilities regulated by the Wyoming Public Service Commission.

#### **Greater Sage-Grouse Populations and Wildlife Impacts**

The Task Force acknowledges the potentially significant detrimental impact of having the Greater Sage-Grouse listed as a threatened or endangered species. The listing of the Greater Sage-Grouse as an endangered species could not only halt a significant part of Wyoming's future wind energy development, but might significantly impact Wyoming's economy and its way of life. As a result, the Task Force recommends the adoption of a joint resolution by both houses of the Wyoming Legislature supporting the "Core Population Area" strategy for Greater Sage-Grouse population management. The Task Force further recommends that the joint resolution support scientifically valid research to better analyze the impact of wind energy development on Wyoming's wildlife. The Task Force affirmatively voted to adopt a draft joint resolution prepared by Chairman Anderson as a model for this recommendation. Chairman Anderson agreed to modify the resolution to accurately reflect the groups who participated in designing the population core area concept and to encourage scientific research by all entities capable of such research. A copy of the unmodified resolution is included as **Exhibit 4**.

#### Wyoming Industrial Development and Information Siting Act

The Task Force recognizes the Wyoming Industrial Development and Information Siting Act ("the Act") and the Wyoming Industrial Siting Council ("ISC") as valuable tools in assuring the responsible siting and development of wind energy facilities. The effectiveness of the ISC is currently impacted by its restrictive jurisdictional authority. Consequently, the Task Force recommends that the ISC's jurisdiction be expanded so that it can act as a more comprehensive regulatory body for wind energy development. This expansion should include: 1) allowing smaller facilities to be regulated; 2) including lower capacity transmission lines within the ISC's jurisdiction; and 3) expanding the ISC's jurisdiction to facilities which are associated with jurisdictional projects, but which do not qualify for jurisdiction independently. The Task Force also recommends that county commissioners be given the option to refer the permitting of wind energy facilities which are otherwise not within the ISC's jurisdictional minimums to the ISC. The Task Force further recommends expanded notice provisions be adopted to provide time for local governments to respond to industrial siting applications and to require that additional state agencies be consulted in the siting process. Finally, the Task Force recommends that the Legislature adopt changes to the Act which would allow the ISC to collect fees to pay the reasonable costs of permit compliance proceedings. Currently, fees are authorized for the permitting process only.

The exact nature of these recommendations are contained in a draft recommendation presented to the Task Force by Senator Perkins. A copy of that proposal is included as **Exhibit 5**. The Task Force affirmatively voted to adopt Senator Perkins draft as its recommendation on this issue.

Upon suggestion by Senator Perkins, the Task Force also affirmatively voted to recommend that W.S. 35-12-110(a)(i), a part of the Act, be amended to require permit applicants to provide a copy of their industrial siting application to local governing bodies, rather than requiring some undefined type of "serving notice."

Consistent with the Task Force's recommendations regarding state-wide standards for wind development, the Task Force recommends that the ISC be given the authority to promulgate rules and regulations for decommissioning standards and financial assurance requirements for all commercial wind energy facilities.

#### **Taxation of the Wind Energy Industry**

With regard to taxation of the wind energy industry, the Task Force makes no specific recommendations regarding any additional taxes which might be imposed on the wind energy industry or the rate that might be appropriate to apply. The Task Force does recommend that the Joint Revenue Committee comprehensively study the issues surrounding taxation of the wind energy industry. The Task Force recommends that any proposed new tax be imposed in a way so as to encourage the diversification of Wyoming's economy and so as not to force the wind energy industry out of Wyoming. Any tax should be designed to encourage the development of employment opportunities for Wyoming's people and to encourage the development of businesses ancillary to the wind energy industry. To this end, the Task Force recommends that the Legislature conduct a careful examination of all burdens placed on wind energy producers and weigh those burdens against any benefits the producers realize by harnessing Wyoming's high quality wind resources. The Task Force recommends that any tax burden proposed be calculated to maintain some competitive advantage for Wyoming's wind energy producers as they deliver electricity to distance markets where a demand for their product exists.

#### Impact Assistance Payments

The Task Force acknowledges that, once the sales tax exemption for renewable energy projects ends, sales taxes paid by wind energy developers will benefit counties impacted by wind energy development by increasing the impact assistance funds paid to those counties. However, the Task Force also recognizes that the formula used to calculate impact assistance payments can lead to unfair results which under-compensate impacted counties. The Task Force recommends that the Legislature further study the impact assistance formula and consider amending the formula to provide a more stable and accurate revenue source for counties.

#### **Transmission**

The Task Force recognizes, and recommends that the Legislature fully appreciate, the fundamental importance of transmission development in Wyoming. Wind energy cannot be developed in Wyoming without an adequate system for moving the electricity generated out of this state and to the places where there is demand for the electricity. A coordinated and well planned transmission system will provide multiple benefits to Wyoming's economy and is a key element in allowing Wyoming to expand and maximize its energy portfolio. The Task Force

recommends that the Legislature promote the responsible development of transmission capacity in Wyoming and consider ways to promote cooperation between developers and with federal agencies who are responsible for transmission line siting. In doing so, the Task Force recommends that the Legislature remain mindful of the substantial infrastructure that will need to be installed to meet potential capacity demands. The Task Force recognizes the potential impacts, potential problems and public opposition associated with such large-scale development and encourages the Legislature to assure that such development is highly coordinated and appropriately regulated.

#### Wind as a Property Right

The Task Force makes no specific recommendation regarding the legal status of wind as a property right or other type of legal right. Further, the Task Force makes no recommendation regarding the severability of any right to wind from any legal estate to which it belongs. The Task Force does recognize the fundamental importance of these issues and recommends that the Legislature study these subjects to determine if wind rights need to be statutorily defined and, if so, how. The Task Force recommends that any study of these issues include a full consideration of the research presented to the Task Force. The Task Force notes that the Joint Judiciary Interim Committee might be particularly well suited to consider these issues because of their expertise surrounding split estates, pore space rights and eminent domain.

Approved this 1<sup>st</sup> day of November, 2009

Inderson

Senator Jim Anderson Charman, Wind Energy Task Force

# Appendix

# NOTE:

# All information referenced in this appendix is available for review on the Legislative Service Office's web site: http://legisweb.state.wy.us/

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# Exhibit No. 1

DAVE FREUDENTHAL GOVERNOR



STATE CAPITOL CHEYENNE, WY 82002

# Office of the Governor

# STATE OF WYOMING EXECUTIVE DEPARTMENT EXECUTIVE ORDER

# Order 2008-2

# **GREATER SAGE-GROUSE CORE AREA PROTECTION**

WHEREAS the Greater Sage-Grouse (*Centrocercus urophasianus*) is an iconic species that inhabits much of the sagebrush-steppe habitat in Wyoming; and

WHEREAS the sagebrush-steppe habitat type is abundant across the state of Wyoming; and

WHEREAS the state of Wyoming currently enjoys robust populations of Greater Sage-Grouse; and

WHEREAS the state of Wyoming has management authority over Greater Sage-Grouse populations in Wyoming; and

WHEREAS the U.S. Department of the Interior has been petitioned to list the Greater Sage-Grouse as a threatened or endangered species in all or a significant portion of its range, including those populations in Wyoming; and

WHEREAS the listing of the Greater Sage-Grouse would have a significant adverse affect on the custom and culture of the state of Wyoming; and

WHEREAS the listing of the Greater Sage-Grouse would have a significant adverse affect on the economy of the state of Wyoming, including the ability to generate revenues from state lands; and

WHEREAS the Wyoming State Legislature has appropriated significant state resources to conserve Greater Sage-Grouse populations in Wyoming; and

WHEREAS the state of Wyoming has endeavored to conserve Greater Sage-Grouse populations in order to retain management authority over the species through its statewide sage grouse working group, local sage grouse working groups and the efforts and initiatives of private landowners and industry; and WHEREAS the Governor's Sage Grouse Implementation Team developed a "Core Population Area" strategy to weave the many on-going efforts to conserve the Greater Sage-Grouse in Wyoming into a statewide strategy; and

WHEREAS on April 17, 2008, the Office of the Governor requested that the U.S. Fish and Wildlife Service review the "Core Population Area" strategy to determine if it was a "sound policy that should be moved forward"; and

WHEREAS on May 7, 2008, the U.S. Fish and Wildlife Service responded that the "core population area strategy, as outlined in the Implementation Team's correspondence to the Governor, is a sound framework for a policy by which to conserve greater sage-grouse in Wyoming".

NOW, THEREFORE, pursuant to the authority vested in me by the Constitution and Laws of the State, and to the extent such actions are consistent with the statutory obligations and authority of each individual agency, I, Dave Freudenthal, Governor of the State of Wyoming, do hereby issue this Executive Order providing as follows:

- 1. Management by state agencies should, to the greatest extent possible, focus on the maintenance and enhancement of those Greater Sage-Grouse habitats and populations within the Core Population Areas identified by the Sage Grouse Implementation Team and modified through additional habitat and population mapping efforts.
- 2. Current management and existing land uses within Core Population Areas should be recognized and respected by state agencies.
- 3. New development or land uses within Core Population Areas should be authorized or conducted only when it can be demonstrated by the state agency that the activity will not cause declines in Greater Sage-Grouse populations.
- 4. Funding, assurances (including state-conducted efforts to develop Candidate Conservation Agreements and Candidate Conservation Agreements with Assurances), habitat enhancement, reclamation efforts, mapping and other associated proactive efforts to assure viability of Greater Sage-Grouse in Wyoming should be focused and prioritized to take place in Core Population Areas.
- State agencies should use a non-regulatory approach to influence management alternatives within Core Population Areas, to the greatest extent possible.
  Management alternatives should reflect unique localized conditions, including soils, vegetation, development type, climate and other local realities.
- 6. Incentives to enable development of all types outside Core Population Areas should be established (these should include stipulation waivers, enhanced permitting processes, density bonuses, and other incentives). However, such development scenarios should be designed and managed to maintain populations, habitats and essential migration routes outside Core Population Areas.

- 7. Incentives to accelerate or enhance required reclamation in habitats adjacent to Core Population Areas should be developed, including but not limited to stipulation waivers, funding for enhanced reclamation, and other strategies.
- 8. Existing rights should be recognized and respected.
- 9. On-the-ground enhancements, monitoring, and ongoing planning relative to sage grouse and sage grouse habitat should be facilitated by sage grouse local working groups whenever possible.
- 10. Fire suppression efforts in Core Population Areas should be emphasized, recognizing that other local, regional, and national suppression priorities may take precedent. However, public and firefighter safety remains the number one priority on all wildfires.
- 11. State agencies work collaboratively with the U.S. Fish and Wildlife Service, Bureau of Land Management, U.S. Forest Service, and other federal agencies to ensure, to the greatest extent possible, a uniform and consistent application of this Executive Order to maintain and enhance Greater Sage-Grouse habitats and populations.
- 12. State agencies shall work collaboratively with local governments and private landowners to maintain and enhance Greater Sage-Grouse habitats and populations in a manner consistent with this Executive Order.

Given under my hand and the Executive Seal of the State of Wyoming this \_\_\_\_\_ day of August, 2008.

Dave Freudentha

Governor

# Exhibit No. 2



FORCE COLLECTOR TASK 1



Report to the Legislative Task Force on Wind Energy **Transmission Sub-Committee** 

October 9, 2009





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- 2. Introduction
- 3. Background
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  - c. Overview of current planned interstate transmission projects
- 4. Economic benefits of transmission and wind development
- 5. Challenges with building transmission
- 6. Wyoming Wind Collector System: The missing link
  - a. Need for a collector system
  - b. Commercial realities
  - c. Conceptual plan for a collector system
- 7. Conclusion: Findings and Opportunities

# 1. Executive Summary

The demand for renewable energy in the United States – and in particular in Arizona, California, Nevada, Oregon and Washington – has increased significantly in recent years and is expected to experience further dramatic increases in coming years. This increased demand comes from state and federal energy policies focused on developing sustainable domestic resources and on the overall increasing demand for electricity.

As everyone in Wyoming knows, the wind blows fairly regularly in Wyoming. In fact, Wyoming has some of nation's very best wind resources. Having some of the best energy resources in the country that could be delivered to western markets at competitive prices is not a unique position for Wyoming. However, in the case of renewable energy where resource development can be done on a small scale in many locations, Wyoming's advantage over resources in other states is not as significant. The most likely and logical markets for the bulk of Wyoming's wind energy is to the west of Wyoming in states such as Arizona, California, Nevada, Utah and Oregon, which have all instituted renewable energy goals and various forms of in-state preferences.

Six proposed Wyoming transmission lines are currently under development to improve reliability and to serve the increasing demand for energy, Wyoming's wind industry and the out-of-state renewable energy markets. These lines could also deliver electricity produced by other renewable and fossil-based energy sources.

Given the regional demand for renewable energy, Wyoming's superior wind resources, the wind development activity under way, and the capacity of the proposed transmission lines, the upper

limit of wind resource development in the state of Wyoming is projected to be between 10,000 to 15,000 MW. This scale of development will enhance Wyoming's economic base significantly.

Transmission development is challenging from both a commercial and public acceptance aspect due to its scale. From a commercial perspective, electric transmission requires large investments and thus a high degree of certainty of revenues in order to obtain financing. From a public acceptance perspective, transmission at this scale is very visible and requires a contiguous route through areas that may or may not be directly served by these portions of a regional system. While everyone benefits from a robust regional transmission system, it is often difficult to accept the impacts associated from part of the system within one's environment.

The Wyoming Wind Collector and Transmission Task Force was formed to focus on one of the key elements required to get Wyoming's wind resources to market at a competitive price: the connection lines between generators and the hubs of the proposed transmission lines. Connection lines can be built as sole-purpose lines between the generators and the hubs. However, given the scale of the potential development and the distances between potential generator sites and transmission hubs, it would be difficult to accommodate the full-scale development with these types of lines alone. The Task Force reviewed alternative collector system designs to accommodate the full-scale development under several wind deployment scenarios and found:

- The scale of the collector system would be several hundred miles of 500 kV and 230 kV lines throughout south central and eastern Wyoming with an estimated cost on the order of \$5 billion.
- The amount of transmission would increase relative to the amount of eastern Wyoming resources developed due to the westerly direction of export from the state.
- There are several design alternatives to be considered that would impact flexibility, reliability and cost. Within all alternatives, sole purpose generation tie lines would be utilized to connect the wind generation facilities to either the collector system or directly to the transmission hubs.
- There are elements of the existing and planned transmission system that may be able to be expanded to serve as part of the overall collector system. This is a key reason for the diverse participation in the Task Force from transmission project sponsors (a federal transmission owner/operator, a state authority, a load serving utility and three independent transmission developers) in Wyoming.

These are preliminary findings and additional analysis is required before recommendations on these aspects could be made.

The Task Force believes there may be some unique opportunities in Wyoming to expand Wyoming's energy-based economy by facilitating the development of a coordinated, environmentally responsible wind collector system by:

- Fostering a public and private partnership to develop the in-state collection system. The partnership could include state, federal and private entities that already have a presence within Wyoming in either operating and/or developing transmission.
- Coordinating among federal, state and local permitting processes, potentially through the development of a coordinated corridor plan that expands upon the federally designated energy corridors.
- Public recognition by the Wyoming State Legislature of the economic development opportunity by expanding Wyoming's energy portfolio to include renewable energy development and transmission development in an environmentally responsible manner.

# 2. Introduction

The United States' security and economy depends upon having a reliable, stable, costeffective supply of electricity to power homes, businesses, and public facilities. The nation is turning its attention to the need to generate not only *more* electricity but also a higher percentage of *renewable* energy from sources like wind, solar, bio-fuels, and geothermal to serve overall demand. Given Wyoming's rich resources and the current advantages of windgenerated renewable power, Wyoming wind is a logical, cost-effective choice to satisfy a portion of the demand for renewable energy in the region. Wyoming's existing intrastate and export transmission capacity is fully utilized. If Wyoming is to be a part of a solution to satisfy renewable energy and load growth now and into the future, interstate and intrastate energy delivery development issues must be addressed and resolved. In this instance, the only way to deliver and sell power generated by Wyoming resources in the form of wind and clean burning fuels is via new and/or rebuilt transmission lines.

The Wyoming Wind Collector and Transmission Task Force, formed in June 2009, includes the Wyoming Infrastructure Authority, the Western Area Power Administration<sup>1</sup>, and four interstate transmission developers: LS Power, PacifiCorp, TransCanada and TransWest Express LLC<sup>2</sup>. The Task Force participants represent a diverse group of interests. The Wyoming Infrastructure Authority (WIA) is an instrumentality of the state of Wyoming that is focused on diversifying and growing Wyoming's economy through the development of electric transmission. The WIA has been directly involved in four transmission projects in Wyoming and is supportive of all projects identified in this report. Western Area Power Administration is a Federal Power Marketing Administration that owns and operates

<sup>&</sup>lt;sup>1</sup> The Western Area Power Administration (Western) is a power marketing administration within the U.S. Department of Energy. Western is participating in the Wyoming Wind Collector and Transmission Task Force to assist in the development of a coordinated plan to collect energy from potential renewable resource projects and deliver it to hubs for export over proposed interstate transmission lines. Western's participation in the Task Force is not intended to advocate policy positions before the Wyoming State Legislature, or to imply that this report fully represents the views of the U.S. Department of Energy.

<sup>&</sup>lt;sup>2</sup> This report reflects collective input from the Task Force members and not necessarily the interests of any one or all of the participants.

transmission facilities, including facilities in Wyoming, and provides transmission service. PacifiCorp is an investor-owned utility that owns and operates transmission facilities, including facilities in Wyoming, and provides transmission service. PacifiCorp and Western coordinate and collaborate with their transmission customers in the planning of transmission to cost-effectively and reliably serve these load customers while minimizing impacts to communities, the environment, and other factors. TransCanada, TransWest Express and LS Power are independent transmission developers focused on developing interstate transmission projects to export renewable energy to markets outside Wyoming. All of these groups actively participate in regional and sub-regional transmission coordination and planning groups to ensure regional needs are met, system reliability is maintained and impacts are minimized.

The primary focus of the Task Force is to provide input to assist in the development of a coordinated plan to collect energy from renewable resource projects located in Wyoming and deliver it to hubs for export over proposed new interstate transmission lines. In addition, the Task Force is also working to inform policy makers with regard to key issues on developing safe, reliable improvements and the expansion of the transmission system in Wyoming for both the utility and the independent projects. While the following sections are focused more on the collector system, the challenges described further in the report may be applicable to merchant and load service projects.

As of October 2009, the Task Force is not yet in a position to provide specific recommendations to the state's leaders. However, this report is designed to provide education and factual background about the realities of the transmission and wind industries, especially as they apply to the concept of a Wyoming wind collector system. As transmission system engineers and experts, our goal is to help better inform the public and Wyoming elected officials as plainly and simply as possible about these important infrastructure issues facing the state.

# 3. Background

#### a. Demand for renewable energy

The demand for renewable energy in the United States has never been greater than it is today. Population in the Western U.S. is growing rapidly, which in turn is driving an increasing demand for electricity. Reflecting an increasing nationwide interest in environmental and sustainability matters, state and national leaders are setting goals and passing legislation that requires the use of more renewable electricity (Renewable Portfolio Standards or RPS) and requires the reduction of carbon emissions typically associated with fossil fuels.

In California, for example – the most populous U.S. state with nearly 40 million citizens – utilities will be required to source 33% of their energy from renewable sources by 2020. California also has adopted goals to cut its greenhouse-gas emissions to 1990 levels by 2020.

Arizona, Nevada, Washington and Oregon, among others, also have legislated targets for renewable energy use and emissions reductions. To meet these goals and mandates, utilities

and developers must invest in new renewable energy resources including wind, solar and geothermal power sources.

Again, using the example of California, the state's RPS and electricity sales growth requirements are forecasted to create demand for an additional 75,000 GWh/yr by 2020. The California Public Utilities Commission in its June 2009 "33% RPS Implementation Analysis Preliminary Results Report" stated that California's 33% RPS will require "nearly triple the amount of electricity from renewable sources in the next 10 years."

Moreover, in a January 2008 RPS and energy demand report for the entire west, the Western Electric Industry Leaders, a group of CEOs of the major utilities in the west, found that to meet its RPS goals California would require an additional 21,000 MW of renewable energy development. Yet according to the June California Public Utilities Commission report, only 800 MW of renewable energy have been developed in California since 2002.

Tasked with both delivering more renewable energy and delivering energy at the best price, utilities must look to a range of potential solutions to deliver the required supplies.

Studies and data such as the July 2008 National Grid report, "*The West's Renewable Energy Future: A Contribution by National Grid*," have shown that tapping Wyoming windgenerated electricity should be considered to help states like Arizona, Nevada and California meet RPS and GHG reduction goals due to its potential scale and quality, which is unmatched by any other region. The same report concludes that the most likely and logical market for the majority of Wyoming wind energy is the Desert Southwest region of Arizona, Nevada and California. While Wyoming wind could be competitively priced and delivered to a city like Los Angeles, it likely could not be competitively priced and delivered to cities like Chicago – especially given the strong wind resources available from closer states like North Dakota, South Dakota, Nebraska and Kansas.

# b. Supply of renewable energy

Wyoming is fortunate to have pockets of some of the nation's best wind resources – including Class 6 and 7 (the maximum on the scale developed by the National Renewable Energy Laboratory or NREL). A report published by the Western Governors Association in partnership with NREL entitled "*Western Renewable Energy Zones – Phase 1 Report*" found that over 50% of the developable Class 5 and above wind sites in the west can be found in southern Wyoming.

No in-state market exists for all of Wyoming's potential wind electricity supply. According to a 2009 Harvard University study published in *Proceedings of the National Academy of Sciences of the United States*, the wind energy potential in Wyoming exceeds current total electricity sales in Wyoming by a factor of 220: "the resource in this region...is significantly greater than local demand." Therefore, finding export opportunities for Wyoming wind power in the broader western markets makes economic and environmental sense.

Because of the high quality of Wyoming Class 5, 6 and 7 wind resources, this energy can potentially be delivered at a lower cost to consumers than most other renewable energy

resource technologies and locations in the West. Several recent studies have identified the relative favorable market position of Wyoming's wind potential vs. other renewable resource alternatives. It is important to note that the renewable energy market is a subset of the overall electric energy market. This renewable energy market is driven by the states that have implemented renewable energy targets (i.e. RPS). All forms of renewable energy receive certain federal subsidies, regardless of location, to help offset the comparatively higher cost of

these less mature technologies. Therefore, Wyoming renewable energy resources are not any more competitive due to federal subsidies.

These broad market analyses that point to Wyoming's favorable position focus on the high-



Wyoming's market position relative to other renewable resources. Wyoming Class 6 and 7 winds are among the lowest-cost potential resources to supply the California market, for example. Assumptions used do not include reduced production due to low air density. Source: National Grid, April 2008

quality winds and business development policies adopted by Wyoming. While the analyses point to a general notion of Wyoming's favorable position, they do not include some of the basic factors used by wind developers in identifying economic sites such as relatively level land, access to transportation hubs, access to transmission and changes within Wyoming's development policies (i.e. taxes, environmental policy etc.), which all factor into the economics of a potential wind generating facility.

These regional studies also do not account for the production downgrade that results from lower air densities found at higher elevations, such as in Wyoming. This downgrade represents a **20% to 25% reduction** in energy output compared to a turbine located in the same wind class at sea level. This reduction in energy output results means that a NREL Class 4 wind site at elevation actually performs more like a Class 3 site at sea level.

These lower power production capabilities, coupled with Wyoming's distance from western market centers, means that NREL Class 4 wind in Wyoming is not likely developable for delivery to out-of-state markets at competitive prices. According to the June 2005 BLM Programmatic Environmental Impact Statement for wind energy development, which refers to the NREL wind maps, "Developers using currently available wind turbine technologies have
found that sites with wind power densities at Class 4 or higher represent economically viable sites for a wind generating facility." If a Wyoming wind site actually reflects Class 3-type energy production, it likely will not be as practical or economic to develop as a wind site with higher energy production.

Wyoming wind resources are well positioned to potentially be delivered to markets at competitive prices. However, Wyoming also presents a number of challenges to wind development that reduce its competitiveness and places the viability of wind at risk. Below is a listing of some additional obstacles identified by the Task Force and the Wyoming Power Producers Coalition (WPPC) that are not specifically addressed elsewhere in this report. All of these obstacles act to reduce the competitive position of Wyoming wind.

- Taxation: The tax burden on a Wyoming wind resource is higher than surrounding states that contain renewable resources competing in the same marketplace. With the sunset of the renewable energy sales/use tax exemption, Wyoming has one of the highest sales tax burdens in the West. In addition, Wyoming's property tax burden is also one of the highest in the West. For example, a 100 MW wind generation facility in Wyoming will pay approximately 6% in sales tax and \$1,900,000 in property taxes in its first year. A similar 100 MW wind project in Montana will pay 0% sales tax and approximately \$400,000 in property taxes in its first year. Wyoming does not have a corporate income tax, but because business will be conducted across state lines, this advantage is not likely to offset the high burden of sales and property taxes. The comparison between Montana and Wyoming is particularly important because both are similarly suited in that they both have very good wind resources that are far removed from large markets and are in need of new transmission to reach these markets.
- Time factors: Renewable energy has different values based on the time of the year and time of the day in which they are generated. Renewable generation during the summer months and the afternoon hours receive the highest prices. Typically the Wyoming wind resource produces the least in the summer and the production profile throughout the day varies from location to location in Wyoming. These factors combined with price declines in solar and other renewable energy technologies may create alternatives to Wyoming wind.
- Subsidy structures: Federal or state renewable subsidies that are not dependent on the amount of energy produced such as the federal investment tax credit act to remove the advantage of a higher capacity factor.
- State support: In contrast to other states that have publicly embraced and encouraged renewable energy and the associated economic benefits, Wyoming's unfocused position has created uncertainty within the industry.
- In-state preferences: Many state regulators across the West have expressed a
  preference for in-state renewable resources. Some states such as Colorado
  (125% renewable energy credit for in-state resources), Nevada and Arizona
  provide incentives to in-state renewable energy production. Other states, including
  California, have been considering similar incentives.

The question is often posed about how much developable wind exists in Wyoming. Sources such as NREL estimate there are 116,670 MW of developable Class 5-7 winds in Wyoming, and that Wyoming has over two-thirds of the developable Class 7 wind and over one-half of the developable Class 6 wind in the onshore United States. The American Wind Energy Association (AWEA) ranks Wyoming 7<sup>th</sup> in terms of its future wind potential, with 85,200 MW of potential capacity estimated; however, when considering Class 6 & 7 developable wind, Wyoming ranks 1<sup>st</sup> in the U.S.

However, the general industry viewpoint is that the amount of wind that actually will be developed in Wyoming is far lower than estimates provided by NREL or AWEA, due to a mix of environmental and economic factors. The Western Renewable Energy Zones initiative estimates that about 14,200 MW of Class 5 and above wind resources will likely be developed in Wyoming. The numbers generally heard in industry discussions related to wind and transmission is that between 10,000 and 15,000 MW of Wyoming wind in total are likely to be developed. This amount of wind energy development is within the capacity of the interstate transmission lines currently planned for development in Wyoming.

In addition to abundant wind resources, Wyoming has traditional energy resources that can benefit from expanding the state's transmission and wind industries. Wyoming is in the top three states in the U.S. in natural gas production. Since wind is an intermittent energy resource, it requires to be backed up by a generation resource that can respond flexibly - to changes in demand - and seasonal, daily or unexpected fluctuations in the wind energy produced. Natural gas fired generation is excellent for this purpose.

Historic data for the monthly performance profile of Wyoming wind indicates that it is 60% more abundant in the winter months (November-March) than the other months on an average monthly basis. This characteristic blends well with the pricing of natural gas, which is generally higher in the winter. Ultimately, customer utilities will likely require a more stable or "firm", energy resource rather than an intermittent product. As a result, the development of wind resources in Wyoming can be expected to encourage the development of natural gas generation. These are complementary resources both of which can provide significant benefit to the state.

Transmission infrastructure is designed to have a service life of over 40 years. Over the lifetime of this infrastructure, new generation technologies will undoubtedly be developed and matured. Extensive research continues with the goal of developing more cost-effective clean coal generation and carbon capture processes. Great strides have been made in the carbon sequestration field as well. At some point in the future, these technologies will likely become major contributors in meeting the energy needs of the marketplace. If Wyoming then posses significant export transmission facilities, they will greatly increase the possibility of these technologies being deployed within Wyoming.

### c. Overview of current planned interstate transmission projects

In 2003, Wyoming Governor Dave Freudenthal and then Utah Governor Mike Leavitt announced the formation of the Rocky Mountain Area Transmission Study (RMATS). The

governors found that: "For many years, utilities and other entities have been reluctant to make investments in needed electric transmission infrastructure. This was due to a number of factors, including protracted uncertainties in the regulatory environment and nascent regional transmission organizations under development. As a consequence of this lack of transmission expansion, transmission congestion and bottlenecks were increasing. While this was a problem throughout the western interconnect, it was becoming an acute issue in areas of the Rocky Mountain sub-region."

In order to encourage and assure the development of new transmission originating in Wyoming, the Wyoming Infrastructure Authority (WIA) was formed by the Wyoming Legislature in the same year as the release of the RMATS Report, 2004. The WIA has participated in three of the six transmission projects currently under development and is supportive of the remainder.

There are six interstate transmission projects originating in Wyoming currently in development. Five of these projects are being developed primarily to serve the renewable energy markets described in the previous supply and demand sections. The interstate project proposed by PacifiCorp, the Energy Gateway Project, is being designed primarily to provide reliable service to its customers and to make improvements to serve the growing needs of the communities they serve. The Energy Gateway Project includes substantial improvements to the transmission system in Wyoming that are needed to serve PacifiCorp's Rocky Mountain Power customers as well as provide opportunity for Wyoming wind developers to export power within the region. The Energy Gateway Project, consisting of Gateway West, Gateway South and other elements in Utah, Idaho and Oregon, is considered as a single project within this report.



# **Wyoming Transmission Projects**

## Wyoming Transmission Project Details:

**Energy Gateway:** Designed as a single circuit 500 kV AC transmission line between Wyoming and Idaho (**Gateway West**); and Wyoming and Nevada (**Gateway South**). Also designed to have the capability to construct adjacent lines for double the capacity, which would be staged as load service and customer needs mature.

- Capacity: designed for a maximum total of up to 6,000 MW for Gateway West and Gateway South combined (initial capacity will be less than the design)
- Length: part of a 2,000 mile system that includes Gateway South and Gateway West
- Developers: PacifiCorp and Idaho Power for Gateway West; PacifiCorp for Gateway South
- Year Initiated: 2007; In-service date: 2014 17 (Gateway West) and 2017 - 2019 (Gateway South)
- Project Link: <u>www.pacificorp.com/Article/Article79554.html</u>

**High Plains Express:** Two single-circuit 500 kV lines or a new double-circuit 500 kV AC transmission line between Wyoming and Arizona with on-ramps and off-ramps in Colorado and New Mexico.

- Capacity: 4,000 8,000 MW
- Length: over 1,200 miles each
- Developers: The WIA and 11 other parties
- Year Initiated: 2007; In-service date: 2017-2018
- Project Link: <u>www.highplainsexpress.com</u>

**Overland Intertie:** A new 500 kV transmission line between Wyoming and Idaho to connect with the Southwest Intertie Project to southern Nevada.

- Capacity: 2,000 to 3,000 MW
- Length: over 560 miles
- Developer: Jade Energy Associates, LLC an affiliate of the LS Power Group
- Year Initiated: 2009; In-service date: 2014 2015
- Project Link: <u>www.lspower.com/projects.htm</u>

**TransWest Express:** A new 600 kV DC transmission line between Wyoming and Nevada.

- Capacity: 3,000 MW
- Length: approximately 750 miles
- Developer: TransWest Express LLC, an affiliate of The Anschutz Corporation
- Year Initiated: 2006; In-service date: 2014
- Project Link: <u>www.transwestexpress.net</u>

**Wyoming-Colorado Intertie:** A new 345 kV AC transmission line between Wyoming and Colorado which will resolve a long-standing transmission constraint known as TOT 3.

- Capacity: 850 MW
- Length: 180 miles
- Developers: The LS Power Group and the WIA
- Year Initiated: 2005; In-service date: 2013
- Project Links: <u>www.wyia.org/wci</u>; <u>www.wcintertie.com</u>; and <u>www.lspower.com/projects.htm</u>

**Zephyr:** A new 500 kV DC transmission line between Wyoming, Idaho and Nevada.

- Capacity: 3,000 MW
- Length: 1,100 miles
- Developer: TransCanada
- Year Initiated: 2005; In-service date: late 2014
- Project Link: <u>www.transcanada.com/company/zephyr\_chinook.html</u>

## **Summary of Wyoming Transmission Projects**

Of the six Wyoming transmission projects currently in development, four projects representing about 85% of the proposed export capacity are planned to serve markets to the west of Wyoming. This is consistent with the information provided that concludes the demand for renewable energy is the greatest in the regions west of Wyoming (i.e. Intermountain, Desert Southwest and West Coast). Two of the proposed Wyoming transmission projects are planned to serve markets south or southwest of Wyoming by routes through Colorado's Front Range. Transmission developers have not focused on serving markets to the east of Wyoming. The distance to the eastern markets and the quality of resources located closer to those markets places Wyoming resources at a disadvantage. The transmission projects proposed in terms of targeted markets and scale are consistent with the results of the RMATS study and other more recent analyses.

Given the higher-quality wind resources, the buildable sites and the westerly direction of the proposed transmission projects, two thirds of the proposed export capacity is slated to have terminals located in south-central Wyoming. One-third of the proposed export capacity is planned to have terminals located in eastern Wyoming. This is where high-quality winds exist and relatively fewer environmental issues exist for wind developers. The eventual selected location of the wind developments and the markets they serve will likely drive additional transmission needs within Wyoming.

### 4. Economic benefits of transmission and wind development in Wyoming

Wyoming has an abundance of natural and energy resources. The planned and sound development of these resources has resulted in strong economic and employment opportunities. Wyoming also possesses an abundance of renewable energy resources and is increasingly becoming a green energy provider. As with the other energy resource issues that Wyoming has addressed, wind energy is not without its challenges, which must be addressed as development continues. The development of Wyoming's renewable resources will result in benefits to the state and its citizens. Among these benefits are increased local employment opportunities, increased state and county revenue base from sales and property taxes, and increased revenue to Wyoming landowners.

Employment opportunities tied to wind energy and transmission development exist both in the short-term and long-term. In the short-term, jobs are required to design, permit, prepare and construct wind generation facilities and the associated equipment. While the wind turbines are the most noticeable of the development features, local work is also required for site preparation and site reclamation at both the wind sites and the necessary new transmission facilities. In order to complete each of the necessary development steps, materials, construction equipment and employees are required.

In the long-term, employees are needed to operate and maintain the wind and transmission facilities. In addition to the direct jobs created by developing Wyoming's wind resources there are significant indirect and induced jobs created, often called the multiplier effect. These include supplier and consumer jobs, such as the new jobs created by a cement plant in order to increase production or the jobs required to open new restaurants.

As previously mentioned, it is estimated that there are 10,000 MW to 15,000 MW of realistically developable wind resources in Wyoming after considering environmental and other limiting factors. The table below demonstrates some of the direct economic benefits that could be realized from development of the wind generation. This table does not consider the economic benefits of new transmission or the multiplier effect, but those listed are certain to increase the benefits.

Estimated Direct Economic Benefits to Wyoming 12,000 MW of Wind Generation						
Permanent, full-time O&M jobs	700					
Construction jobs	800 per year for 10 years (assuming 600 turbines built per year)					
Sales taxes	\$1.404 billion					
Property taxes	\$1.7 billion to \$2.6 billion over 20 years					

Sales taxes are applied to equipment installed for the development of the wind resource. The magnitude of the capital investment required to install a single wind turbine is significant. When the costs of equipment for an entire wind generation complex are added together, the total investment is even more significant. The sales tax applied to this equipment can generate a large revenue stream to the state. Similarly, property taxes are assessed against each project when they have been completed and are operating. These property taxes represent a long-term revenue stream for state and local governments. The following tables represent an example of the benefits resulting from a large wind energy development project and the associated transmission. The tables present estimates for employment, sales and property taxes. This benefits information summary is based upon a project 3,000 MW in size, roughly the size of one major transmission project.

In millions of dollars									
	Total Capital Cost	Capital in Wyoming	Direct Employment	Mulitiplier Effect	Property Taxes	Sales Tax	Total		
3,000 MW Transmission	\$3,000	\$1,500	\$168	\$135	\$17	\$32	\$350		
3,000 MW Wind Generation	\$6,000	\$6,000	\$600	\$480	\$93	\$267 *	\$1,440		
Collector System * *	\$800	\$800	\$153	\$123	\$12	\$15 *	\$300		
Total	\$9,800	\$8,300	\$920	\$740	\$120	\$310	\$2,090		

#### Benefits to Wyoming During Construction (Over 3 years)

 $^{\ast}$  Assumes the sales tax exemption for renewable resources expires before project procurement

\*\* AC lines from the wind farm to the 3,000 MW transmission system

## **Annual Benefits to Wyoming During Operation**

In millions of dollars								
	O&M Contracts and Direct Employment	Multiplier Effect	Property Taxes ***	Sales Tax	Total	# Full Time Employees		
3,000 MW Transmission	\$22	\$9	\$9	\$1	\$41	13		
3,000 MW Wind Generation	\$144	\$58	\$46	\$7 *	\$255	160		
Collector System * *	\$9	\$4	\$6	1*	\$20	3		
Total	\$175	\$71	\$61	\$9	\$316	176		

\* Assumes the sales tax exemption for renewable resources expires before project procurement

\*\* AC lines from the wind farm to the 3,000 MW transmission system

\*\*\* Property Taxes may decline slightly over time depending on Fair Market Value assessments

The previously represented tables do not address the economic return to landowners for the development of the wind resource. While the tables reflect the employment and tax benefits from a typical project, they do not reflect the land payments and production revenues that landowners receive from wind development on their property. Although the income associated with these payments is not part of the state tax revenue base, it does represent an economic infusion for landowners and indirectly into local communities.

## 5. Challenges in building transmission

While the benefits of expanding the transmission system in Wyoming are generally well understood, the scale to support 10,000 MW to 15,000 MW of renewable energy exports is immense and requires a significant undertaking on many fronts. As a rough example, 15,000 MW of export capacity would require a comprehensive collector transmission system consisting of approximately ten 500 kV lines; with up to forty 230 kV lines connecting large wind generating facilities to the collector system. A number of significant challenges and obstacles exist that stand in the way of developing high voltage transmission expansion projects in and out of the state. These challenges generally fall under three categories: commercial, siting and permitting, and operations.

#### A. Commercial

Commercial challenges generally relate to issues around how new transmission is financed and how the costs and benefits of that construction are allocated to customers.

#### **Investment Structures**

A number of different investment structures *(i.e.,* business models) exist among developers of transmission projects. The two most common structures are: (i). Development of transmission facilities by a regulated utility (e.g. PacifiCorp), and (ii). Development of transmission facilities by independent transmission utilizing a merchant model. Typically, under the model of a regulated utility expansion, all prudently incurred construction costs are allocated to customers of that utility. With merchant projects, a developer proposes a new facility and looks for customers willing to sign up for service under a wide range of contractual considerations. TransCanada and LS Power are developing projects under the merchant model. TransWest Express is using a hybrid approach where the ultimate structure will be determined later in the development process.

### **Cost recovery – Who Pays**

Under either investment structure, developers seek to recover the construction, financing and operational costs of transmission developments from wholesale customers under an Open Access Transmission Tariff (OATT) approved by the Federal Energy Regulatory Commission (FERC). This allows a transmission provider to charge transmission customers for use of the transmission network. While it is a simple concept, successful implementation of this model is not so easy. Following are some specific areas that make revenues or cost recovery uncertain for developers.

*High cost of construction* – New transmission lines are magnitudes more costly than existing lines. It is not uncommon to have construction costs that exceed \$2 million per mile, resulting in large projects costing billions to construct. Placing the payment obligation onto wind developers and select transmission customers for new line construction is difficult, due to the risk associated with the large investment and uncertainties related to transmission line construction.

Service agreement / contract requirements – Transmission lines are long-term investments, often lasting 40 to 50 years, which requires long term financing supported by long term customer contracts. In the utility investment structure, the long term customer contracts take the form of network service to provide end use customers access to resources. In the merchant model, transmission customers are typically generators. These customers are faced with developing business cases for funding on at least three fronts that align: (i). power purchase agreements, which provide their revenue stream, (ii). wind development construction and production costs, (iii). long distance interstate transmission costs, and potentially (iv). local or collector system transmission costs.

This can create a very complex "chicken or egg" type dilemma since end use customers (e.g. utilities), turbine manufacturers, interstate and local transmission providers all have very different constraints and financing needs. Yet a wind generation developer will clearly need to avoid a substantial binding commitment on any one element while they remain uncertain on the other elements. Furthermore, even when this is achieved, continuing to maintain an alignment of these necessary elements can be very difficult.

*Cost uncertainty* – Service requests and contract offers for the transmission service are tendered and signed prior to line construction. Customers must know, with some level of certainty, their cost requirements before signing a long-term commitment. Unfortunately, various factors create cost uncertainty for any construction project requiring a 5- to 10-year time frame to complete, as is the case with large transmission projects. A limited set of factors that can vastly affect costs include final routing decisions, right-of-way costs, design variations, permitting requirements, environmental mitigation, level of intervener interest, material and contractor availability, and other project delays. The transmission provider and transmission customer may not be able to accept the potential for cost escalation risk associated with the unknowns of a transmission construction project.

*Credit requirements* – Transmission customers must provide credit support for a longterm power delivery commitment, for the long-term transmission commitment, and to a lender who finances a new generation project. Often the credit requirements far exceed a developer's capability. The transmission provider cannot construct a billion-dollar project without protecting itself from customer default risk. *Schedule risk* – Transmission lines require time to construct and are impacted by numerous factors, including environmental permitting, land owner and right-of-way issues, material procurement, contractor availability, and weather. Transmission customers who sign delivery requirements over a long-term contract require certainty related to when transmission service can begin. Any long-term project comes with schedule risks, making it extremely difficult for the customer to sign commitments.

#### B. Siting and Permitting

Once a sound business plan is in place and a project has been announced, it will proceed into a detailed siting and permitting process. There are significant cost, time and successful execution uncertainties with the current process. In the 2009 report, "Transmission Siting in the Western United States" by Holland & Hart, challenges to transmission siting, permitting and construction are discussed. As the report suggests, challenges faced by developers of major transmission projects in the western U.S. are "daunting" and one of the reasons transmission enhancements take a long time to make. Traditionally, state siting practices were largely developed at a time when power moved within local utility systems. Today's need for interstate and regional transmission projects are not adequately addressed in existing requirements for transmission infrastructure.

Some of the key challenges related to transmission siting and permitting include:

*Conflicts between local, statewide and regional interests (Holland & Hart 2009)* – Unlike pipelines (that have access to the FERC and a Federal approval) transmission line permitting processes still provide broad discretion to local, county or state bodies. Such entities find it difficult to support such developments, if supported only by projected broad regional or national benefits, with no direct benefit to the state or local jurisdiction through which the transmission line will pass. Furthermore, there is no single entity that decides who will ultimately benefit from a new transmission project and how costs will be shared accordingly."

*Public Opposition (Holland & Hart 2009)* – Transmission siting processes can be encumbered by the "Not in My Back Yard" (NIMBY) syndrome. Not only do many people object to the aesthetic impacts of a transmission line, but there is also a growing number of objections to power lines on public lands remote from population centers. Land use obstacles are common since lines often traverse protected habitat, scenic areas and historic trails.

*Environmental sensitivities* – Sensitivities regarding species, land use and other considerations can have a significant impact on the siting and location of potential projects. In 2008, Wyoming Governor Dave Freudenthal issued Executive Order 2008-2, which outlined the Core Sage Grouse Area Strategy. Following the order, state representatives participated in the Western Governors Association's Western Renewable Energy Zone project in an effort to better define renewable energy hubs in Wyoming. While wind and transmission developers are working to respond to these refinements in policy, some key questions remain such as how much wind and

transmission expansion the state will support through core sage grouse areas or other environmentally sensitive areas.

*Common corridors* – Placing multiple transmission lines in common corridors in order to minimize the environmental impact is a sound goal that is challenging to implement. While multiple lines can technically function within a single corridor, this creates an increased exposure to the risk of a single incident interrupting service (e.g. a regional blackout) and is therefore restricted or not allowed under Federal (electrical system) reliability criteria. The WIA recently commissioned a study on the reliability impacts of lines placed in the same corridor, specifically looking into the minimum distance between lines.

*Transmission line "right-sizing"* – The "super-sizing" or "right-sizing" of transmission lines to minimize the environmental impact has similar challenges of multiple lines within a corridor. An outage of one "super-sized" line can also represent significant risk to a transmission provider and its customers. The Task Force has agreed that a 3,000 MW transmission line would be at the upper limit, or "super-sized", in the western United States. This limit could be increased, as it has been in other parts of the country; however, a substantial amount of system upgrades would be required to do so. Super-sizing is also difficult to implement from a commercial perspective, since benefits from the oversized portion of the transmission line may not be realized for many years.

#### **Permitting Challenges**

*Federal and state environmental reviews (Holland & Hart 2009)* – Multiple federal and state environmental review requirements are often not complementary, can require years to complete, and may serve as the venue for litigious efforts by project opponents. Examples of environmental review requirements include the National Environmental Policy Act (NEPA), the Endangered Species Act, the Migratory Bird Treaty Act and the California Environmental Quality Act. In addition, the time required to complete the siting process may exceed the shelf life of an environmental review and will require additional reviews.

Federal land authorizations (Holland & Hart 2009) – Along with NEPA and other review processes, a major transmission project in the West must navigate through an array of federal public land management requirements administered by federal land management agencies including the Bureau of Land Management (BLM), the Forest Service, the Fish and Wildlife Service, the National Park Service and the Bureau of Reclamation. In addition, a major project may require amendment of an agency's land use management plans, and will require additional time and expense.

*Multiple jurisdictions* – Multi-jurisdiction permitting can be challenging, expensive and uncertain. The lack of a state permitting entity that, consistent with planning activities and expectations, works cooperatively with the Bureau of Land Management and other federal agencies adds to the complexity of permitting activities.

Agency resources – The extent of permitting reviews requires numerous resources to be expended by the various agencies. Given the scale and resource requirements of these reviews, the project sponsors are rightly obligated to provide financial resources to conduct these reviews under the direction of the agencies in order to maintain the independence of the process. As such, the agencies need sufficient qualified staff to manage and direct these reviews. Any changes in permitting requirements adopted by the legislature should make provisions to ensure limited agency resources do not become a barrier to executing high quality and timely environmental reviews.

#### C. Operating Challenges

All high voltage grids are a complex, delicate system within which the supply and demand for electricity must be kept in constant balance. Unlike natural gas, electricity cannot be stored, even for a fraction of a second. We are painfully reminded of the consequences of failing to maintain this balance when we experience wide scale blackouts, as occurred in California and the Northwest in 1996 and the failures of the Northeast in 1965, 1977 and 2003.

In practice, the balancing of supply and demand is undertaken at a sub regional level in what are known as "balancing areas". These do not necessarily follow logical political or electrical system boundaries, but mostly reflect ownership boundaries. Integrating intermittent generation resources, particularly those located remote from load centers, creates an additional level of complexity to the challenges of maintaining balance within the electric system. The following situations, described in more detail in the North American Electric Reliability Corporation's 2009 report entitled "Accommodating High Levels of Variable Generation," are examples that contribute to these operational and reliability hurdles.

Regulating resources adequate to support a 15,000 MW renewable model in Wyoming do not exist today and must be developed. The cost for adding these resources adds to the barriers of developing a 15,000 MW system in Wyoming.

- Wind resource output can change quickly, compared to the more gradual and predictable changes of electricity demand and the output of traditional generation. Managing these rapid changes can be challenging for system operators, particularly if the change in wind and demand is in the opposite direction.
- Fuel availability may not occur during periods of high consumer demand for electricity, making it difficult to balance load and energy supply.
- Voltage control, stability and regulation issues may occur when locating generation away from load centers as the power system must have sufficient reactive power resources (both dynamic and static) to maintain reliability.

## 6. Wyoming Collector System

#### a. Need for a collector system

The earlier sections outlined the fundamentals that support development of Wyoming's renewable energy infrastructure. The earlier sections have also, however, reflected on the significant challenges wind generation and transmission developers must overcome to achieve this goal. Developers have thus far focused on the interstate transmission solutions and the actual wind development, which are the most fundamental and challenging pieces. However, a vital infrastructure element that also requires attention is building transmission infrastructure between the wind farms and the major Wyoming transmission line terminals.

With conventional generation, where individual facilities operate on the larger scale, the most common "collector" approach is to build single purpose lines (known as "generator tie lines"), between the generation facility and the high voltage transmission system. These are typically built and owned by the generation facility for their sole use, which keeps the contractual structure simple and avoids another potential "chicken or egg" type dilemmas.

This model works less well with wind generation facilities because they operate on the smaller scale and because there may be multiple generation owners within one region. In the particular case of Wyoming, where major transmission line hubs may be located hundreds of miles away from wind generation plants, building multiple single purpose transmission lines is an even less attractive approach, since it increases environmental impact and reduces the economic viability of Wyoming wind. While it may be practical for multiple generators to collaborate and build larger, more economic lines, the competitive nature and other factors (timing, risk) make these arrangements quite difficult.

Wyoming's existing transmission infrastructure is weak and has little capacity available, causing the unlikelihood of wind developers using the existing system for delivery to the major transmission projects. Further, the existing fragmented ownership pattern of transmission, particularly between eastern and western portions of the state, coupled with the regulatory charging structure for such facilities is based upon the costs of the utilities whole transmission system (referred to in the industry as rate "pancaking"), causes additional costs that might make the delivered energy uneconomical in the remote market place.

A "collector system" can take many shapes and forms, ranging anywhere from a radial system to a completely integrated system. Ultimately, the market will select the winners and losers and determine the shape of the collector system. As discussed in the following section, each collector system build-out has its own advantages and disadvantages. The developers of the collector system must keep a balance between improved reliability and market flexibility and economics so that the collector system

does not make Wyoming wind uneconomical. If done in the proper manner, a collector system has potential to add value to the wind projects through improved economics and market flexibility, increase reliability and reduced environmental impacts.

These challenges, on top of the inherent development risks of all transmission (i.e. permitting and siting, and the "chicken or egg" problem with aligning PPA, turbine order and interstate transmission), make it very difficult for wind developers to organize a robust plan on their own. Furthermore, even if they were to undertake these developments on their own, the solution would likely not accommodate broader societal benefits for Wyoming, such as facilitating and encouraging future wind generation developments.

A coordinated "collector system" has potential to aid with the integration of intermittent wind resources, which is one of the key challenges facing the electric industry. The electrical grid is unlike "storage and pipe" systems (i.e. water, oil, gas) since electrical energy cannot be stored within the system. Electrical generating resources must increase or decrease their output as demand varies with consumer use. As a result, a premium is placed on the resource certainty and the ability for resources to respond to changing demand. Wind is an intermittent resource that is not as predictable as other resources and cannot be increased on command as other resources can. The use of new and existing gas fired resources can complement wind resources and deliver a more certain product. Resource requirements, including generation reserves and generation capable of increasing and decreasing output quickly to support the intermittent wind resources will be significant. New non-wind generation capacity with these fast acting controls will be required. A collector system can help facilitate the development and delivery of both wind and gas fired generation.

A potential operational benefit of a broader collector system could be to expand the pool of resources used to balance system. These resource pools are called "balancing areas" within the electrical industry. Each area is operated by a group of system dispatchers that keep the flows in and out of the system balanced at all times. It has been found that the expansion of these balancing areas allows more resources to be pooled, such that the impacts of intermittent resources are mitigated to an extent. Wyoming is split between two Western Electricity Coordinating Council (WECC) certified Balancing Areas. The eastern portion of Wyoming is included within a Balancing Area operated by the Western Area Administration that includes Colorado and Nebraska. The western portion of Wyoming is included within a Balancing Area operated by the Uestern Area Administration that includes Colorado and Nebraska. The western portion of Wyoming is not the eastern portion of these Balancing Areas is large on their own, both operators are looking for ways to share resources more effectively to help integrate wind resources. Elimination of the barriers between the eastern and western portions of the transmission systems within the state of Wyoming could help facilitate the statewide development of resources to supply multiple markets. All of these factors suggest that public support or involvement (either Federal or State, or a combination thereof) to facilitate a Wyoming Collector System is desirable. This will actively encourage these major developments and ensure that the local transmission infrastructure is developed in a way that supports Wyoming's long term interests.

Although the form of such support is yet to be identified, this may be viewed similarly to a state or a municipality assisting with building road infrastructure to encourage employment that will create industrial or commercial developments. As discussed earlier in this report, such benefits may not be restricted to new wind generation facilities but will likely extend to gas fired generation facilities (to provide balance to the wind generation) and future clean coal or carbon sequestered generation facilities.

#### b. Commercial Realities

Perhaps the biggest commercial issue with a coordinated collector system is who will pay for the construction of the system. It is unlikely that the end use market demand and the wind generation will be built out at the same time such that the collector system can be fully utilized. This could create a first mover disadvantage. For example two wind projects may be able to utilize a portion of the same transmission facility but their inservice dates may be separated by five years. If the facility is built to accommodate both projects, a portion of it may go unutilized for five years, and neither the wind developers nor the transmission developer would support the funding of unutilized transmission.

These issues are not unique to Wyoming. Several states, most notably Texas and California, have adopted policies that support the proactive development of the transmission system to resource rich areas to help stimulate the development of the resources.

In the case of Texas, the rate payers (i.e. retail customers) are funding the transmission expansion through a regulated process managed by the Texas Public Utility Commission and an independent transmission entity, the Energy Reliability Council of Texas (ERCOT). In this system, wind generator developers have access to the transmission plans being implemented and the cost certainty of how they can price their output to the various buying entities within Texas. The transmission and wind industry in Texas has one of the highest levels of capital deployment and infrastructure development in the country. This model works well since all new transmission investments are approved as part of a state wide plan and the construction costs are recovered through an annual pass through to retail customers.

In California, a new form of transmission funding has been adopted for "locationalconstrained resources." Within this framework, California ratepayers are initially funding the expansion of the transmission system through a regulated process managed in part by an independent transmission entity, the California Independent System Operator (CAISO). These expansions, which are initially funded directly by energy consumers, will ultimately be paid by the generators that interconnect and use the lines. Ultimately, only the specific energy consumers of the wind facilities will pay for the transmission service. This system also affords the wind developers in California with a transparent plan and certainty on access and the cost of transmission to include within their marketing plans.

Both the Texas and California frameworks provide some insight on how transmission could be expanded within Wyoming to serve both the Wyoming consumers and the wind development community with transparent transmission expansion plans into the most economic resource areas with cost certainty. There are two major distinctions between these states and Wyoming. The most notable exception is that Texas and California have the wind development and their ultimate consumers within a single state. This allows each state's respective regulators to control the overall expansion to best serve the ultimate consumer of these resources. While Wyoming consumers will use portions of the transmission system and the resources, particularly if a national renewable energy policy is implemented, they will always remain the minority consumer group for the planned infrastructure. This is similar to other energy export industries in the state (i.e. oil, gas, coal exported by pipe, rail and wire).

Without direct access to the ultimate consumers, the cost of transmission expansion within Wyoming will need to be borne by the wind developers and/or the major transmission lines. In turn, these entities would pass the costs to the ultimate energy consumers within the targeted markets as part of the delivered energy price, thus avoiding any inappropriate obligations placed on Wyoming consumers. While charging either of these developers for the expansion makes sense in the long run, the missing element is the lack of direct access to a broad range of consumers that could both initially fund the development and provide a financial backstop until the costs can be passed through to the end customers. Individual developers have shown an inability to work with competitors and an unwillingness to share the cost risk for an expansion beyond their own needs.

The second distinction between of Wyoming is that Texas and California have an independent transmission entity that facilitates coordinated state wide transmission planning. Coordination and support from state and/or federal agencies could potentially be used to bridge the gap between individual developers and the ultimate end use customers.

While a transmission collector system has much potential in Wyoming, there are a number of commercial realities that cannot be ignored. For instance, depending on the location of the wind and the hub of the transmission project; the collector system alternative may have a higher cost than a generator tie line and the benefits of a collector system may not be economically justified. In this case, the developers should be able to develop a generation tie line and not be forced to utilize the broader collector system.

## c. Conceptual plan for a collector system

The sponsors of five of the Wyoming transmission projects each individually submitted Statements of Interest to the Western Area Power Administration for participation in Western's Transmission Infrastructure Program. Through leadership provided by the Western Area Power Administration and the Wyoming Infrastructure Authority, Task Force members have focused on the technical aspects of a collector system scaled to serve all of the projected developable wind resources in Wyoming and the proposed transmission projects, roughly between 10,000 MW and 15,000 MW.

Such a conceptual (or "master") plan is typically used to provide a framework on which to evaluate smaller incremental projects to ensure they ultimately fit into a coordinated larger system, similar to the way a city plan form a framework for reviews of individual developments. The Task Force employed traditional transmission planning steps to develop a range of scenarios based on different system inputs, outputs and interconnection configurations. One of the fundamental objectives in long-range planning for any type of infrastructure is to provide flexibility for a range of potential outcomes without unduly prejudicing any particular outcome.

As shown in the following figures, the Task Force designed a number of conceptual collector systems that would deliver wind energy to the hubs of the proposed Wyoming transmission projects.



Two resource development scenarios were examined to capture the range of possible wind generator developments outcomes that would most impact the collector system design. Given the location of the transmission hubs and potential resource areas, the biggest factor that will impact the collector system design is the relative amount of wind development in south-central versus eastern Wyoming. The colored areas depicted on the hub maps are the areas with the highest development potential based on a detailed screening of development factors including wind speed, site development and environmental constraints. With the majority of capacity being built to exit Wyoming towards the west, the cost and environmental impact of the collector system will be greater as more wind development takes place in the eastern part of the state.

The greater cost and impact of the collector system will ultimately be balanced through a series of decisions by numerous developers as they weigh the relative economics of various wind regimes and development risks inherent in various locations. While the south-central areas may have higher wind speeds and are located closer to the target markets, the eastern resources may be seen as having lower development risk due to the Sage Grouse Core Area Strategy recently implemented by the State of Wyoming.

The Task Force created what might be called an uncoordinated development scenario that could be imagined in an environment where there is no coordinated development of the collector system. The characteristics of this scenario are under-utilized, duplicative, and criss-crossing lines throughout Wyoming. While it is hard to imagine such a system would be built, there is little to point to in the current generation tie line commercial framework (see the challenges section for more explanation) that would help coordinate development. This scenario is constructed as a worst case scenario. It may be more likely that generators would seek to utilize the nearest available transmission hub, even though this would limit their marketing flexibility.

Note that the map shown is for a central Wyoming dominated wind resource development. The eastern Wyoming development scenario would have all of the collector lines ending in the east and routed through the Laramie Mountain Range.



The Task Force considered several alternative coordinated collector system designs each featuring a different degree of interconnectivity between the hubs and the wind generation sub-hubs. The Task Force hasn't reached any conclusive determinations on the optimal configuration, however some general findings are that the alternatives all cost approximately the same and include the same amount of lines. Generally, the more interconnectivity between hubs and sub hubs, the more flexibility and reliability the grid provides; however, these benefits come at a slightly increased price. The order of magnitude cost for the collector system to support a 10,000 MW to 15,000 MW Wyoming wind industry is preliminarily estimated to be on the order of \$5 billion. Below is a map that shows one of the more integrated collector system networks considered. Note that the collector system maps do not include the necessary generation tie lines that would be needed to connect the hubs or sub-hubs to the respective wind generating facilities.



### 7. Conclusion: Findings and Opportunities

The Wyoming Wind Collector and Transmission Task Force has set out to develop a conceptual plan for a coordinated transmission network within Wyoming to collect wind energy from the potential resource areas to the hubs of the proposed transmission lines. This long-range plan is scaled to support the collection of between 10,000 MW to 15,000 MW of Wyoming wind capacity from regions throughout south central and eastern Wyoming for delivery to markets in other Western states. The scale of the collector system is significant, although it only represents about a tenth of the overall in-state economic development that the system would support within Wyoming. Given the immense scale of the in-state overhead transmission system required, the Task Force concludes that some form of coordinated collector system is essential to the effective, efficient and environmentally responsible development of Wyoming's vast wind resources.

The Task Force reviewed alternative collector system designs to accommodate the full scale development under several wind deployment scenarios and found:

• The scale of the collector system would be several hundred miles of 500 kV and 230 kV lines throughout south central and eastern Wyoming and the estimated cost would be on the order of \$5 billion.

- The amount of in state transmission would increase relative to the amount of eastern Wyoming resources developed due to the westerly direction of export from the state.
- There are several design alternatives to be considered that would impact flexibility, reliability and cost. Within all alternatives, sole purpose generation tie lines would be utilized to connect the wind generation facilities to either the collector system or directly to one of the transmission hubs.
- There are elements of the existing and planned transmission system that may be able to be expanded to serve as part of the overall collector system.

These are preliminary findings and additional analysis is required before recommendations on these aspects could be made.

There are a number of challenges in development of any of form of regional infrastructure system. Electric transmission has been found to be one of the more difficult types of infrastructure to develop because of the unique commercial and technical challenges. There are currently six proposed Wyoming transmission lines in advanced stages of development within Wyoming. The developers of these projects have taken on these very difficult challenges to develop very large scale multi-state transmission projects under a variety of commercial models. These developers see the opportunity to serve the emerging wind and the overall energy industry of Wyoming and the needs of the West's consumers in large metropolitan areas for the decades to come.

One common element needed to support the wind industry in Wyoming is a degree of certainty that wind developers will be able to gain access to these remote markets at a cost that maintains their competitive position with respect to the wide array of alternatives to Wyoming resources. The utilization of the existing commercial arrangements for transmission development have been found to be a significant constraint on the development of large scale wind collection systems throughout the country. Other states have implemented new transmission development frameworks that could be modified to work in the case of Wyoming. Wyoming is unique from these other states that have developed specific renewable energy, primarily wind, collection system frameworks in that the ultimate customer's of the system are not located within the state, or more specifically the same regulatory jurisdiction. Implementation of a federal or regional renewable energy transmission cost allocation framework is unlikely to happen in a timely manner without significant changes in state and federal law.

The Task Force believes there may be a unique opportunity in Wyoming to develop some form of public/private partnership that could develop an in-state collection system to serve the wind industry and the citizens of Wyoming through development of a coordinated system. There is already a federal transmission network presence in Wyoming; there is a state authority with the mission to enhance Wyoming's economy through transmission development that has been authorized by Legislature to provide private bonding for transmission and generation tie lines. As mentioned earlier, there are several private companies utilizing different business models that are actively developing transmission expansion in Wyoming.

The Task Force has initially focused on the technical aspects of the collector system and has only been able to complete a high-level conceptual planning effort. The Task Force will continue to refine this technical evaluation and start to focus on a commercial evaluation. Therefore, the Task Force has only been able to define the need and potential opportunity for a public/private partnership to coordinate expansion of Wyoming's transmission system.

Other opportunities identified by the Task Force include:

- Coordination among federal, state and local permitting processes potentially through the development of a coordinated corridor plan that expands upon the federal west wide energy corridors.
- Public recognition by the Wyoming State Legislature of the economic development opportunity by expanding Wyoming's energy portfolio to include renewable energy development and transmission development in an environmentally responsible manner.
- A significant level of transmission, wind generation, and generation tie line development is under way within Wyoming. Any legislative or policy enhancements considered should be screened to ensure that developers are not burdened with any unintended barriers to continuing with development and operation.

#### References

Renewable Energy Transmission Company, "The US Electric Transmission Grid: Essential infrastructure in need of comprehensive legislation", April 2009.

Holtkamp, J.A., and M. Davidson, "Transmission Siting in the Western United States: Overview and Recommendations Prepared as Information to the Western Interstate Energy Board," August 2009.

North American Electric Reliability Corporation, "Accommodating High Levels of Variable Generation," 2009.

National Grid, "The West's Renewable Energy Future: A Contribution by National Grid", July 2008.

Western Electric Industry Leaders, "Load-Resource Balance in the Western Interconnection: *Towards 2020,* January 2008.

# Exhibit No. 3

#### <u>Wind Energy Task Force</u> <u>Rep. Tim Stubson Recommendations</u>

#### State-Wide Standards for Wind Facilities

#### 1) Minimum Standards:

No wind farm or individual wind turbine capable of generating more than 0.5 megawatts of electricity shall be constructed or operated within this state without having the county commissioners in the county in which the farm or turbine will be located grant a permit for the construction and operation of the farm or turbine. A permit may be approved or disapproved if an applicant complies with the following:

- a) Notice in writing shall be given to all land owners of record within 1 mile and to any Town or City within (20) miles of the proposed project. Notice of the project shall be published in a newspaper of general circulation in the impacted <u>counties.</u> (Make these notice provisions consistent with any changes to the notice provisions in the Industrial Siting Act).
- b) Provide an emergency management plan to the County Commissioners prior to the beginning of construction. Prior to submitting the plan to the County Commissioners the plan will be submitted for review and comment to the County Fire Warden, County Emergency Management Coordinator and County Sheriff. The emergency management plan will be supplemented and revised following construction and prior to commencing operation.
- c) Provide a waste management plan that includes an inventory of estimated solid wastes and a proposed disposal program for the construction, operation and eventual decommissioning of the site.
- d) Provide documentation satisfactory to the Board of County Commissioners that access has been provided to the proposed site. All Private roads in the proposed project shall be clearly marked as private roadways. The County is under no obligation to repair, maintain or accept any dedication of such roads to the public use. A traffic study of the county roadways leading to the proposed site and surrounding ancillary roads shall be submitted to the County and a developer must enter into a road use agreement with the County prior to commencement of construction or prior to issuance of the ISA permit in the event the project is subject to ISA jurisdiction.
- e) Provide a preliminary site plan indicating proposed roadways, proposed tower locations, proposed substation locations, transmission, collector and gathering lines and other ancillary project components. Following construction and prior to commencing operations, the site plan must be supplemented to show the final location of facilities.

- Deleted: shall be granted if

- f) Provide a site reclamation plan indicating the planned life of the project and the means by which the site will be reclaimed, and facilities removed, at the conclusion of the project.
- g) The county commissioners may refer an application to the Wyoming Industrial Siting Council for permitting. (*Consistent with any amendments to the Industrial Siting Act which would allow such a referral.*). Once referred, any decision of the ISC will be binding upon the county which made the referral.
- h) Minimum setbacks shall apply:

110% of the maximum height of the tower and blade from property of any landowner not participating in the project.

110% from public road rights of way.

<sup>1</sup>/<sub>4</sub> mile from platted subdivisions.

<sup>1</sup>/<sub>4</sub> mile from a residence or occupied structure. However, any person protected by this provision may waive this setback in writing.

<sup>1</sup>/<sub>2</sub> mile set back from any incorporated limits of a Town or Municipality.

2) Impose a public hearing requirement and a comment period <u>45 days after receiving</u> the application from the planning commission or if no planning and zoning commission has been appointed within 60 days of receiving the report.

3) Decommissioning:

a. For projects not constructed by a regulated utility and not subject to ISC jurisdiction, require proof of financial assurance to the extent required by the Board of County Commissioners. Decommissioning plans and financial assurance plans must be updated every five years until decommissioning occurs. The elements to consider when establishing adequate levels of financial assurance will include credit worthiness, financial strength, credit history, credit rating and any other factors that reasonably bear on the decision to accept the financial assurance. The financial assurance may be in the form of a corporate guarantee, letter of credit, bond, deposit account, or insurance policy. The beneficiaries of the financial assurance shall be the landowners, with the county as a third party beneficiary to execute on the financial assurance only in circumstances where the landowners do not accomplish the decommissioning and reclamation.

**Deleted:** of not less than 45 days and not more than sixty (60) days before the public hearing

b. For projects built by those who do not qualify as a regulated utility under Wyoming Law but who must obtain an ISC permit, the ISC shall require as part of its permitting the submission of a decommissioning and reclamation plan which must be updated every five years. The ISC through rule and regulation shall establish adequate levels of financial assurance. The elements to consider when establishing adequate levels of financial assurance will include credit worthiness, financial strength, credit history, credit rating and any other factors that reasonably bear on the decision to accept the financial assurance. The financial assurance may be in the form of a corporate guarantee, letter of credit, bond, deposit account, or insurance policy. The beneficiaries of the financial assurance shall be the landowners, with the state as a third party beneficiary to execute on the financial assurance only in circumstances where the landowners do not accomplish the decommissioning and reclamation.

c. Require a permitting fee which would include a surcharge to fund a permanent trust. The trust would cover the state for uncompensated decommissioning costs. The fee could be based upon total generation capacity with a provision allowing for variances based on site-specific risk assessment.

d. For wind facilities not operated by Wyoming public utilities, require decommissioning of turbines if: (1)they fail to transmit electricity to the grid for a period of two years (2) the wind energy lease terminates or expires (3) the technology becomes obsolete and re-powering is not available.

4) Establish that these new statutes do not preclude any county from exercising their planning and zoning authority to adopt more stringent standards.

5) Authorize counties to charge reasonable permitting fees,

6) Provide a penalty provision, imposing a penalty of \$750 for every tower erected without a permit for each day's violation.

**Deleted:** which must be forwarded to, and credited toward, any fee charged by the ISC if the ISC is asked to conduct the permittin

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# Exhibit No. 4

# DRAFT ONLY NOT APPROVED FOR INTRODUCTION

SENATE JOINT RESOLUTION NO.

Sage grouse core areas and wildlife research. Sponsored by: Senator(s) Anderson, J.

#### A Bill

#### for

A JOINT RESOLUTION to recognize the Greater Sage Grouse
Core Area Strategy as the State of Wyoming's primary
regulatory mechanism to conserve sage grouse and preclude
the need for listing the bird as a threatened or endangered
species pursuant to the Endangered Species Act of 1973.
WHEREAS, over fifty percent (50%) of the Greater Sage

8 Grouse remaining in North America occur in the State of 9 Wyoming; and

10

11 WHEREAS, the United States Fish and Wildlife Service has 12 been directed by a federal court to reconsider its 2005

1

2010

STATE OF WYOMING

1 decision not to list the Greater Sage Grouse as a 2 threatened or endangered species; and 3 WHEREAS, listing of the Greater Sage Grouse as either 4 5 threatened or endangered would result in significant, 6 adverse impacts to the economy of the State of Wyoming; and 7 WHEREAS, industry and private landowners have undertaken 8 9 significant efforts to preclude the listing of the Greater 10 Sage Grouse; and 11 12 WHEREAS, industry, private landowners and state and federal 13 agencies have worked collectively to develop the Greater 14 Sage Grouse Core Area Strategy; and 15 16 WHEREAS, the Greater Sage Grouse Core Area Strategy is supported by a broad consensus of industry, private 17 18 landowners and state and federal agencies; and 19 WHEREAS, the Governor's Executive Order 2008-2 has been 20 21 recognized by the United States Department of the Interior, Fish and Wildlife Service to provide an effective method 22 23 for preserving sage grouse populations within the State and

2

1 avoiding the need to list the species as threatened or 2 endangered.

3

4 NOW, THEREFORE, BE IT RESOLVED BY THE MEMBERS OF THE 5 LEGISLATURE OF THE STATE OF WYOMING:

6

7 Section 1. That the Legislature of the State of
8 Wyoming endorses the Sage Grouse Core Area Strategy as
9 outlined in the Governor's Executive Order 2008-2.

10

11 Section 2. That the Wyoming Game and Fish Department 12 be encouraged to continue to conduct and support 13 scientifically-valid research to determine how and to what 14 level energy development and other land uses can occur 15 within sage grouse core area habitat without reducing sage 16 grouse populations.

17

3

Section 3. That the Secretary of State of Wyoming 1 2 transmit copies of this resolution to the President of the 3 United States, President of the Senate and the Speaker of the House of Representatives of the United States Congress, 4 the members of the Wyoming Congressional delegation, to the 5 Director of the United States Department of the Interior, 6 7 Fish and Wildlife Service and the lead United States Fish and Wildlife Service Field Office. 8 9

10 (END)

# Exhibit No. 5

#### WIND ENERGY TASK FORCE DRAFT PROPOSED CHANGES TO THE WYOMING INDUSTRIAL SITING ACT

CHAPTER 12 - INDUSTRIAL DEVELOPMENT AND SITING

35-12-102. Definitions.

(a) As used in this chapter:

(vii) "Industrial facility" or "facility" means any industrial facility with an estimated construction cost of at least ninety-six million nine hundred thousand dollars (\$96,900,000.00) as of May 30, 1987. Exempt activities shall not be included in the estimated construction cost of an industrial facility. The council shall adjust this amount, up or down, each year using recognized construction cost indices as the council determines to be relevant to the actual change in construction cost applicable to the general type of construction covered under this chapter. "Facility" also includes, regardless of construction cost:

 (A) Any commercial waste incineration or disposal facility capable of receiving greater than five hundred (500) short tons per day of household refuse or mixed household and industrial refuse;

(B) Any commercial facility which incinerates or disposes of any regulated quantity of hazardous wastes which are subject to hazardous waste shipping manifest requirements under subtitle C of the Resource Conservation and Recovery Act (42 U.S.C. §§ 6921 through 6939e);

(C) Any commercial radioactive waste management facility defined by W.S. 35-11-103(d)(v); and

(D) Until July 1, 1999, any facility constructed solely for the disposal of overburden, development waste rock or refuse from mining as defined under W.S. 35-11-103, except for the following facilities:

(I) Facilities permitted or licensed under article 4 of the Wyoming Environmental Quality Act;

(II) Facilities specifically exempt from permitting requirements under article 4 of the Wyoming Environmental Quality Act;
(III) Facilities specifically identified under W.S. 35-11-103(d)(v)(A).

#### (E) Any wind generation facility that:

### (I) Consists of thirty (30) or more towers;

or

(II) Has the capacity or planned capacity to generate greater than or equal to fifty (50) megawatts of electricity.

(F) Any board of county commissioners having the authority to regulate wind energy projects and within whose jurisdiction any portion of a wind energy project is proposed to be built may request that the council permit the wind energy project regardless of the construction costs or size of the project. Such request shall be made in writing and, upon receipt of the request, the council have authority to require a permit prior shall to construction of the wind energy project in conformity with the requirements of the Act, but the provisions of W.S. 39-15-11 and 39-16-111 shall not apply. Once the permitting process has begun at the request of any county board of commissioners, such request cannot be withdrawn and all decisions of the council shall be binding, subject to the reviews and remedies provided by the Act and under Wyoming law.

(x) "Permit" means the permit issued by the council and required for the construction or operation of any industrial facility or facilities <u>or facility requested to</u> <u>be permitted pursuant to subparagraph (vii)(F) of this</u> subsection;

(xi) "Person" includes an individual, group, firm, partnership, corporation, cooperative, association, <u>the</u> <u>parent company, partnership or holding company for wind</u> <u>energy projects that are within a five mile radius of a</u> <u>facility or existing or proposed wind energy project</u>, or other entity excluding the state, federal government and local government; 35-12-109. Application for permit; form; fee; financial accounting.

(a) An application for a permit shall be filed with the division, in a form as prescribed by council rules and regulations, and shall contain the following information:

(i) The name and address of the applicant, and, if the applicant is a partnership, association or corporation, the names and addresses of the managers designated by the applicant responsible for permitting, construction or operation of the facility;

(ii) The applicant shall state that to its best knowledge and belief the application is complete when filed and includes all the information required by W.S. 35-12-109 and the rules and regulations, except for any requirements specifically waived by the council pursuant to W.S. 35-12-107;

(iii) A description of the nature and location of the facility;

(iv) Estimated time of commencement of construction and construction time;

(v) Estimated number and job classifications, by calendar quarter, of employees of the applicant, or contractor or subcontractor of the applicant, during the construction phase and during the operating life of the facility. Estimates shall include the number of employees who will be utilized but who do not currently reside within the area to be affected by the facility;

(vi) Future additions and modifications to the facility which the applicant may wish to be approved in the permit;

(vii) A statement of why the proposed location was selected;

(viii) A copy of any studies which may have been made of the environmental impact of the facility;

(ix) Inventory of estimated discharges including physical, chemical, biological and radiological characteristics;

(x) Inventory of estimated emissions and proposed methods of control;

(xi) Inventory of estimated solid wastes and proposed disposal program;

(xii) The procedures proposed to avoid constituting a public nuisance, endangering the public health and safety, human or animal life, property, wildlife or plant life, or

recreational facilities which may be adversely affected by the estimated emissions or discharges;

(xiii) Preliminary evaluations of or plans and proposals for alleviating social, economic or environmental impacts upon local government or any special districts which may result from the proposed facility, which evaluations, plans and proposals shall cover the following:

- (A) Scenic resources;
- (B) Recreational resources;
- (C) Archaeological and historical resources;
- (D) Land use patterns;
- (E) Economic base;
- (F) Housing;
- (G) Transportation;
- (H) Sewer and water facilities;
- (J) Solid waste facilities;
- (K) Police and fire facilities;
- (M) Educational facilities;
- (N) Health and hospital facilities;
- (O) Water supply;
- (P) Other relevant areas.
- (xiv) Estimated construction cost of the facility;

(xv) What other state or federal permits and approvals are required;

(xvi) Compatibility of the facility with state or local land use plans, if any;

(xvii) Any other information the applicant considers relevant or required by council rule or regulation;

(xviii) A brief description of the methods and strategies the applicant will use to maximize employment and utilization of the existing local or in-state contractors and labor force during the construction and operation of the facility.

## (xix) Certification that all local governments within the study area, as determined by the Administrator, were provided notification and a detailed description of the proposed project at least thirty (30) days prior to submission of the application.

(b) At the time of filing an application or a written request for a waiver of the application provisions of this chapter as provided in W.S. 35-12-107, or as subsequently required by the director, an applicant shall pay a fee to be determined by the director based upon the estimated cost of investigating, reviewing, processing and serving notice

of an application <u>and</u>, holding a hearing in case of a request for waiver, inspection and compliance activities and processing requests to update the application. The fee shall be credited to a separate account and shall be used by the division as required to investigate, review, process and serve notice of the application and, to hold a hearing in case of a request for waiver and to pay the reasonable costs of any meeting or hearing associated with permit compliance. Unused fees shall be refunded to the applicant. The maximum fee chargeable shall not exceed onehalf of one percent (0.5%) of the estimated construction cost of the facility or one hundred thousand dollars (\$100,000.00), whichever is less.

(c) The director shall provide the applicant with a full financial accounting, including but not limited to all materials, labor and overhead costs relating to the expenditures of the fee at the time of the council's decision as provided in W.S. 35-12-113 or at the completion of construction, whichever occurs later.

(d) At any time after the fee required by subsection (b) of this section has been exhausted or refunded and in addition to the fee imposed under subsection (b) of this section, the applicant may be required to pay a fee, as determined by the director, for the costs of any meeting or hearing associated with permit compliance. The director shall provide the applicant with a full financial accounting for the expenditure of the fee, including but not limited to all materials, labor and overhead costs at the conclusion of the council meeting or hearing.

35-12-110. Service of notice of application; information and recommendations; application deficiencies; procedure; jurisdiction; hearing.

(b) The division shall obtain information and recommendations from the following state agencies relative to the impact of the proposed facility as it applies to each agency's area of expertise:

(i) Wyoming department of transportation;
(ii) Public service commission;
(iii) Repealed By Laws 1998, ch. 6, § 5.
(iv) Game and fish department;

(v) Department of health; (vi) Department of education; (vii) Office of state engineer; (viii) Repealed by Laws 1990, ch. 44, § 3. (ix) Wyoming state geologist; (x) Wyoming department of agriculture; (xi) Department of environmental quality; (xii) Repealed by Laws 1992, ch. 60, § 4. (xiii) Repealed by Laws 1990, ch. 44, § 3. (xiv) The University of Wyoming; (xv) Department of revenue; and, (xvi) The Wyoming business council-; (xvii) Department of workforce services; (xviii) Office of state lands and investments; (xix) Department of employment; Department of state parks and cultural resources; (xx)

# (xxi) Department of fire prevention and electrical safety.

35-12-118. Penalties for violations; civil action by attorney general.

(a) No person shall:

and

(i) Commence to construct a facility after the effective date of this chapter without first obtaining a permit required under this chapter;

(ii) Construct, operate or maintain a facility, after having first obtained a permit, other than in specific compliance with the permit; or

(iii) Cause any of the acts specified in this subsection to occur;

#### (iv) Operate or maintain an industrial facility without having first obtained the permit required under this chapter.

35-12-119. Exemptions; information required.

(c) The construction, operation and maintenance of the following activities are exempt from this chapter:

(i) Electric transmission lines not exceeding <u>five</u> <u>hundred thousand (500,000)</u>one hundred sixty thousand (160,000) volts, except:

(a) All transmission and collector lines, regardless of size, associated with a jurisdictional ISA project shall not be exempt;

(b) A wind energy project that is not a jurisdictional ISA project does not become jurisdictional because it has electric transmission and collector lines that are greater than one hundred sixty thousand (160,000) volts.