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Wind Energy Development on Public Lands in Alberta: A Missed Opportunity

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To date, most of the wind energy development in Alberta has been on private lands in the southern part of the province. As a result, private landowners and wind farm developers on private lands have reaped the financial benefits from electricity production. In 2010, we posed the following question: in light of the significant revenues secured by the Alberta government for decades from leasing public lands for hydrocarbon development, why has the provincial government not yet leased public lands for wind energy development? (Allan Ingelson & Ryan Kalt, Wind Farms on Alberta Crown Lands?, International Resources Industries & Sustainability Centre, University of Calgary, IRIS Executive Brief #10-02, March 17, 2010). Eight years later the Alberta Government has not yet adopted a wind energy rights disposition system to facilitate investment and the development of wind farms on public lands in the province. Unlike the governments of Ontario, B.C., Quebec, Nova Scotia, Saskatchewan, Manitoba, and New Brunswick, the Government of Alberta has thus far missed out on the revenue-generating opportunity from leasing public lands to develop wind farms and generate electricity. Years ago, other provincial governments created and adopted wind energy lease systems for public lands, but Alberta has failed to do so and as a result wind farms are located on private lands.

Wind Farm Development in Alberta

In 2007, the Hon. Ed Stelmach, Premier of Alberta stated, "Alberta has the highest per capita of electricity generated by wind, and in overall generation we are exceeded only by Ontario – which has twice the area and four times the population" (March 16, 2007 speech to the Ft. Macleod and District Chamber of Commerce Annual Meeting). In light of the revenues from the construction and operations of wind farms in other provinces and U.S. states, the Alberta Association of Municipal Districts and Counties in March 2009 called on the Alberta government to "start granting companies the right to develop wind power turbine farms on leased Crown Land" (Canadian Press, "Rural Communities want Alberta to allow wind power farms on leased Crown land" Whitehorse Star, March 23, 2009, 14). Since 2001 and the restructuring of the Alberta electricity market, our market – more competitive than in many other provinces – has created increased complexity and challenges in increasing the level of renewable energy that is integrated into the Alberta electricity system.

Wind power is seasonal and the intermittent nature of wind resources limits its ability to provide uniform capacity (Friedrich Wagner, "Surplus from and storage of electricity generated by

intermittent sources" (2016) 131 Eur Phys J Plus 445). The Pembina Institute discussed four overarching barriers to wind development, including an insufficient powerline capacity and grid infrastructure, a lack of complementary technologies to buffer wind power fluctuations, landowner concerns over wind turbine aesthetics, and a constrained supply of wind turbines globally (Jeff Bell & Tim Weis, Greening the Grid: Powering Alberta's Future with Renewable Energy, The Pembina Institute, 2009) at 35. One of the largest technical obstacles to overcome regarding wind energy is its intermittent nature and the subsequent need for long-term storage mechanisms. The Alberta Electric System Operator (AESO) reports approximately 7500 MW of wind applications seeking approval and grid connections. Options such as batteries, hydrogen fuel cell storage, compressed air, and pumped hydro exist for renewable energy storage; however, the technologies are still being developed and are not yet mainstreamed into Alberta's electricity sector. In addition, the Alberta Government is in the process of creating a capacity market that is different from an energy-only market (see this post by Nigel Bankes).

As the role of the AESO is to ensure safe and reliable operation of the Alberta Interconnected Electric System (*Electric Utilities Act*, SA 2003, c E-5.1 s 16), the umbrella under which transmission and generating companies operate, the AESO plays a critical role in managing the increased level of renewable energy in large part from wind farms to ensure grid integrity.

Notwithstanding the above technological challenges and the evolving energy market, wind energy development in Alberta has increased in the last decade. Despite the volume of wind infrastructure in southern Alberta, we utilize less than 1% of the estimated 64,000 MW of wind energy potential available in the province (See Bell & Weis at 34; KPMG, Alberta's future energy mix: exploring the potential for renewables, 2014, Issue 3). The 1500 MW of installed capacity equates to about 9% of the Alberta supply mix capacity and 4% of the actual generation share (AESO, AESO 2015 Annual Market Statistics). Therefore, there is a significant volume of untapped wind energy resources that could be developed on public lands, reducing GHG emissions consistent with the Alberta Climate Leadership Plan and generating revenue for the Alberta government to reduce the cost to taxpayers.

In 2015 the Alberta Government released Alberta's Climate Leadership Plan to reduce CO_2 emissions. The plan provides for tripling the amount of renewable energy electricity generation in the province by 2030. (Government of Alberta, Climate Leadership Plan Progress Report, 2017).

Thirty percent of the electricity generated in the province is targeted to be provided from renewable energy with 5000 MW of additional electricity generated from renewables. In light of the substantial untapped wind energy resource in the province and the development experience with wind, I anticipate a large amount of increased renewable electricity production will be from wind farms in the province. To date the provincial government has focused on reducing impacts on wildlife from wind turbines by releasing a Wildlife Directive for Alberta Wind Energy Projects that became effective on January 27, 2017 (Alberta Environment and Parks, April,

2017). However, the core economic issue of leasing public lands to wind developers remains to be addressed and therefore is an obstacle to additional wind farm development in the province.

Wind Energy Development in Other Provinces

In the last decade, wind energy production has increased as the Canadian demand for electricity from energy sources with lower CO_2 emissions has increased. According to the Canadian Wind Energy Association (CanWEA), wind capacity in Canada has increased from 137 MW in 2000, to over 10,000 MW in 2015. Surpassing the 10,000 MW threshold has positioned Canada as one of seven countries around the world to generate that amount of wind power (CanWEA, Canada's wind energy industry reaches another significant milestone, June 15, 2015). From 2010-2015, Canada's total wind energy capacity increased by about 23% each year (T Weis, A Doukas & K Anderson, Landowners' Guide to Wind Energy in Alberta, Pembina Institute, 2010). Falling production costs have had some influence on this trend, as the cost of producing wind energy in Canada has decreased 60% since 2009 and continues to fall with technological development (CanWEA, Wind energy in Canada, 2016).

Government policies and laws have also played an important role in facilitating the development of renewable wind energy and the associated investment opportunities. To promote wind energy investment, the provincial governments of Ontario, Quebec, Manitoba, BC, Saskatchewan, Nova Scotia, and New Brunswick have created systems for wind energy leases on provincial public lands. These provincial regimes are discussed below, and outline the process and rights associated with developing wind farms on public lands. As a result of these initiatives, the provincial governments have obtained the land rental, royalty, and tax revenues from wind farm development on their public lands.

Wind Energy Rights Leasing Systems on Public Lands in Other Provinces

To promote wind energy development on their public lands, the provincial governments of BC, Ontario, Quebec, New Brunswick, Manitoba, Saskatchewan, and Nova Scotia have adopted wind energy rights leasing systems to facilitate wind farm development on public lands and have received revenues from wind energy development in the same way the Alberta Government has leased oil and gas rights on provincial Crown lands. A brief outline of the commercial wind energy leasing systems in these provinces provides examples of regimes that the Alberta Government can consider.

In BC, the Ministry of Energy, Mines and Petroleum Resources (MEMPR) is responsible for land tenure policies for wind and independent power producers. In 2005, the MEMPR implemented a rental policy for wind energy projects with investment incentives and flexibility for wind farm development on BC Crown lands. Wind farm producers do not pay participation rents for the first ten years of commercial wind energy operations. Starting in year 11, wind farm producers pay royalties that range from 1-3% of gross annual revenues on a sliding scale

formula, based on annual electricity production. When the annual production factor is less than 25%, only 1% of gross revenue is required; whereas 3% is paid when the production factor is equal to or exceeds 40%. During times that the production factor is between 25-40%, the rental payments will range from 1-3% on a sliding scale. As a result, the BC government receives a fair return and the rates are flexible and sensitive to individual wind projects. Wind developers begin the project by applying for an Investigative Permit, and in doing so they must submit an investigation plan. A License of Occupation (LOC) for the wind farm turbines application must be submitted within six months from the investigative permit start date. (Government of British Columbia, Land Use Operational Policy – Wind Power Projects, August 2011)

In Manitoba, wind farm development on Crown lands occurs on a first-come, first-served basis for proponents. Wind energy land-use applications are subject to standardized Crown Land and Property Agency eligibility criteria. A License of Occupation and a conditional General Permit is issued by the provincial government for approved sites to undergo site testing. Long-term, 21-year, renewable leases are issued thereafter. The Manitoba Government does not accept Crown land applications for wind farms in provincial parks, ecological reserves, wildlife management areas, or protected areas. A limit of 40,000 hectares of Crown land is in effect for development proposals. Currently, a Crown land application fee is in effect and the government is designing a rent and royalty system similar to that used for private lands. (Government of Manitoba, Crown Land Policy and Wind Farms, September 14 2006)

New Brunswick hosts three large wind farms developed by private energy companies, generating over 294 MW of power (The Maritimes Energy Association, Wind Power, 2016). The provincial government offers wind developers the opportunity to apply for a License of Occupation for Wind Exploration to obtain wind exploration rights. A temporary license is provided for companies to erect test towers, take meteorological measurements, and potentially conduct environmental monitoring activities (The Government of New Brunswick, Crown Lands – Wind Exploration License, 2016). A $300 application fee, $640 per wind test tower (maximum 5 towers), and $1 plus HST/hectare of exploration Crown land are required. Companies may also apply for an Option Agreement to have exclusive rights to exercise their option on the lands, preventing other applicants from obtaining a License of Occupation for Wind Exploration on the same land. An additional annual fee of $3 plus HST/hectare is required for a License of Occupation with an Option Agreement. Following the License of Occupation for Wind Exploration activities, the developer may be issued a Wind Farm Lease for a maximum of 30 years.

In Nova Scotia, the government's Department of Natural Resources issues Crown land leases for wind-energy generation. The applicant submits an Application for the Use of Crown Land, a development plan, land appraisal value, etc. and all associated fees. Leases are granted for up to 20 years. (Nova Scotia Department of Natural Resources, Guidelines for the Preparation of Crown Land Lease Applications, September 9 2015)

For the past thirteen years, the Government of Ontario has offered wind energy leases to wind energy developers under ss 1 & 37 of the *Public Lands Act*, RSO 1990, c P-43 through the Ministry of Natural Resources. After identifying a prospective site for adequate wind resources in Ontario the wind farm developer submits an "Application for Crown Land and Site Release." Two options are available to secure wind energy rights on public lands. In areas lacking substantial development interest, developers can apply and pay the provincial government a $20,000 application fee in a non-competitive process. The wind energy developer can be issued a land use permit to test and confirm the economic viability of wind energy resources. In other parts of Ontario where several companies are interested in developing wind energy in the same area, competitive bidding is available on provincial Crown land as is the case with oil and gas development on public lands in Alberta. (Ontario Ministry of Natural Resources, Onshore Windpower Development on Crown Land, 2010 (OMNR))

The Ontario government issues a Lease Agreement for "Wind Power Development on Crown Land". Commercial wind energy leases are granted for an initial term of 25 years with an extension period available, that provides sufficient incentive for wind farm developers to proceed with the significant capital investment (OMNR). Conditions are stipulated in the lease that typically include a land rental payment schedule and royalties payable to the Ontario government. In addition, wind energy developers pay property taxes to municipal governments at a rate of $40,000 multiplied by the capacity of the wind farm nameplate in MW (Government of Ontario, Property Tax Treatment of Renewable Energy Installations, 2011). Wind farm energy development proposals are subject to the Renewable Energy Approval process (Government of Ontario, Renewable Energy Approvals, 2012).

In Quebec, the Ministère des Ressources Natureles et de la Faune manages wind farm development on public lands. Wind energy developers must apply for a letter of intent to construct wind farms on public lands. If the project is approved, the successful bidder must also submit a request to use public land (Government of Quebec, Wind farm construction on public land, 2012). Land rights applications are distributed to corporate bidders selected by the ministry; therefore, no standard application fee is required. Lease costs are based on the generating capacity of the wind turbine set by the provincial government. The prices range from $1,763 annually for a 1 MW wind turbine, up to $4,149 annually for a 2.5 MW wind turbine (Government of Quebec).

The seventh example of a province that has created a wind energy rights leasing on public lands is Saskatchewan. In 2012, the Government of Saskatchewan released a Wind Power Surface Lease Policy pursuant to Part 3, Division 1, s 3-1(2) of *The Provincial Lands (Agriculture) Regulations*, RRS 2017, c P-31.1, Reg 1 to support wind development on agricultural Crown land. The ministry can charge an annual minimum flat rate up to $2500 revenue share per wind tower. All other surface lease charges are calculated according to *The Provincial Lands Regulations.*

Conclusion

Thus far, the Alberta government and the majority of provincial residents have missed out on the economic benefits derived from wind energy development on public lands. Unlike other provinces, where wind energy leases have been issued for years and revenues received by their provincial governments, wind farm development is for the most part limited to private lands in Alberta. The lack of a Crown wind energy leasing system deters wind energy development on public lands and the associated economic benefits. It is time for the Alberta Government to take action to capture the economic and environmental benefits of such development.

As part of the Pan-Canadian Framework on Clean Growth and Climate Change, the transition towards a lower carbon economy in Alberta can be supported by an increased volume of wind energy generation. Wind power can play a significant role in this transition and at the same time generate revenue for Albertans to avoid the higher electricity rates experienced by some rural residential consumers in Ontario.

The Alberta government should seize the opportunity to facilitate Crown wind farm development on public lands in light of the decline in oil and gas royalty revenue and the provincial deficit. Some critics of the "green energy" transition cite higher electricity costs from renewable energy compared to fossil fuel-based electricity systems (see e.g. Kenneth P. Green, "Renewable Energy Sources Mean Higher Electricity Bills", *Huffington Post* (April 27 2015)). Collecting revenues from wind energy production on public lands in Alberta can in part address this criticism as wind energy development on public lands would contribute revenue to the provincial government in the same manner that oil and gas development on public lands has contributed to provincial government revenues for decades under the *Mines and Minerals Act*, RSA 2000, c M-17. No equivalent legislation exists for wind energy. The Alberta government would receive revenue from application fees and upon approval, would receive ongoing revenue from annual land rentals and royalties. Municipal tax revenue is another potential benefit from Crown wind farm leases in Alberta as has been the experience in other provinces.

The price of wind power has decreased over the past decade. More wind development is viable in Alberta despite low natural gas prices. Furthermore, wind energy development on public lands can provide rural development and employment opportunities. The Alberta Government's support for wind energy development on public lands remains in question due to the lack of a certain and predictable wind energy rights leasing system for public lands in Alberta. If the provincial government adopts a Crown wind leasing system on provincial public lands as other provincial governments have already done, Albertans will receive both the financial and environmental benefits from wind energy development that include reduced CO_2 emissions from electricity generation. It is time for the Government of Alberta to stop lagging behind other

provinces and make public lands available to wind farm developers so that all Albertans receive both the economic and environmental benefits from wind energy development in the near future.

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