Wind Energy in Alberta:

SUSTAINABLE COMMUNITIES, SUSTAINABLE ENVIRONMENT

Benefits to local economies

SUMMARY

Wind energy development has a variety of positive impacts on the local economy. It can provide a reliable source of revenue to local governments and landowners, create local employment, and advance community development goals, including contributions to local economic diversification. Assorted compensation and ownership models exist that can be designed to enhance shared benefits from wind development.

Wind energy development has positive direct and indirect economic impacts, both locally, where the development occurs, and provincially.

Benefits include employment, contracting and procurement during construction and operation, municipal tax revenues, lease payments to residents (which may include participating and non-participating landowners), and other forms of community investment. In addition, within Alberta's electricity market, wind power production has the effect of reducing wholesale power prices. The focus of this paper is on local economic benefits to residents, landowners and municipalities, and how those benefits can be structured to increase the shared benefits of wind power development.

Municipal tax revenue

Since wind is a more widely distributed resource than conventional sources of energy, its benefits are also distributed among a larger number of communities. It can be a significant source of reliable revenue for local governments with wind facilities in their jurisdiction. For example, the Municipal District of Pincher Creek in southern Alberta currently receives approximately 27% of its total revenue from wind farms. The 150 MW Halkirk Wind facility commissioned in Paintearth County will provide the county with a revenue stream of $40 million over 25 years.[1] The average property assessment[2] per wind turbine is $1.15 million.[3] Tax revenues from these facilities are often used for community development and municipal services and local infrastructure investments. Tax revenues from depreciated facilities decrease over time. Depreciation begins a few years after turbine construction is completed and is at a rate of 3-10% per year for the majority of the asset life before assessed value becomes constant again.

Landowner lease payments

Landowners who agree to lease land to wind generation companies benefit financially from a regular and substantial revenue stream. Lease payment structures for landowners vary, both from company to company and from project to project. Some options for the structure include:

- a flat rental fee;
- a revenue portion of generation revenues;
- a combination of flat rent and portion of generation revenue;
- a one-time lump sum payment; and,
- a fixed amount at scheduled intervals.

Landowners adjacent to a wind project may also be asked to lease air rights to wind developers, i.e. to agree in return for payments to restrict development on their lands so as not to interfere with the wind regime near turbines.

In some cases, wind companies also make payments to residents who live near the wind facility but do not have project infrastructure on their land. This arrangement can help increase the sense of fair distribution of benefits and of shared ownership in the community. One mechanism for distributing the revenue is pooled leasing, whereby neighbouring landowners receive a portion of the royalties as a percentage of their land in the pool. Prince Edward Island has established wind royalty sharing arrangements for project-adjacent landowners.[4]

The total amount paid depends on the land agreement negotiated between the local stakeholders and wind developer. Compensation rates vary across the province based on a variety of factors including land characteristics, transmission access, land value, turbine size, price of electricity, public policy, competition and alternatives, and community support. Generally, as turbine sizes have increased and wind project performance has improved over time, projects today tend to pay more than projects in the past.[5]

Land agreements for wind development typically include an initial "option to lease" (or "option") period that can allow a project developer time to conduct feasibility studies and determine if a site is suitable for a project, although often the entity optioning the land is not the final developer. Land options are legally binding and typically run from three to five years. The landowner has the right to first refusal. If a landowner has received multiple offers from wind developers to lease the land, they may want to consider auctioning the wind rights to the developer with the best offer. The land agreement itself may last from 20 to 80 years, with the typical range being 25-35 years, or the average life of a wind facility. There is often an initial payment for signing a lease.

In addition to the financial compensation, landowners can negotiate non-commercial terms with the developer. For example, they can negotiate on the turbine construction, operation, decommissioning, on residential setbacks and on transportation allowances.

Ownership models

While in North America it is common that a wind project developer owns the facility and leases land from an individual landowner, a number of other financial and ownership models can be used to develop wind projects. These models have been used in jurisdictions such as Nova Scotia, Germany and Denmark, where local ownership of the wind projects have resulted in greater local involvement in decision-making and support.[6]

Community or co-operative ownership

Shared ownership of projects is an alternative way to ensure significant local economic benefits from wind development. The electricity generated can be used for the owner's consumption or sold into the wholesale market. This development model is popular in some European countries, notably Denmark. Research has shown that locally owned wind projects create five to 10 times more economic activity in the community than large developments owned by companies from outside the community.[7] Unlike leasing land to a wind developer, the financial, technical and legal risk of full ownership is carried by the community or co-operative, therefore this model requires a higher level of sophistication and financing ability.

Municipal ownership

The current Municipal Government Act does not permit direct ownership of generation assets by municipalities, but it does allow for indirect ownership by municipalities if they comply with several requirements. Medicine Hat, Cardston, Vulcan, Lethbridge, Grande Prairie, Edmonton and Calgary have all established utilities that own and operate generation facilities at an arm's-length from the municipal corporation.

Direct community investment by developers

Wind developers can also directly invest in other projects that contribute to the community's development goals, including economic diversification and growth. Typical investments include broadband Internet, community facilities, infrastructure, education and community or regional funds.

Employment

Wind energy has the potential to create a significant number of direct and indirect jobs (140-300 direct and 270-1,300 indirect jobs for a 150 MW project[9]). The Blackspring Ridge Wind Project in Vulcan County created 350 construction jobs and 20 permanent positions, with a majority of the workforce hired from southern Alberta.[10] The employment opportunities increase with community-scale renewables and sustained renewables growth.

Impact on property values and land use

The impact of wind development on property values is a common concern for landowners in the vicinity of wind projects. The available evidence indicates that wind development does not have an adverse effect on property values.

A study examining the effect of wind development on local property values in nine counties in the U.S. considered more than 25,000 properties within 8 km of wind farms, and found no indication that property values decreased as a result of wind farms being sited nearby. For the great majority of projects, values actually rose more quickly for those properties within sight of the wind farm than for those in the rest of the community.[8] The study found where individual properties did decrease in value, there was no statistical evidence it was due to being in view of wind developments.

Typically, only 2% to 5% of the actual land leased for a wind farm is occupied by the wind turbine foundations, other electrical components, roads etc., leaving the remaining land available for other uses. As a result, wind projects generally do not interfere with existing land uses, even though they are spread over a significant area of land due to wind turbine spacing requirements. The amount of land occupied by wind project components can vary and is somewhat dependent on design and construction considerations that can be negotiated by landowners prior to construction. Lease agreements also contain provisions for ensuring continued access to wind turbines for maintenance and operational needs.

The construction phase is the largest component of local jobs, both direct and indirect. In regions that are undergoing signficiant growth in wind, construction jobs can continue for many years as crews move from one project to the next. There is the potential for 3,800-6,800 person-years of employment depending on the scale of growth of wind in the province (corresponding to 4,000-7,200 MW of wind[11]). There may be opportunities for municipalities to negotiate with developers and operators to encourage local job growth through local contracting. Local colleges can also be involved in skills training.

The post-construction employment benefits can be more limited in local communities. With remote monitoring systems, and the option of having one maintenance crew servicing several wind facilities within a certain region, fewer of the direct operations and maintenance jobs have to be located where the wind turbines are.

Property and income tax implications

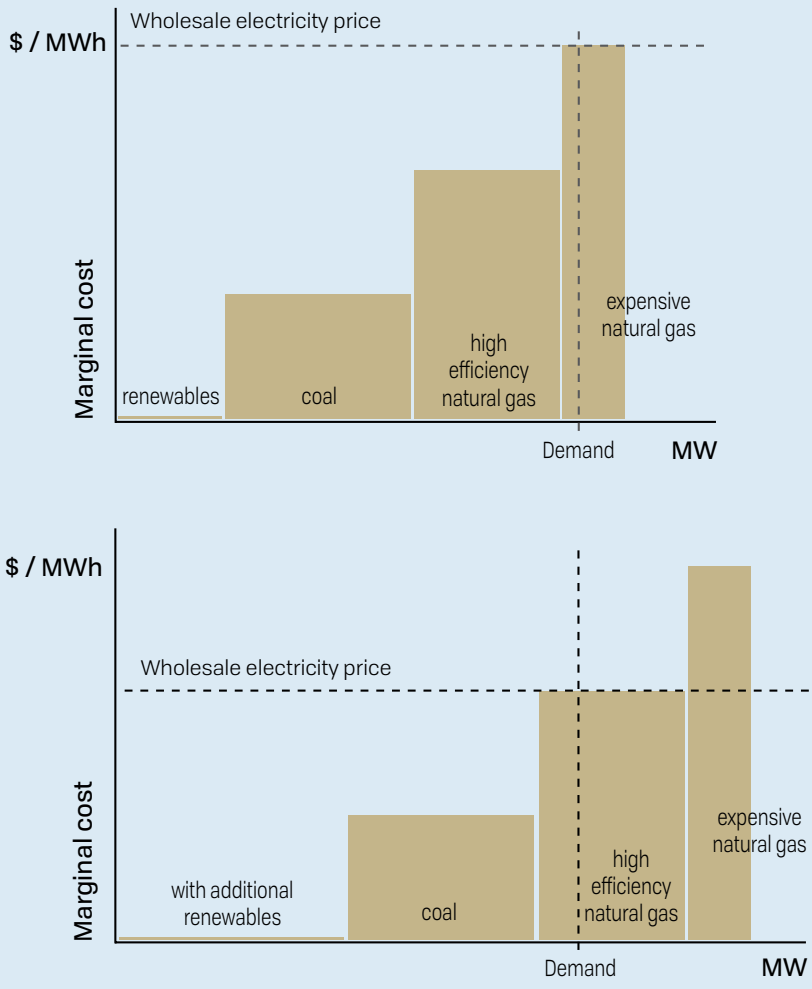
In Alberta, the developer typically pays the increased taxes from the wind development on the land. The landowners may have to pay the taxes first and then be compensated by the developer; the arrangement should be clarified in the land agreement.

Wind reduces electricity prices

In Alberta's deregulated market, the system operator dispatches generation from the lowest bidders (power producers) and works its way up to more expensive bidders until demand is met. The price is set by the cost of the marginal producer (the most expensive generator dispatched) — all sources that are dispatched get the same price. Because renewables have no fuel costs to produce energy, they bid at $0/MWh. Additional renewables can fill more demand at this low price, meaning the final price gets set by a lower-cost marginal producer (see figure below).

As with all new electricity generation, system costs may increase if new wind energy needs transmission infrastructure. But Alberta has already made significant investment in transmission infrastructure and it is expected that significant levels of new wind can be developed without the need for new transmission infrastructure.

When additional renewables are added, prices will be set by lower-cost generation



Questions for consideration

The following questions are proposed for further discussion:

- Which compensation models have proven effective in creating shared benefits?
- What support would be needed and what roles should different stakeholders play when considering different compensation options?
- What is the potential for different shared ownership models in Alberta? What are the barriers, and how can interested communities achieve success?
- What can municipalities do to attract wind development?
- How can local governments and developers facilitate local employment and procurement benefits from wind farms?
- How can landowners be empowered and educated in their dealings with land agents for wind?

[1] Canadian Wind Association, Wind. For My Community. http://canwea.ca/wp-content/uploads/2014/01/canwea-AB-brochure-e-web-v1.pdf

[2] The linear property assessment is completed by Alberta Municipal Affairs and delivered to municipalities to support municipal budget planning. Government of Alberta, Linear Property Assessment 2016 Annual Report (2016), 1. http://www.municipalaffairs.alberta.ca/documents/as/2016_Annual_Report.pdf

[3] Government of Alberta, Linear Property Assessment 2016 Annual Report (2016), 12. http://www.municipalaffairs.alberta.ca/documents/as/2016_Annual_Report.pdf

[4] Government of Prince Edward Island, Island Wind Energy, 20. http://www.gov.pe.ca/photos/original/wind_energy.pdf

[5] Tim Weis, Alex Doukas and Kristi Anderson, Landowners' Guide to Wind Energy in Alberta (Pembina Institute, 2010), 55. http://www.pembina.org/pub/landowners-guide-to-wind-energy-alberta

[6] Jobert, Arthur, Pia Laborgne, and Solveig Mimler. "Local acceptance of wind energy: Factors of success identified in French and German case studies." Energy policy 35.5 (2007): 2751-2760. Toke, David, Sylvia Breukers, and Maarten Wolsink. "Wind power deployment outcomes: How can we account for the differences?." Renewable and sustainable energy reviews 12.4 (2008): 1129-1147. See also a publication from the U.S. Department of Energy: http://www.nrel.gov/docs/fy13osti/56386.pdf

[7] Jessica Shoemaker and Christy Brekken, Community Wind: A Review of Select State and Federal Policy Incentives, (Farmers' Legal Action Group, 2006). http://www.flaginc.org/publication/community-wind-a-review-of-select-state-and-federal-policy-incentives-2/

[8] George Sterzinger, Fredric Beck, and Damian Kostiuk, The Effect of Wind Development on Local Property Values (Renewable Energy Policy Project, 2003). Available at http://dekalbcounty.org/PlanningZoningBuilding/FPL/Exhibit%20F%20(part%205).pdf

[9] Pembina Institute, Job Growth in Clean Energy: Employment in Alberta's emerging renewable and energy efficiency sectors (2016). https://www.pembina.org/reports/job-growth-in-clean-energy.pdf

[10] Wind. For My Community, 3.

[11] Job Growth in Clean Energy, 21.

APRIL 2017

FOR MORE INFORMATION:

This paper is one in a series prepared for **Wind Energy in Alberta: Sustainable Communities, Sustainable Environment** initiative, a project to gain input from stakeholders on responsible growth of this renewable resource in the province. This series includes the following papers: Benefits to local economies; Communities, neighbours and wind energy facilities; Environmental benefits and mitigation of wildlife impacts and Local government capacity and wind energy.

PEMBINA institute

www.pembina.org/pubs

Capital Power

www.capitalpower.com/abwind