
Workshop Report

Wind Energy in Alberta:
Sustainable Communities,
Sustainable Environment

September 2017

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About the Pembina Institute

The Pembina Institute is a national non-partisan think tank that advocates for strong, effective policies to support Canada's clean energy transition. We employ multi-faceted and highly collaborative approaches to change. Producing credible, evidence-based research and analysis, we consult directly with organizations to design and implement clean energy solutions, and convene diverse sets of stakeholders to identify and move toward common solutions.

About Capital Power

Capital Power and its predecessor companies have over 100 years of history generating and supplying electricity to Albertans. Capital Power (TSX:CPX) is a growth-oriented North American power producer headquartered in Edmonton, Alberta. The company develops, acquires, operates and optimizes power generation from a variety of energy sources. Capital Power owns approximately 4,500 megawatts of power generation capacity at 24 facilities and is pursuing contracted generation capacity throughout North America.

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Executive summary

Alberta's commitment to a target of 30% of electricity generation from renewables by 2030 is predicted to result in significant growth in wind energy development in the province over the next 13 years. While this growth has the potential to contribute to both local economic development and the achievement of climate change objectives, concerns about wind energy exist in terms of wildlife impacts, realizing local economic gains, addressing neighbour concerns and potential workloads on local governments. Proactive discussions and actions to build capacity and address issues will create an opportunity for wind energy development to take place with public support and reduced impact on the local environment and communities. To this end, Capital Power and the Pembina Institute engaged community and policy leaders to explore lessons learned in wind energy development both in Alberta and other jurisdictions, and identify resources, information and best practices that can benefit Albertans and community decision makers.

Titled *Wind Energy in Alberta: Sustainable Communities, Sustainable Environment*, the central action in this initiative was a workshop on April 26, 2017 which examined stakeholder perspectives on, and concerns with, existing processes and emerging issues. The workshop focused on generating ideas for strengthening the environmental, social, financial and technical elements that contribute to responsible wind development with community support.

The workshop created opportunities for discussion among participants, who included a broad spectrum of stakeholders with varying interests and perspectives: landowners, farmers, agricultural associations, local governments, provincial government employees, industry, and technical experts. Discussions focused on four main topic areas:

- Local economy (benefit sharing, property values, ownership models)
- Local government capacity (permitting, bylaw development, tax agreements)
- Habitat and wildlife (impact on plant, animal and bird species, surface disturbance)
- Human impacts (health, noise, view, construction disturbance)

Participants shared their views and concerns on the challenges and opportunities they identified with wind development. These discussions culminated with focused discussion on possible pathways to leverage opportunities and to address concerns and challenges. Several pathways that emerged during Workshop discussions have been categorized into two prominent themes:

- Regulatory and procedural solutions; and
- Capacity building, communications and information sharing.

Regulatory and procedural solutions

1. ***Decommissioning Assurance.*** Provide greater certainty for landowners regarding end-of-life liabilities, obligations and processes in the event the project owner becomes insolvent. Participants suggested a range of potential approaches, including the creation of a pooled decommissioning and reclamation fund that requires bonding or other forms of security based on expected reclamation and decommissioning costs, defining end-of-life requirements in regulation, and/or regulatory or financial backstops by the Province of Alberta. Communicating the residual (scrap) value of projects at end-of-life was also noted as a potential source of assurance that reclamation and decommissioning would occur.
2. ***Complaint Resolution Process.*** Provide a clear and consistent complaint resolution process, by having the Alberta Utilities Commission (AUC) specify a process or procedure for companies and community members to follow.
3. ***Regional Land Use Plans and Mapping.*** Make optimal future wind facility siting easier for developers and communities by identifying sensitive zones or preferred development areas in regional and sub-regional plans. Develop maps with layers that identify environmental factors (such as wetlands, native prairie, and known migration routes), preferred development locations, and community and cultural values.
4. ***Social Objectives in Renewables Procurement.*** As social and community objectives are integrated into future rounds of the Renewable Electricity Program, consider rewarding projects that have demonstrated community and/or Indigenous support, participation or ownership.
5. ***Preferred Forms of Landowner Compensation.*** Standardize shared or pooled compensation models or implement as a preferred practice, to help build strong local relationships and increase trust. Further, require pooled compensation, while maintaining the flexibility to adapt to local preferences and circumstances.

Capacity building, communications and information sharing

6. ***Resources for Municipalities.*** Enhance local government capacity to manage wind development, reduce duplicative work, and provide greater certainty for developers and community members, by developing:
 - ***Model Documents and Processes.*** Template bylaws, agreements, checklists, and permits that can be used or adapted by local governments to efficiently provide an open, fair and transparent process.
 - ***Networking and Events.*** Sharing of information and expertise between municipalities through existing associations and events. This could include peer to peer workshops for local government officials to learn about wind energy impacts and their role in the development/operations process, or the development of additional groups (potentially modelled on the Southern Alberta Alternative Energy Partnership).

- **External Expertise.** Access to independent experts and third-party review of projects to enhance the ability of local governments to participate in wind development, sharing of expert staff between municipalities, and/or the provision of regional renewable energy officers by the province.
- 7. **Resources for Landowners.** Develop and publish standard form lease agreements to provide a trusted and consistent set of information for landowners (similar to lease agreements and *Surface Rights Act* processes for oil and gas), and update third-party information resources such as Pembina’s Landowner Guide for Wind Development.
- 8. **Aggregated Wildlife Data.** Collect and assess project-developed data on baseline wildlife populations via a central data registry to support the long-term evaluation of potential cumulative impacts, and share this data with the public and subject experts.
- 9. **Alternative Dispute Resolution.** Where differences arise between developers and landowners, encourage the incorporation of alternative dispute resolution mechanisms in lease agreements, with a view to reducing the burden on both parties and the courts.
- 10. **Information for Health Practitioners.** To support public education, develop documents and resources for medical and public health practitioners that summarize the current understanding of wind and human health, and provide information for sharing with patients and the public.
- 11. **Public Health Information.** Based on current scientific understanding through studies completed to date, risk communication best practices, and an understanding of Alberta audiences, develop and disseminate credible and easy to understand communications from Alberta public health experts on wind facility operations and human health. These materials could be resources for the public, municipalities, and decision-makers.
- 12. **Optimizing Local Economic Benefits.** Build the capacity of regional post-secondary institutions to train workers for work in the renewable energy sector. Promote opportunities for local hiring and contracting through contractor and labour showcase events. Assess the potential for synergistic infrastructure investments in rural communities that facilitate additional economic development, such as broadband internet service and strengthening of road and bridge infrastructure. In addition, enabling shared ownership models can help interested communities and community members to participate more directly in wind development.
- 13. **Communication Best Practices for Developers.** Engage landowners, nearby residents, affected communities, and local governments early and offer transparent project information. Support landowner-to-landowner communication, in which neighbours for prospective projects can interact with neighbours at existing operations.
- 14. **Operational Best Practices for Developers.** Continue to develop improved operational practices that mitigate local resident impacts (e.g. shadow flicker, navigation lights) and wildlife impacts, such as changes to operations during migration periods or certain weather conditions.

1. Introduction

1.1 Context

As of September 2017, the Alberta Electric System Operator (AESO) had received proposals for over 8,000 MW of new wind energy projects. These proposed projects are in anticipation of Alberta's Renewable Electricity Program, which will procure 5,000 MW of renewables and is the key mechanism for the province to reach its commitment of generating 30% of its electricity from renewable sources by 2030.¹

Most of the growth of renewables in the province is expected to be from wind energy facilities. With the development of new wind projects, it is critical to minimize local environmental impacts, maximize local economic benefits, and address stakeholder concerns. However, they must be applicable to Alberta's geography, economy, electricity market, and regulatory context.

Within this context, Capital Power and the Pembina Institute hosted a workshop on wind energy in Alberta on April 26, 2017 in Calgary, Alberta.

1.2 Workshop goals, participants, and agenda

The objectives of the workshop on wind energy development in Alberta, were to:

- Develop a shared understanding of the scope and range of risks
- Develop a shared understanding of how issues are currently being addressed
- Identify priority gaps and challenges
- Identify the most promising pathways forward

The 75 workshop participants were selected from a broad spectrum of stakeholder groups with varying interests and perspectives, including: farmers, landowners, local governments, provincial government, labour, industry, and subject matter experts.

The workshop was designed to encourage “roll-up-the-sleeves” discussion of workable pathways to enable responsible wind development with public support. The morning sessions of the workshop were conducted in plenary format with panel discussions on the current state of concerns and opportunities in the workshop's four primary topic areas:

- Local economy (benefit sharing, property values, ownership models)
- Local government capacity (permitting, bylaw development, tax agreements)
- Habitat and wildlife (impact on plant, animal and bird species, surface disturbance)
- Human impacts (health, noise, view, construction disturbance)

¹ Alberta Government, “Renewable energy target improves health, environment,” September 14, 2016 <http://www.alberta.ca/release.cfm?xID=434069BDC1E17-D70A-8BEE-63FDAE67F6CC37EA>

In the afternoon, the participants went into breakout sessions that focused on identifying specific gaps and possible solutions for each of the above topics. The workshop agenda is provided in Appendix A.

The workshop was held under the Chatham House Rule to enable candid dialogue; hence, the discussion points in this report are not attributable to individual participants. Specifically, the Rule states:

When a meeting, or part thereof, is held under the Chatham House Rule, participants are free to use the information received, but neither the identity nor the affiliation of the speaker(s), nor that of any other participant, may be revealed.

In addition, the pathways identified are a synthesis of potential solutions that emerged from the discussion, and do not represent explicit commitments or recommendations from the participants or report authors.

This report summarizes the discussions in the workshop, including panel discussions, table discussions, and breakout sessions.

2. Workshop discussion

2.1 Local economy

Wind energy development has positive impacts for both individual landowners and 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.

2.1.1 Economic opportunities for the community

Employment and business opportunities

Wind facilities, particularly during the construction period, can employ local workers and seek support services from local businesses. Several workshop participants noted that, in addition to providing economic diversification, these wind energy facilities can also attract young people to rural areas where demographic trends often see young people moving to urban centres.

Direct and indirect investment in community development

The tax revenue from wind facilities is an additional source of income for the municipality that reduces the tax burden for other taxpayers, or that council can spend on infrastructure, municipal services, or economic development (if it chooses). Wind developers often directly invest in communities through contributions to community economic funds, local sponsorships, community events, investments in recreational facilities and other infrastructure.

Investment in infrastructure

The construction and operation of wind turbines can lead to the development of ancillary infrastructure with long-term benefits for community members. For example, roads and bridges may be upgraded to allow the passage of heavy equipment. Several participants also pointed to the extension of broadband internet into rural communities – a feature of the technical management of wind turbines – that can benefit nearby residents.

Community ownership and investment

Several workshop participants noted the possibilities of shared ownership models as a way of increasing the number of pathways for project development, and diversifying the ways residents can benefit from wind projects. A variety of approaches to shared ownership exist, including projects with ownership roles for participating residents, municipal governments, or Indigenous communities. In plenary discussion, there was mixed feedback about the potential role for direct or indirect municipal ownership. Communities, including Indigenous communities, often have

access to land that may lead to development opportunities in the right circumstances (i.e. strong wind regime or lands with minimal environmental constraints). Participants noted that shared ownership models may create opportunities for the development of projects that are additional to those being procured under Alberta's Renewable Electricity Program.

2.1.2 Challenges for community economic development

Local expertise

There was considerable discussion at the workshop about how to facilitate local employment opportunities during both construction and operations. Several developers spoke of the challenges in local hiring, ranging from skill levels to lack of available people to meet construction schedules. Some developers may also have a requirement to hire union workers who may or may not be locally available. Relevant training programs can increase the overall capacity for workers to seek other employment opportunities. The expected on-going and large-scale growth of renewables will result in more employment and business opportunities.

Challenges for community ownership

Participants noted there are barriers to community economic participation in wind energy projects:

- Setting up a shared ownership structure (LLP, JV, etc.) is complex and has significant legal costs.
- Ownership and equity stakes in projects carries risks for all participants that may not be compatible with the risk tolerance of the community or the local government.
- Rural communities typically have limited access to funds for an equity or ownership stake in projects.
- Shared ownership models take time to develop which may not be compatible with the timing requirements for project planning and development.
- While some developers have adopted the model of shared ownership with communities, competitive pressures may limit the ability of developers to explore shared ownership models.
- Diverse public opinion about a specific project may complicate municipal decisions about community investment in a project.

2.1.3 Promising pathways for community economic development

Job training and local hiring agreements

There are several local colleges in regions where wind projects are being developed in Alberta; several workshop participants saw opportunities for those colleges to be training facilities for workers. Local governments may also work with developers in hiring locally by entering

agreements that provide incentives for using local labour and services or by finding opportunities for local governments to showcase their local labour force to developers.

Infrastructure investments

Beyond addressing infrastructure damage that occurs during the construction process (e.g. road wear, drainage impacts), some workshop participants felt that opportunities could be developed for wind companies to invest in roads, bridges, and the installation of broadband internet in rural Alberta. Many local governments are unaware about the range of options for investment. Through collaborative efforts, local governments and developers may generate other synergistic investment opportunities.

Community participation options

In certain circumstances, there may be opportunities for communities to become economic partners in wind projects. For example, communities could form joint ventures for equity partnership, be investment partners, or receive equity in a project in lieu of other benefits. Alternatively, they could buy renewable Power Purchase Agreements to provide green energy at guaranteed rates and hedge against future changes in energy prices. One participant stated that the City of Medicine Hat purchases renewable energy, as there was demand for it from their residents. Developers could also assist communities with the installation of a smaller community-scale project. During the afternoon sessions at the workshop, a question was raised about opportunities for joint ventures with larger landowners with access to consolidated pieces of land to facilitate land procurement for developers.

Mechanisms to enable and incentivize community participation and ownership

Some workshop participants looked ahead to upcoming rounds of the REP, and would encourage opportunities to either require some component of community ownership for the projects, or provide additional credit in the competitive process for projects that incorporate community participation. Proactive capacity building and peer-to-peer learning workshops with communities can create awareness about the issues and opportunities with ownership and participation.

2.1.4 Landowners – Opportunities and Challenges

There was discussion about how landowners are engaged throughout the development process cycle, from initial contact to where projects move into operation. During the initial stages of development, wind companies ‘sign-up’ residents with ‘option agreements’, which allows companies to include specific parcels of land in the detailed work of planning a wind farm. It is common that some properties in a project area will not receive project infrastructure (turbine, road, collector lines, etc.) due to various factors such as wind regime, environmental constraints, technical constraints, etc.

It is becoming increasingly common for all landowners who become involved in a project (by signing an option agreement) to receive a form of long-term revenue once the project goes into

operation, regardless of whether they receive project infrastructure or not. It was noted that the revenue streams will be higher for those whose lands have project infrastructure.

Numerous workshop participants voiced approval for such models, viewing this as a fair approach with the potential to distribute benefits from a widely dispersed, highly visible form of power generation.

Landowners and working with developers

Several workshop participants expressed concerns about the lease agreement process including:

- Liabilities for remediation and reclamation in the event of developer insolvency.
- Land agents who may be contracted by the developer. Several participants felt that land agents might not have full information the landowners need to make an informed decision, which may lead to a decreased level of trust between the landowner and developer.
- Information gaps, such as: lack of information and knowledge of the regulatory process, the existing protections for landowners, lease agreements options, and environmental impacts.
- Wind development agreements (option and lease agreements) are unique, while oil and gas access agreements are standardized. It was felt that landowners need time, resources and access to expertise to understand these agreements, and how they differ from the more familiar agreements used in oil and gas development.
- The long-term nature of certain wind agreements was noted (potentially 60 years) as well as the care that landowners must take in negotiating these agreements. Participants had questions about how landowners could address concerns and issues with these agreements. In the oil and gas industry, landowners can resolve disputes through the Surface Rights Board, but the equivalent for wind energy does not exist.

2.1.5 Promising pathways for landowners

Dialogue in both the morning and afternoon sessions produced several ideas related to landowner involvement with wind energy projects:

Shared or pooled compensation

Many participants stated that shared or pooled compensation models should be standard practice. Such models would help build strong local relationships and increase trust in the entire industry. Some participants voiced support for requiring pooled compensation, rather than it simply being a best practice or preferred approach.

Standardized lease agreements

A standardized lease agreement – with mandatory clauses – would help landowners negotiate with a developer, provide comfort about the agreement's adequacy, and build collective knowledge of the nature of wind energy agreements.

Alternative dispute resolution

Some participants noted that a mechanism to arbitrate contractual differences between landowners and developers would be beneficial, and require fewer resources than engaging with the courts.

Information materials for landowners

Additional information resources for landowners, produced by independent parties and agencies, should summarize the benefits and risks of wind development, the basics of land leases and the regulatory process, and how to work with developers, regulators and municipalities. Examples of helpful materials or resources include the Farmer's Advocate Office, and the Pembina Institute's Wind Landowner's Guide; although, the latter is nine years old and requires updates.

Addressing concerns about reclamation liability risks

There were several suggestions for providing greater assurance to landowners regarding concerns about reclamation liabilities if a developer or operator becomes insolvent.

Some suggested that community concerns could be alleviated by an industry-wide reclamation and decommissioning fund, while others suggested project-specific reclamation bonds, and/or regulatory or financial backstops provided by the province. There are jurisdictions in North America that require bonds for reclamation. One delegate noted the importance of being aware of wind developers' past performance and size of operations to understand the risk of abandonment.

- Representatives from several wind developers were involved in these discussions. They noted the interest that both landowners and local governments had in this issue, and pointed out the long-term nature of wind energy developments, the potential of well-sited facilities to continue generating power for decades, and the incentive for decommissioning created by the scrap-value of metal. For context, to-date in Alberta there has been only one major decommissioning for a wind energy facility (the 16 megawatt Cowley Ridge project established in 1993, which was Canada's first commercial wind farm).

2.2 Local government capacity

Wind energy projects present significant economic and community building opportunities for local governments. Municipal taxation of wind energy facilities provides local governments a stable, long-term source of revenue. Wind projects, directly and indirectly, generate employment and contracting opportunities for support services that may contribute to local prosperity and community vitality. However, wind energy projects can also create workload demands for municipalities and lead to other issues that municipal councils must navigate. Workshop participants explored both the issues and opportunities.

2.2.1 Concerns, gaps, and challenges for local governments

Lack of regulatory clarity

Among workshop participants there was mixed understanding of, and confidence in, the regulatory process relating to wind energy facilities, reflecting the lack of information and capacity building in this regard. For many municipal representatives, the role of the local government in the planning and regulatory process of the Alberta Utilities Commission (AUC) and Alberta Environment and Parks (AEP) was unclear. In terms of the permits that wind companies must obtain before beginning construction, local permitting processes vary between jurisdictions and are the responsibility of the local government. There were questions about the relation of those processes to provincial regulatory approvals, and the potential for standardization or best practices in the development of bylaws, approval processes, and development agreements. Several workshop participants wanted more clarification on how the existing regulations protect landowner and municipality interests.

Decommissioning and reclamation

Numerous workshop participants expressed concerns about decommissioning and land reclamation, the most significant concern being the potential risk of landowner/ municipal liability in the event of wind company insolvency. Participants heard that reclamation requirements can be included in the lease agreements between the developer and the landowner, and in agreements with the local government. Still, questions persist about how requirements would be fulfilled in cases of insolvency/bankruptcy, and what recourse would be available to landowners or municipalities.

There is heightened attention to the potential for reclamation issues due to current trends in the oil and gas sector in terms of abandoned wells and companies declaring insolvencies. However, differences in the two sectors were noted during the workshop. With wind energy being a renewable source of power, the facility is likely to be repowered after the initial contract or purchased by another company if the initial company goes bankrupt. Turbine towers, due to the

steel structure, have scrap metal value, which should partly or fully offset the future costs for their removal.

Importance of early engagement with municipal governments

Local government officials indicated they hear questions and comments from residents about a wide range of issues and impacts from development, including aesthetics, costs associated with renewables, traffic, etc. Several municipal leaders reported hearing about a development through questions from their residents rather than from the developer. Some municipal officials say they have also experienced challenges obtaining answers from the AUC. They emphasized the importance of companies and the provincial government providing information to local governments as early in the process as possible.

Lack of experience and knowledge about wind development

As wind energy development is new to many local governments, there are gaps in knowledge and experience in certain jurisdictions. Limited staff time and resources, as well as other municipal priorities, may add to the challenges of being effectively engaged in the early stages of development. While external expertise (consulting firms) may be available, the cost of accessing these services was seen by some as a barrier. These costs can also deter those municipalities that have developed resources with the help of consulting firms from sharing the resources they've developed with other municipalities.

Emergency services

Wind development can put a strain on local emergency services. Concerns were raised about whether local fire departments have the expertise and technical capacity to respond to emergency situations that may arise at a wind facility or during construction. During construction, there are also opportunities for theft and vandalism that may impact police resources. The increase in traffic from construction crews can be disruptive to residents.

2.2.2 Promising pathways for local governments

Sharing information between local governments

There was broad support among participants for sharing information between local governments. Information sharing opportunities could, for example, be facilitated by the Alberta Association of Municipal Districts and Counties (AAMDC)² and the Alberta Urban Municipalities Association (AUMA)³. Sessions may involve information sharing between those municipalities that have established wind projects and those anticipating new developments. Participants noted the

² AAMDC is an independent association comprising Alberta's 69 counties and municipal districts.

³ AUMA represents urban municipalities including cities, towns, villages, summer villages and specialized municipalities.

Southern Alberta Alternative Energy Partnership, and the involvement of 39 municipalities in that group. One workshop participant suggested that a central data registry for wind development would be a useful tool to facilitate information sharing.

Best practices guide or checklist

Several participants suggested a best practices guide or checklist for wind development in relation to municipal interests. Case studies about regions with successful wind development could also provide lessons learned. Factsheets developed by credible third-party sources would offer useful background information. Several participants suggested an update to Pembina's Landowner's Guide to Wind to reflect current realities, including new regulations and policies, in addition to best practices for government and industry. Specific sections could be developed to provide resources to municipalities, landowners, and the public respectively.

Standardized agreements and permitting

Several participants suggested that local governments would benefit from templates and guidelines for the development of relevant agreements (E.g. road use agreements), permits and bylaws. Templates would reflect best practices and common options for policymakers. The development of template bylaws and agreements would ease the financial burden on any single municipality by reducing duplicative work, encourage consistent approaches across jurisdictions, and be particularly useful to municipalities with limited financial or organizational capacity. The development of template materials could be undertaken by municipalities through an existing association, or in concert with trusted third party organizations.

One workshop participant noted that standardized requirements across municipalities (to the extent that they still reflect local needs and realities), may also streamline the development process for wind development companies and simplify communication with residents.

Government of Alberta resources and support

Several participants indicated that local governments would benefit from an overarching government body being tasked with overseeing renewable energy leases. This same body could also provide information to local municipalities on the AUC process. There was general discussion about this same body providing a multi-year plan for wind development in Alberta.

Access to independent experts and funding for expert review of projects

Some participants indicated that local governments would be better able to engage in the assessment and permitting of new projects if they had improved access to subject matter experts (such as legal, engineering, regulatory, community engagement or environmental assessment). Ideas shared for improving access included a shared database and/or hiring of experts and consultants who would work with municipalities, developer-funded third-party expertise, or additional provincial resources for municipalities. Early information sharing by developers was also identified as making it easier for municipalities to plan and seek appropriate resources.

Several workshop participants raised the idea of local governments collaborating to hire skilled wind energy staff that can be shared amongst those municipalities. There is also an opportunity to collaborate with independent organizations, such as Pembina, AAMDC, and AUMA for resources.

Also discussed was the concept of regional Renewable Energy Officers through the provincial government. The Renewable Energy Officers would support local governments, residents, landowners, developers, and Indigenous communities on renewable energy projects. The officers could act as key liaisons with the provincial government, provide up-to-date information and connect parties with the appropriate government and agency resources.

Proactive capacity building and skills development

Participants suggested a program of municipal capacity building and skills development, with several noting the benefits of having such a program in place before significant procurement (i.e. power contract awards) and construction begins in Alberta, before wind developers approach communities or significant work has begun on the project. Attention was given to the AUMA and AAMDC as organizations that could build local government capacity for permitting, construction, firefighting, traffic management, guidance for lease agreements, etc.

2.3 Wildlife and habitat

There was consensus among workshop delegates that wind energy had significant environmental benefits, particularly in terms of the negligible life cycle emissions as compared to conventional power generation sources. Discussions occurred on managing direct impact on wildlife (birds, bats) and natural habitats (native prairie) and how responsible planning, construction, operation and decommissioning can help to ensure local ecological impacts and cumulative effects are mitigated.

2.3.1 Wildlife and habitat concerns

Wind development can have three main impacts on wildlife and habitat:

- Direct fatalities of birds and bats – turbines can injure or kill birds and bats. Alberta is home to both at-risk bird species (both domestic and migratory), and species that are not at risk from a conservation perspective. Bats are also of concern due to their low reproductive rate, the current prevalence of White Nose Syndrome, and other pressures on their population from unrelated causes.
- Indirect impacts – species are impacted by loss and degradation of habitat. For example, such impacts may be encountered by grassland birds, such as the greater sage grouse and sharp-tailed grouse.
- Habitat disturbance due to construction or operations activity is of concern for native prairie grassland, which has already seen significant impacts in Alberta by agricultural and oil and gas activities.

Given other human activities, such as urban development and oil and gas facilities, there are questions about the potential cumulative impacts from wind development, in addition to the impacts from individual projects.

2.3.2 Wildlife and habitat gaps and challenges

In Alberta, wind development must consider a range of plans and legislation such as the South Saskatchewan Regional Plan, Water Act, Migratory Birds Convention Act, Wildlife Act, and Public Lands Act. However, workshop participants noted challenges and gaps to protecting wildlife and habitat.

Data and information

There are several studies based on the collection of species data stored in the Fisheries and Wildlife Management Information System (FWMIS). Participants noted that a significant portion of the survey data collected is proprietary and not shared. The public's inability to access and use this database was also raised. Several participants felt that the competitive nature of bidding processes may deter information sharing between developers and data pooling.

FWMIS is missing data for legacy sites built prior to the 2000's. Participants raised concerns regarding a lack of understanding of the cumulative impacts of different developments (oil and gas, transmission lines, population centres etc.) in each area. Some indicated the absence of rigorous site-specific baseline data to evaluate impacts *before* starting a project.⁴

Alberta Environment and Parks (AEP) also has a Landscape Analysis Tool (LAT)-geospatial software that identifies siting and operational constraints that may apply to an activity within a specific area; however, it is also only accessible to small group of selected users. Workshop participants saw the need for better understanding the populations of key species, more site-specific information about wildlife, and a rigorous dataset available to evaluate impacts and identify high and low-risk locations before beginning a project. Not discussed were specific comments on the new wildlife directive for wind by AEP that can help address some of these issues.

Some participants felt there was a lack of public information on mitigation measures that can reduce the impacts to wildlife and habitat from of commercial wind operations.

Native grasslands

While workshop participants noted the lack of incentives (financial or otherwise) for landowners to protect native prairie grassland, several participants saw that revenue producing activities (i.e. wind development, ranching) may be compatible with preserving this ecosystem, that is, if care is taken during construction and operations. Overall, there was strong support for siting turbines on land already disturbed.

Regional and holistic planning

Some participants noted that regional land use planning did not yet comprehensively identify critical wildlife habitat areas, and preferred areas for development, in ways that would facilitate early planning by developers and municipalities and an assessment of tradeoffs. Where regional plans are complete, such as the South Saskatchewan Regional Plan, counties still have work to do to reflect the regional plan within their detailed land-use plans.

Regulations

Workshop participants noted that regulatory requirements are different between industries such as wind, transmission, and oil and gas. During this discussion, it was observed that the approval process for various sectors is not centralized, and that this presents challenges for municipalities, developers, and stakeholders.

⁴ There is a requirement for a two-year study in the current wildlife directive for wind.

Measurement and monitoring

Several workshop participants felt that pre-construction surveys are not necessarily aligned with post-construction realities. For example, the impact of wind development on migratory species is difficult to measure as there are many uncertainties in the mapping of migrations in general.

Some participants saw limitations to monitoring and surveying: only observed fatalities are recorded and there is limited data about carcass persistence or density-weighted proportion, which are inputs for calculating wildlife impacts of wind turbine operations.

2.3.3 Promising pathways

Project siting

Workshop participants saw avoidance of sensitive wildlife habitat, where possible, as a positive step toward the goals of protection and conservation. Developers are encouraged to be aware of best practices and resources (e.g. Alberta Prairie Conservation Forum) that exist regarding native prairie grasslands.

Operational actions

Participants noted the growing body of research on operational modifications to help protect species, such as limiting the operation of turbines at certain times of year (e.g., spring and fall bird migration) and during certain weather conditions when adverse effects on birds and bats are more likely. Operational modifications during high-risk periods may substantially help protect species. Modifying operations can also help protect species such as bats through timed curtailment. Determent technologies may also be used, but their effectiveness has yet to be confirmed.

Aggregating data

Many workshop participants saw value in making data from wildlife surveys and project monitoring easily accessible and aggregated. Shared data has the potential to improve the understanding of baseline populations, operating impacts, and the impacts from changes in operating practices. It was noted that CanWEA has a working group to develop a toolkit and aggregate bat population and impact data.

In addition, some participants noted the potential to build on AEP's existing Landscape Analysis Tool⁵, to create accessible mapping of factors such as wetlands, native prairie, and known migration routes. This mapping could help developers and regulators mitigate impacts through improved project design. It was noted that the World Wildlife Fund is undertaking a layered map that considers conservation issues, community values, and cultural issues to understand comparative risks for different areas.

Information gaps among the public and local decision makers on the impacts of wind and mitigation strategies should be addressed through targeted education.

Conservation Offsets

Several participants saw value in conservation offsets as a means of mitigating habitat disturbance, under certain circumstances.

2.4 Human impacts and concerns

Wind energy facilities are unique among power generation technology as the turbines are geographically dispersed, sometimes over many kilometres, and that they are often situated on land leased from numerous private landowners. These projects can have many neighbours; thus, there can be many perspectives, positive and negative, on the nature of wind energy.

One workshop participant noted the importance of distinguishing between public acceptance of wind development from the degree of local stakeholder acceptance. The concerns of residents living near wind facilities should be identified through effective stakeholder engagement work. Addressing concerns can take many forms, whether providing fact-based information or taking steps to address concerns in project design.

2.4.1 Neighbour concerns (non-economic)

Concerns about wind turbines by residents include impacts to views, aircraft navigation light impacts, and operational noise. Health concerns have been raised by some landowners. However, the balance of peer-reviewed scientific evidence indicates that properly sited wind turbines do not have negative impacts on human health. In Alberta, AUC Rule 012⁶ outlines setback requirements based on sound levels (below 40 dB), and is one of the most comprehensive and strictest noise regulations in the world.

⁵ Alberta Environment and Parks, "LAT Overview," June 2017. <http://aep.alberta.ca/forms-maps-services/industry-online-services/public-lands-dispositions/step-one-pre-application/lat-overview.aspx>

⁶ Alberta Utilities Commission, *Rule 012: Noise Control*, amended 2017. <http://www.auc.ab.ca/acts-regulations-and-auc-rules/rules/Documents/Rule012.pdf>

While the scientific evidence and regulatory requirements are clear, there remain questions about how to communicate on these issues, which sources of information are credible and useful to residents and decision-makers, and how to implement risk communication principles in the design of consultations and communications.

Several municipal representatives noted they hear few complaints once a project is built and operating.

2.4.2 Challenges and opportunities to address concerns

Discussion occurred on the amount of scientific research into the matter of human health and wind turbines. The 2014 Health Canada survey was raised as one of the most comprehensive ever conducted on this matter – involving over 1,200 households near wind energy facilities in Ontario and Prince Edward Island – found no link between wind turbine noise and self-reported illnesses.

Attitude and visual impacts were pointed out as drivers of negative views on wind energy projects. There was discussion over how attitudes may be significantly impacted by a sense of involvement and an understanding of the benefits of wind energy, both on an individual and collective basis. In relation to this, several raised the sharing of financial benefits (pooling of benefits, as referred to in section 2.1).

Questions were raised regarding the communication of the potential degree of risk. Several participants viewed the information on health effects as an area for involvement by health authorities. Other participants noted the importance of effective communication and engagement by developers as critical to building confidence and addressing the concerns of facility neighbours. Active listening and effective risk communication were noted as tools that developers needed to practice with high levels of competency.

2.4.3 Promising pathways

Complaint resolution

Participants noted the importance of a clear and effective means for neighbours to lodge complaints regarding projects that are in operation. A detailed complaint resolution process was recommended.

Effective communication

While recognizing the availability of scientific literature on the question of human impacts and wind turbines, it was noted that much of this work is challenging to read and derive clear meaning from. Communication on matters related to human impacts (particularly human health) should be tailored to Alberta audiences, and include the credibility of recognized experts and institutions. There was also a desire among participants for developers to provide early and transparent communication of information and risks, and actively listen to stakeholders.

Engagement with local physicians

Participants noted that local doctors are viewed as credible sources of information for Albertans. Therefore, documents and resources on the impacts of wind development should be available to physicians to help with public education.

Benefit sharing

Many participants perceived a relationship between “attitudes towards wind development” and “an equitable distribution of the financial benefits of individual projects”, despite neighbours who may have no project infrastructure, but still find turbines being built near their homes. One participant stated that economic benefits did not replace honest community engagement and effective operations by the company.

Information sharing between landowners

Landowners involved in existing wind projects were viewed as important information sources for other landowners considering being involved in wind energy. Several participants suggested developing platforms for asking questions and exchanging information.

Continued regulatory refinement

Certain impacts (navigation lights, shadow flicker) can be managed at the operational level. For example, the potential of shadow flicker can be predicted over the course of a year and, in some cases, operational adjustments can be made to reduce the potential impacts to neighbours.

3. Conclusions

The broad range of workshop attendees and their voluntary participation indicates high interest in Alberta wind development from varying groups, including: developers, local government, Government of Alberta, unions, farmers and rural associations. Comments from participants recognized the many benefits of wind development, but also concerns. Several of the most popular, possible pathways identified for capitalizing on the benefits, while addressing the concerns, include:

Regulatory and procedural solutions

- Create a detailed complaint resolution process to help address stakeholder concerns and provide a publicly accessible mechanism.
- Standardize pooled compensation.
- Better integration of regional plans into wind facility siting.

- Require bonding or some form of security for reclamation and decommissioning to address concerns regarding end-of-life liabilities.
- Tailor future rounds of the AESO Renewable Electricity Program to support greater community participation and ownership in wind projects.

Capacity building and communications

- Implement transparent communication with landowners and local government authorities, with developers practicing effective engagement and listening practices.
- Provide easily accessible information from trusted, credible sources on the impacts of wind development (on communities, individuals, wildlife and habitat), the approval process for projects, the options available for lease arrangements, and for agreements between communities and developers.
- Develop peer-to-peer learning workshops with landowners and municipalities experienced in hosting wind farms.
- Standardize documents for lease agreements and templates for bylaws and permits for landowners and local government officials.
- Create a central database to understand baseline populations and cumulative impacts on wildlife.
- Share data in an accessible manner with the public and experts both within and outside of government.
- Enable local government officials to learn about the impacts of wind development and their role in the process, through workshops, peer-to-peer learning, and guiding documents.
- Provide local governments with access to independent experts, and funding for expert review of projects that would greatly enhance their ability to participate in wind development. There is also interest in a provincial resource dedicated to supporting support to local governments in renewable development.
- Build the capacity of post-secondary institutions to train workers for wind project work.

Industry best practices

- Engage landowners, nearby residents, affected communities, and local governments as early as possible and provide transparent information regarding projects.
- Adopt the pooled compensation mechanism as standard practice for industry.
- Seek opportunities for developers and local governments to invest in infrastructure development such as roads, bridges, and broadband internet.
- Use local labour and services to retain benefits in the community, as feasible.

Appendix A. Workshop agenda and discussion questions

3.1 Workshop agenda

7:30 am	Registration & breakfast
8:30 am	Opening remarks and table introductions
9:00 am	<p>Panel discussion: Economic development and local government capacity</p> <p><i>Unlocking the economic opportunities of wind energy and building local government capacity to manage wind development</i></p> <p>Moderator: Sara Hastings-Simon, Pembina Institute</p> <p>Trevor Lewington, Southern Alberta Alternative Energy Partnership</p> <p>Peter Dobbie, Farmers' Advocate Office</p>
9:45 am	Break
10:05 am	<p>Moderated table discussion</p> <p><i>Sharing experiences and perspectives on the current state of actualizing economic benefits for communities and individuals, and of local government capacity to manage wind development</i></p>
10:45 am	<p>Panel discussion: Mitigating impacts on habitat, wildlife, and residents</p> <p><i>Understanding potential risks, the existing mechanisms and options to protect species and minimize disturbance to residents</i></p> <p>Moderator: Paula McGarrigle</p> <p>Dave Stepnisky, Alberta Environment and Parks</p> <p>Loren Knopper, Stantec</p>
11:30 am	<p>Moderated table discussion</p> <p><i>Sharing experiences and perspectives on the current state of tools and measures to mitigate local impacts.</i></p>
12:10	Lunch
1:10 pm	Summary of morning discussions and framing breakout sessions
1:40 pm	Breakout sessions

	Economic development <i>Exploring how to maximize monetary and non-monetary benefits of wind for landowners and communities</i>	Mitigating wildlife impacts <i>Exploring mechanisms that would work in the Alberta context to protect grasslands, birds and bats.</i>	Local government capacity <i>Exploring the support mechanisms, processes and solutions to aid in local government capacity to engage with wind development</i>	Mitigating human impacts <i>Developing insights on communication strategies to address human health concerns</i>
2:50 pm	Break			
3:10 pm	Summary of the day and next steps			
3:50 pm	Closing remarks			
4:00 pm	Workshop end			

3.2 Discussion questions for breakout sessions

The afternoon breakout sessions were a facilitated dialogue driven by the following questions.

Economic development

- Leveraging benefits to community economic development
 - Of the various economic benefits from wind energy, which are the most relevant, and valuable to the community?
 - What are the gaps or barriers to realizing these benefits? What are the different avenues for ensuring these benefits? (Negotiations, provincial program/policy etc.)
 - How can these barriers be overcome?
 - Is there a role for different ownership models in Alberta? If yes, how can they be supported?
- Compensation for landowners
 - What compensation models can be effective in realizing the economic benefits for landowners?
 - What are the concerns with the current approaches to compensation?
 - How can these concerns be addressed?
 - What other concerns do landowners have and what are the strategies to address them?
- Shared ownership models and other innovative solutions to leveraging benefits to community economic development
 - What are the characteristics of ownership models?
 - What barriers exist for shared ownership?
 - How can these be overcome?
 - What are other innovative ways to use wind for community economic development?

Wildlife and habitat

- What strategies are needed to mitigate impact on native grasslands and habitat?

- Are there any gaps in protecting: native grasslands, water bodies, and other important land features?
- How can the gaps be addressed?
- What strategies are needed to mitigate the impact on birds and bats?
 - Are there any gaps in current regulations/processes protecting birds and bats?
 - How can the gaps be addressed?

Local government capacity

- Role of local government with the developers through the project lifecycle
 - What are the primary concerns for local government regarding the development and permitting process?
 - What are some best practices for local government to engage effectively in the development and permitting process?
 - What resources and support does the local government need in order to do the above tasks?
- Role of local government with the public through the project lifecycle
 - What are the main interests and concerns that the public approach local governments with?
 - What are the challenges for local governments in addressing the issues raised by the public?
 - What resources and support would be helpful to local government in engaging the public?

Human impacts

- What does scientific research say about health concerns?
- What are the most effective ways to engage stakeholders in order to address their concerns?
- What is the role of provincial health authorities, regulators, developers, and municipal governments in addressing health concerns?
- What materials and resources would be useful?