

PCF Wind Assessment Project, Phase 2: Proceedings From Needs Assessment Workshop

January 2015

Prepared by Greg Chernoff



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INSTITUTE



Prepared for: Prairie Conservation Forum

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FINAL REPORT

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INTRODUCTION

This report summarizes the proceedings of a workshop, organized by the Miistakis Institute (Miistakis) and the Prairie Conservation Forum (PCF). The workshop took place in Calgary on March 14th, 2014, and was aimed at discussing the need for tools to support decision-making around appropriate and sustainable development of wind energy facilities and associated infrastructure in prairie and parkland Alberta.

The workshop was a great success; it brought together stakeholders from a wide range of interests, initiated many important discussions about how wind power development might become more sustainable in Alberta, and provided the incubus for a community of practice. The workshop organizers hope that we have created a foundation for continuing balanced and respectful dialog on wind development in prairie and parkland Alberta, and that this dialog will result in improvements to the way this industry grows in our region.

Workshop participants agreed on two next steps of foremost importance:

1. Build a map-based tool to aid in regional-scale assessment and scoping of wind development potential, weighing development potential against conservation priorities.
2. Develop best practices for wind power development, through a collaborative process involving diverse stakeholders.

The “Next Steps” section of this report proposes an approach to moving these two priorities forward.

It should be noted at the outset that this report reflects the opinions and input of those who participated in the March 2014 workshop. Although every effort was made to engage a broad range of stakeholders, there is no guarantee that the entire spectrum of views on wind power development was represented around the workshop table. Many participants emphasized that their opinions might not represent everyone in their affiliated organization or interest group, or the perspective of those that they were at the workshop to represent.

BACKGROUND

Miistakis has been working with PCF on building tools to support assessment decision-making around wind power development since 2011. The stated objective of our project is – through a phased approach – to create a facilitated, consensus-based process and associated mapping tools that inform the assessment of sustainable opportunities for wind power development in Prairie and Parkland Alberta. The March 2014 Workshop was the most recent incremental step towards a long-term vision, which is described below.

Project Overview

Wind power development is a fledgling and fast-growing industry in Alberta, particularly in Grassland and Parkland Natural Regions. In contrast to oil and gas development, the Surface Rights Act of Alberta does not apply to wind development. Specifically there is no "right of entry"; landowners have the authority to approve development and grant access rights through legal instruments such as a contract, easement or lease. There is no requirement under existing Conservation and Reclamation Regulations to reclaim surface disturbances caused by wind energy projects.

The Government of Alberta supports the Alberta Utilities Commission's (AUC's) regulation of the wind industry in a way that is fair and sustainable. There is currently a moratorium prohibiting wind development on Crown lands.

There are ecological impacts associated with wind power infrastructure. A broad range of wildlife species are impacted in various ways, from collision fatalities, to avoidance or altered migratory behaviour. Impacts on native vegetation and wildlife habitat can occur during wind facility construction; there are also permanent additions required to existing road and power transmission networks. The current regulatory process requires that the Wildlife Management Branch of Alberta Environment and Sustainable Resource Development review and sign off on any proposed wind power development projects as part of the approvals process administered by the Alberta Utilities Commission, the provincial regulator.

Industry wants to take advantage of the abundant wind resource in Alberta's Prairie and Parkland regions, and would like to develop their industry on a "level playing field", where the regulator's expectations and protocols are transparent, equitable, and consistent.

Municipal governments and local communities want to balance economic opportunity with the desire to preserve landscape, social, and aesthetic values. Municipalities have authority over wind development through Land Use Bylaws, and can direct development according to this policy.

We propose a facilitated process aimed at creating a spatially explicit, consensus-based, multi-criteria mapping tool for the assessment of sustainable opportunities for wind power development in southern Alberta. The process will take into account regulatory, technical and logistical development considerations, ecological assets, landscape-scale ecological priorities, and local and regional community values. This will increase awareness and consideration of land use alternatives from a balanced perspective, incorporating economic, environmental, and social factors.

We hope to achieve this objective through a phased approach; the first phase involved a review of existing approaches to assessing wind development potential, with focus on two US-based models. The final report from Phase 1 was submitted to PCF in May 2013 (Chernoff, 2013). The second phase was the workshop described in this report; our hope was that the workshop would guide our most logical future phases of the project, and this has indeed been the case (see "Next Steps" section, below).

SUMMARY OF WORKSHOP

The Needs Assessment Workshop for the PCF Wind Assessment Project was held on March 14th, 2014 at the Fish Creek Provincial Park Learning Centre in Calgary. The agenda for the workshop is included as Appendix 1, and a rough transcript of proceedings is included as Appendix 2.

It was critical to PCF that a diverse group of stakeholders attend the workshop, to ensure a balanced discussion of issues related to wind power development from a broad range of perspectives. The following people attended the workshop; their affiliations are also listed:

- Brandy Downey – Alberta Environment and Sustainable Resource Development (ESRD/PCF)
- Greg Chernoff – Miistakis Institute (workshop facilitator)
- Katheryn Taylor – Prairie Conservation Forum (PCF)
- Sean Nichols – Alberta Wilderness Association (AWA)
- Cliff Wallis – Alberta Wilderness Association (AWA)
- Nolan Ball – Special Areas Board
- Chris Gray – Alberta Biodiversity Monitoring Institute (ABMI)
- Cheryl Bradley – Alberta Native Plant Council (ANPC)
- Tim Weis – Alberta Regional Director for CANWEA
- Bill Dolan – Alberta Tourism, Parks & Recreation / PCF
- Pam Pirsch – Cypress County
- Todd Pawsey – County of Paintearth
- Ben Thibault – Pembina Institute
- Doug Walker – Alberta Electric Systems Operator (AESO)
- Kelly Matheson – Bluearth Renewables Inc.
- Sophie Jiang – Alberta Utilities Commission (AUC)
- Mark Kavanagh – Alberta Utilities Commission (AUC)
- Ovo Adagha – University of Calgary
- Brett Boukall – Alberta Environment and Sustainable Resource Development (ESRD)

The workshop began with an open discussion of opportunities and challenges associated with creating sustainable wind power development in prairie and parkland Alberta. A number of themes emerged in this discussion. Many of the opportunities that were identified proposed possible solutions to some of the key challenges.

Challenges and Opportunities Related to Policy and Regulation

Numerous challenges were noted that result from the way that the wind energy industry is managed and regulated in Alberta. Wind energy is not regulated in the same way, or governed by the same rules as other energy industries, creating the perceived lack of a “level playing field”. There are no requirements for decommissioning or reclaiming abandoned wind energy infrastructure after the end of its useful life; no regulating body has the authority to issue certificates of reclamation, and there is no reclamation protocol currently in place. Neither does any regulating body systematically monitor impacts from active or abandoned wind farms. Some attendees suggested that this lack of regulatory capacity is a vestige of the perceived “greenness” of wind energy when it first appeared on the Alberta landscape. In any case,

the result is not advantageous to developers or regulators; expectations are unclear and perceived as “moving targets” so decision-makers are sometimes unsure of the criteria for approval/rejection, and developers are unclear of what is expected. Legacy infrastructure from abandoned projects represents a substantial liability to the Province, which could eventually be assumed by Albertan taxpayers.

At the same time, there are opportunities for growth of the wind energy industry in Alberta. Many of our existing, coal-fired generation facilities are aging, with an anticipated need of replacement in the near future. Assuming that rates of power consumption will continue to increase, the environmental impacts associated with wind power should be assessed in comparison to other energy alternatives. Industry representatives at the workshop indicated an interest to develop wind power responsibly, and edify the notion of wind as a “green” energy alternative. Since the lack of clear policy and regulatory/monitoring capacity is damaging to both developers and government, there is an opportunity to build policy that is balanced, considerate of a wide range of criteria, and serves to benefit both sides. Workshop attendees noted opportunities for better connection between regulators, provincial government decision-makers, municipal governments, and developers to ensure a more transparent, sustainable, and efficient process.

Challenges and Opportunities Related to Economics

The economics of wind development present another suite of challenges. It is costly to develop wind power projects, and recent changes in the availability of subsidies have resulted in more up-front cost being assumed by the developer, rendering many projects prohibitively expensive to get off the ground. In transitioning rural communities, wind power development is seen as an opportunity to bolster and diversify local economies, but the economic benefits are often highly localized and isolated to the landowners of potential development sites.

The County of Paintearth has recently seen development of their first wind farm, and worked with the developer to create a royalty scheme that spreads benefits more evenly across the landscape. Landowners where wind turbines are sited still receive comparatively higher royalties, but adjacent and nearby landowners also receive some compensation. Both municipal representatives at the workshop indicated interest a collaborative effort to develop best practice guidelines for wind power development in rural Albertan municipalities.

In order to market wind power as a sustainable energy alternative, industry representatives suggested the development of a “green wind certification” program, similar to the FSC certification of forest products. This would involve working with stakeholders to develop best practices, a protocol for ensuring that these best practices are being followed, and an associated certification process.

Site-Specific and Local Challenges and Opportunities

Another suite of challenges and opportunities relate to the actual siting of wind farms on the local landscape. Many workshop participants noted the perceived negative site-specific health, aesthetic, and ecological impacts associated with wind power development. Others noted that wind power frequently has the highest potential for development on ridge tops, which coincidentally contain some of the best remaining native prairie landscapes. This collocation of development opportunities and conservation priorities presents an obvious challenge to sustainable development, especially considering the relatively large construction-phase footprint of wind power infrastructure, and the sensitivity of native prairie to any type of disturbance.

In response to this challenge, the opportunity might be to develop a “community of practice” of sustainable wind development in prairie and parkland Alberta. This community of practice would draw from a broad range of experience and expertise and build on previous efforts, and would work collaboratively to develop guidelines for wind farm development, set mutually agreed-upon objectives, and contribute to the creation of the best practice recommendations described above. The workshop was regarded as the potential first step in creating this community of practice.

Assessment of the Need for a Mapping Tool

The next portion of the workshop involved a presentation of the findings from Phase 1 of the PCF Wind Assessment Project: A review of other approaches to assessing the potential for sustainable wind development that focused on two map-based models developed by TNC Montana (Martin et al, 2009) and the Conservation Biology Institute (CBI, 2013) respectively. Details of the materials covered in this presentation can be found in the Phase 1 Final Report (Chernoff, 2013).

Workshop participants were asked to provide feedback on the value of developing a map-based decision support tool for prairie and parkland Alberta. For consideration, the following elements of a successful map-based tool were suggested:

- Meaningful public and stakeholder consultation, and collaborative development of the tool
- Access to and use of quality scale-specific data
- Ability to incorporate best practices
- Meaningful connection to actual policy and decisions related to sustainable wind development
- PCF conceives the tool to be relevant at both regional (prairie and parkland Alberta) and local (e.g. municipal) scales

Feedback from the industry representatives suggested that the utility of a map-based tool would be limited to a broad-scale, “first-cut” assessment of development potential. Since so much of the siting of a wind farm is dependent on highly localized environmental and social factors, it is unlikely that PCF could develop a mapping tool that was accurate and precise enough to work at the finer-resolution, local level. But if there were a map-based tool that allowed for a coarse-scale assessment of the wind development potential across the landscape, or as a screening tool that would help in the initial assessment of the comparative development potential of one area versus another, the feeling was that this would be useful to industry. Incorporation of best practices or conservation priorities as part of the map-based assessment tool could be more problematic; industry representatives felt that, in the absence of and regulation enforcing compliance to best practices, limiting options based on these criteria would likely put a proponent at a competitive disadvantage. The importance of considering all associated infrastructure – not just wind turbines and farms, but also transmission lines and substations – was also mentioned.

Similarly, municipal representatives at the workshop felt that the mapping tool would be of limited use to them. Decisions to permit wind power development are site-specific and subject to the policies and bylaws of each municipal jurisdiction. They acknowledge the need to create some guidelines or best practices to share among municipalities that would share knowledge and experience in dealing with wind development proposals, but this is outside of the intended scope of a mapping tool. The only value of a map-based approach may be to understand the broader perspective of proposed developments.

Representatives from AUC, the province’s regulator of wind and other energy industries, did not envision using this as a regulatory tool, as there are processes and protocols already in place and these assess a project’s merit mostly at a local, site-specific level. However, they did express interest in using this tool as a data source, provided that it could be populated with high-quality spatial data.

Representatives of AESRD, whose sign-off is required on all wind development applications to the AUC, see value in a map-based tool, but caution that many of the data sets that they would require to conduct their assessments using a map based tool are not yet available. Some regional priorities, such as those contained in Regional Plans under Alberta’s Land Use Framework, could be added to the mapping tool to provide a regional perspective to site-specific decisions. This led to a discussion of the potential value of this tool as a repository and distribution mechanism for spatial data related to conservation priorities, human footprint, landscape characteristics, and other factors; and to the suggestion that the scope of the tool be broadened to consider not just wind but all energy development.

Conservationists and other participants noted that significant value lies in the use of this tool as a communication mechanism – a way to overlay areas with high development potential, or areas that are already developed, with areas of high conservation priority. This may become more important if the Province ever removes the wind development moratorium on public land, since this would shift consultation from one-on-one (with individual landowners) to a much broader audience. The PCF sees this as a tool that could be used in their efforts to preserve remaining native prairie.

Many workshop participants expressed concern with the ability of a mapping tool to accurately reflect social values and acceptance or resistance to wind farm development at a local level. The feeling among many in the group was that these values are so individual that it would be impossible to meaningfully represent them spatially. Some suggestions for representing these values at a coarser regional scale included mapping population density, mapping visibility through a viewshed analysis, or mapping openness to wind energy development at the scale of municipalities, as might be determined through researching Municipal Development Plans or other official documents.

In summary, the feedback from workshop participants was generally consensual: There is value in developing a map-based tool to show different considerations related to wind development in prairie and parkland Alberta. However, this value lies more in the tool’s ability to provide a regional perspective and less as a regulatory mechanism that would facilitate site-specific decisions on individual projects.

The remainder of the workshop focused on a discussion of next steps, which are described in detail in the following section.

NEXT STEPS

Two significant initiatives emerged from the workshop as highest priorities and logical next steps. These are described below, in as much detail as possible given that neither initiative has been clearly scoped with objectives, terms of reference, responsibilities, and available resources identified. There is no interdependency or required sequence for the two initiatives. If time and budget allow, both initiatives

could progress concurrently; otherwise, it would be up to PCF and other funding partners to prioritize one initiative over the other.

Interactive Mapping Tool

Workshop participants generally agreed on the value of creating an interactive mapping tool as a logical next step. The mapping tool would be regional in scale, and allow users to examine the potential and anticipated impacts of wind power development at the scale of Alberta's prairie and parkland landscape. Users would be able to zoom to pre-defined (e.g. an individual municipality) or custom extents, and would be able to select from a list of layers to display. The tool would also allow for the customized weighting, combination, and display of layers according to the users interest. Layers would relate to the potential for wind development, ecological values, conservation priorities, or possibly regional-scale social values. A general and preliminary list of possible data layers follows:

- **Wind Resources:** Wind availability and suitability for power generation has been generally mapped for Alberta.
- **Existing Transmission Grids:** Since the transmission grid is struggling to keep up with the pace of wind farm development, projects that are closer to an existing and suitable transmission line and associated infrastructure may be favourable.
- **Municipal Policy:** If a certain municipality has indicated, in their Municipal Development Plan or other documents, that they are either encouraging or discouraging wind power development in their jurisdiction, this may be valuable information to represent at a regional scale.
- **Wildlife Habitat/Range:** Habitats, ranges, and other resource considerations for wildlife species – especially those that are listed under provincial or federal species-at-risk legislation – are important ecological values to consider. Locations of rare or endangered plant species are also important.
- **Native Prairie:** The impact of any anthropogenic disturbance on remaining native prairie is a foremost ecological concern that should be represented in the proposed mapping tool.
- **Environmentally Significant Areas:** The Province of Alberta has mapped Environmentally Significant Areas at various scales. These are landscapes that possess ecological values, systematically measured against pre-defined criteria. Inclusion of these data may help assess the ecological impact of development at a regional scale.
- **PCF High Value Landscapes:** The PCF's Prairie Conservation Action Plan (PCF,2011) includes a map of High Value Landscapes. This data is a good representation of PCF's conservation priorities at a regional scale.
- **Other Regional Conservation Priorities:** These may include regional or sub-regional areas of conservation priority or concern, as mapped or identified in LUF Regional Plans, WPAC Watershed Management Plans, etc.
- **Population Density:** As suggested by workshop participants, a map of population density may provide a coarse, regional-scale assessment of social impacts associated with wind or other development.
- **Viewshed/Visibility:** A landscape scale viewshed analysis may provide a useful assessment of the comparative visible impact of proposed wind power developments.

Inclusion of the layers listed above would be contingent on availability of data for use in the proposed mapping tool, and subject to assessment of data quality (accuracy, currency, relevance, etc.) by PCF, Miistakis, and other stakeholders as identified by PCF.

The general process for developing a mapping tool would involve three steps:

1. **Data Scoping, Acquisition/Creation, and Processing:** Reviewing and prioritizing the preliminary list of data layers above; identifying sources of data; securing access to data; creating other important layers that don't currently exist; and processing data for inclusion in the mapping tool.
2. **Building and Testing the Mapping Tool:** Designing the mapping tool; building a test version; testing the mapping tool with stakeholders and target users; and making refinements based on test version feedback.
3. **Launch of the Mapping Tool:** Official launch of the mapping tool to the public; press releases and other outreach; presentation and workshopping of the tool with target user groups and stakeholders; ongoing user support and troubleshooting; and devising a protocol for incorporating feedback and new data into future updates.

As suggested by workshop participants, the mapping tool would be initially designed as a scoping/screening tool, using regional-scale data. However, the design would be flexible enough to incorporate higher-resolution data and other intended uses, if future needs dictate and future circumstances allow.

Best Practices for Wind Development

The workshop highlighted many opportunities to collaborate on the creation and documentation of best practices for sustainable development of wind power in prairie and parkland Alberta. Key opportunities include:

- **Municipal Best Practices:** Valued input from the two municipal representatives at the workshop suggests a value in developing best practices guidelines for municipalities dealing with wind industry. Although development pressures are common and ubiquitous throughout the region, individual municipalities have a wide range of experience and approaches to negotiating with wind industry proponents. There is great value in creating a forum where municipalities can share experience, learnings, and creative solutions to common challenges with their peers. Although the PCF may wish to support this initiative, it is probably best coordinated organizations like the AAMDC, regional economic development organizations, or others.
- **Industry Best Practices:** As suggested, there may be some interest among some companies in the wind industry to set themselves apart from competitors by distinguishing their wind power as being exceptionally considerate of ecological values. There is an opportunity for PCF to work with industry partners such as CANWEA and other stakeholders to explore the feasibility of developing a "native-prairie-friendly" certification program for wind power. The certification could be based on best practices for industry, and could build on existing work (e.g. Bradley & Neville, 2011; Weis et al, 2010; EWEA, 2002; Fehily Timoney & Co., 2012) that has already been done to outline some of these practices. PCF could potentially endorse the certification program, lending it credibility and legitimacy. Even in the absence of a formal certification program, there

may still be value in PCF and industry working together to establish best practices for wind development in Alberta's prairies and parklands.

- **Policy and Regulation Best Practices:** Workshop discussions elucidated some critical challenges in the way that the wind industry is managed and regulated in Alberta. Questions arose about the proper sequence of decisions, the transparency of the process, the lack of monitoring and enforcement capacity for operational and especially abandoned facilities, the perceived lack of "level playing field" between wind and other energy industries, and the disconnects between and within regulating and decision-making authorities. Hopefully this workshop has opened lines of communication between municipal and provincial government agencies, regulators and system operators, and industry, and catalysed discussion that will eventually lead a more integrated policy and regulation process, improving the transparency of the decision-making process, and overall management of the wind industry in Alberta.

The steps required to advance any of these best practices initiatives are less clearly-defined than they are for the concrete objective of producing a mapping tool. Each initiative would need to be properly scoped, with stakeholders, timelines, processes, and budgets identified. Success of each initiative would need to be measured against its capacity to effect real change in the way wind development plays out on Alberta's sociopolitical and physical landscape. And PCF would need to assess what if any involvement the organization should have in each initiative.

The only clear and consistent component to all three initiatives is the need to create a forum for discussion – for open and mutually respectful dialog that participants engage in with a willingness to create positive change. Well-organized processes managed through strong facilitation will be essential to the success of any of these endeavors. The foundation for continued dialog among an engaged and respectful community of practice has been established through the March 2014 PCF workshop.

CONCLUSION

On March 14th, 2014, the PCF and Miistakis convened a workshop where a diverse group of stakeholders discussed what is needed – both in terms of specific tools and less specific processes and discussions – to ensure that, if wind power continues to grow in prairie and parkland Alberta, it does so in a way that is environmentally, socially, and economically sustainable. Through open and inclusive discussion, workshop attendees agreed on two important next steps: creation of a mapping tool to aid in understanding the potential impacts of wind development at a regional scale; and exploration of opportunities to build best practices into the management of wind energy at local and regional scales. Perhaps more importantly, the workshop forged a diverse community of stakeholders, with a shared interest in the sustainability of wind energy in prairie and parkland Alberta.

The Miistakis Institute is eager to continue working with PCF towards the long-term goals of this project, and specifically to support the next steps outlined in this report through development of the mapping tool and facilitating discussions around best practices.

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APPENDIX 1 – WORKSHOP AGENDA

AGENDA

PCF WIND ASSESSMENT PROJECT – NEEDS ASSESSMENT WORKSHOP

FRIDAY, MARCH 14, 2014 – 9:00am-4:00pm

9:00 – Welcome and round-table introductions

9:05 – Introduction to PCF Wind Development Assessment project

9:15 – Round-Table ice-breaking open discussion:

- Attendees answer “What opportunities and challenges do we face in creating sustainable wind power development in prairie and parkland Alberta?”
- Open discussion of the points brought up during introductory remarks.

10:15 – Break

10:30 – Presentation – Review of decision support tools for assessing wind development potential – based on Phase 1 report. Question period to follow.

10:45 – Break-Out Group Discussions: Evaluating the Need.

- Is there a need for a map-based decision support tool for wind development in prairie and parkland Alberta?
- What form should this take?
- How can we improve on tools developed in other jurisdictions (from presentation)?
- How could this tool impact/improve land use planning and decision making?

12:00 – Lunch

1:00 – Breakout Session: Three Facets of Assessing Wind Potential.

- Break into three groups – to discuss the development potential, conservation priorities, and social (community, economic, health, etc.) values related to wind development.

1:45 – Summary of Breakouts (Greg to Facilitate):

- Each breakout group reports back on their session.
- Open discussion with the whole workshop – get feedback, build consensus.
- Develop list of factors to consider in assessing wind potential and placement.

2:15 – break

2:30 – Open Discussion: Data and Scale issues.

- What sources of data (spatial or otherwise) exist that would allow us to evaluate the factors identified in the breakout & summary session?
- How can we represent these at regional and local scales?

3:30 – Summary and Wrap-up

4:00 – Adjourn

APPENDIX 2 – WORKSHOP NOTES

PCF Wind Assessment Project – Needs Assessment Workshop Notes

Friday, March 14, 2014 – 9:00 am – 4:00 pm

Attending

Brandy Downey – Alberta Environment and Sustainable Resource Development (ESRD)

Greg Chernoff – Miistakis Institute

Katheryn Taylor – Prairie Conservation Forum (PCF)

Sean Nichols – Alberta Wilderness Association (AWA)

Cliff Wallis – Alberta Wilderness Association (AWA)

Nolan Ball – Special Areas Board

Chris Gray – Alberta Biodiversity Monitoring Institute (ABMI)

Cheryl Bradley – Alberta Native Plant Council (ANPC)

Tim Weis – Alberta Regional Director for CANWEA

Bill Dolan – Alberta Tourism, Parks & Recreation / PCF

Pam Pirsch – Cypress County

Todd Pawsey – County of Paintearth

Ben Thibault – Pembina Institute

Doug Walker – Alberta Electric Systems Operator (AESO)

Kelly Matheson – Blueearth Renewables Inc.

Sophie Jiang – Alberta Utilities Commission (AUC)

Mark Kavanagh – Alberta Utilities Commission (AUC)

Ovo Adagha – University of Calgary

Brett Boukall – Alberta Environment and Sustainable Resource Development (ESRD)

1. Welcome - Brandy Downey

Roundtable introductions – All

2. Introduction to PCF Wind Energy Development Assessment project -- Greg Chernoff

- Map-based tools
- Purpose of the workshop is to see if there is a need

3. Roundtable – What opportunities and challenges do we face in creating sustainable wind power development in Prairie and Parkland Alberta?

- **Challenge:** provincial government doesn't have the resources to monitor development.
- **Opportunity:** build capacity within the provincial government.
- **Opportunity:** Identify and address regulatory gaps.
- **Opportunity:** Economy and rural development. Initially, wind development occurred more in noticeably windy areas, however, technology has advanced to the point where other places are opening up. Surprised at wind locations. They are not where

expected – monitoring for a couple of years has shown other places have a constancy of wind (like Paintearth county).

- **Challenge:** economics don't make sense right now (feasible with carbon credits and location to existing transmission lines). The credits from the US (California) have been cut-off, and without subsidies from the government (provincial, federal), financing of wind farms is very difficult (wind farms are very expensive to finance and build).
- **Opportunity:** Coal fleet will be coming off line over the next few years, so we will need a lot of new energy development.
- Alberta imports energy, and it is very unlikely that we will have energy to export.
- Counties – views are very important and wind energy development is detrimental to this. Private landowners are more open to it because of the extra income.
- Permit phase and construction phase are the times that people oppose wind projects the most. A lot of negative reactions come from neighbours that don't have wind development on their properties.
- **Opportunity:** In the county of Paintearth, they have gotten around this by including neighbours and coming up with a community payment plan (shared amongst landholders). The way this worked was that a whole township would sign up for a wind project. There was a base pay that everyone within the footprint of the wind tower would get, and those with towers on their land would get an additional amount.
- **Challenge:** land-use conflict, especially in places like Cypress. On the non-industrial landscapes, like Cypress, people go to escape the busy city life. You don't want to be bombarded by industrial activity on your way there. Wind farms interfere with a sense of arrival to natural areas.
- **Opportunity:** wind energy developers want to do projects the right way. If there are guidelines that could be put in place to make this easier, they are all for it. The energy market is competitive in Alberta, so rules and guidelines need to capture all the different technologies equally. It should be a level playing field for all energy developers. Without guidelines that everyone has to adhere to, companies that are trying to do the right thing (by the environment, etc.), will end up being less competitive.
- **Challenge:** the energy industry is not a level playing field. It is based on what Albertans want at the time.
- **Challenge:** introduce regulatory requirements for reclamation certification that apply to everyone (right now, the wind energy industry doesn't have to adhere to the same rules as other energy industries). There is no enforcement mechanism (for instance, when a wind farm is decommissioned and reneges on their reclamation promises, there is no enforcement in place to make sure they are held accountable). There is long term liability with abandoned infrastructure. Work needs to be done to address issues of decommissioned wind farms.
- **Challenge:** many of the good wind farm locations tend to be on ridge tops, which are mainly still native grassland. Can we develop a viable wind farm industry that avoids valuable native landscapes?

- **Challenge:** the transmission line process can be more challenging than the actual wind farm. Moving power down these lines is a huge challenge and we are behind by 15 – 20 years. These lines also go through native habitats. It is up to the transmission line developers to decide how to get from point A to point B. The cost of building transmission lines is going to go to Albertans and will show up on their energy bill.
- **Challenge:** Fluctuation of wind requires backup alternatives, so that when the wind stops, there is still power available.
- **Opportunity:** increase the number of projects to increase stability of market demands.

4. Presentation: Review of Wind Power Assessment Decision Support Tools (based on phase 1 report). Greg Chernoff. PowerPoint presentation

- There are many different approaches to wind power development. Common factors include develop potential (where's the wind?), other considerations (regulatory, etc.), economic (where's the market?), competing interests (other energy/development), conservation impacts and priorities.
- There are different uses and users of wind energy (different priorities).

Two Approaches Looked At:

- TNC Montana – Risk Mapping. Mapped ecological risk. High risk areas was where there was a high potential for wind development and high ecological value. The good thing about this process is that it is a simple, balanced approach that identified low risk lands where wind development could occur. Less good was that it was a binary ecological value, and dependent on the criteria selected. For instance, if there were 13 criteria selected, the conservation value would be the same for land that had any of these 13 criteria on the land (so doesn't differentiate between land that has one of the 13 to land that has 13 of the 13).
- CBI – Tehachapi Mountains DSS. 2013 project – plan for protection around existing wind developments. They established a hierarchical fuzzy logic model (50 step decision tree). There was public consultation to determine conservation values, but wind potential was not mapped. The good thing about this approach is the high level interactive tools and model, as well as the consultation process. Less good is the time required to build the model, the unilateral approach (only considers conservation priorities, excludes development potential), and binary outputs (it is either a conservation priority or it isn't).
- Ideas for an Alberta DSS:
 - Interactive mapping tools as part of the process.
 - Meaningful public consultation – this starts today!
 - Access to quality data – can you help?
 - Incorporation of best practices – build on existing work.
 - Meaningful engagement and insertion – it has to support real decisions!

5. PCF – would like to see this move forward on two scales: broad scale (land use planning scale), and decision support tools (with local communities).

6. Evaluating the Need. Group Discussion.

Is there a need for a map-based decision support tool for wind development in prairie and parkland Alberta?

What form should this take?

How can we improve on tools developed in other jurisdictions?

How could this tool impact/improve land use planning and decision making?

- Will industry use this?
- Wind developers first start to look at maps for where the wind resources might be. Then they look at where transmission lines are (they like to be as close as possible to existing transmission lines. Ideally, once they have a potential location, they go out and talk to people in the area/community. The business is very competitive. If you think you have a good site, you want to hold on to it, so the ideal order of things doesn't always happen (such as talking to the community first).
- Mapping is a key process. If there is a map available that shows where ideal places for wind development are (and shows potential areas of conflict, be it environmental or social or economic), they would use it. Doing best practices comes at a cost, but if everyone is held to the same standard then this would work great. The business is very competitive, so for this to be useful to industry, it would have to have some teeth to it (as a best practices tool, it might become limited because best practices are more expensive, so companies following these will lose out without enforcement).
- Map social acceptance? This is always changing, and every company has a different approach (such as how the company in the county of Paintearth dealt with things). This would be very difficult to do.
- What about social mapping around key areas (such as Cypress Hills)? This could help in identifying risk.
- Need to understand what landowners attitude is towards wind turbines. What does PCF need to tackle to address this?
- Noise impact assessments are necessary for subsequent development. Oil and gas, as well as wind turbines, produce noise. If the wind energy farms take up the quota of noise, this will be a problem for oil and gas users (there is a threshold for noise levels in any given portion of land).
- AUC probably wouldn't use this as a regulatory tool, but it would use it as a data source which could also be very valuable.
- Information from landowners that live in an area where wind farms exist could be useful.

- Could the noise level thresholds be incorporated into the maps? Someone would have to continuously update this layer on the map. Get the government to build some type of noise level data.
- Social mapping – start thinking about the economic benefits for a community (like the county of Paintearth example). Conflicts occur based on decisions about where wind towers can be located. The shared benefits idea can be one tool in the toolbox to help with the social aspect, but shouldn't be the only one.
- It could also be useful to have a broader social aspect (not just in the area of the project).
- Could this mapping tool be a repository (as AUC mentioned before)? Can it be used as a communication device (as a screening tool)? For instance, before a company even starts to consider a project, areas that could be a problem for a wind farm (such as in sage grouse country) would be identified right away.
- Transmission lines that leave a substation are considered a different project than the wind farm. It would be useful to look at these at the same time as looking at wind farms.
- An advantage of this mapping tool is communication. Right now, wind farms are built on private land. If that ever changes and they start to be built on public land, that involves a lot more people. A mapping tool can be useful for this as well.
- The mapping is probably not advantageous to municipalities. Wind energy companies come to the municipalities and tell them where they are going to put the wind farm. They have to do all of their studies before they put in an application (environmental, social, etc.). Main concerns of municipalities is how far they are set back from roads, houses, etc. Cypress county – have to go through a land-use change first, and then it is only allowed on agricultural land. Every county is different. County of Paintearth doesn't require a land use change. County of Paintearth requires a public consultation process. They also only allow wind development on agricultural land. When the county of Paintearth started collecting information to produce guidelines, they were piecing things together from other counties, CANWEA, others.
 - Other counties are facing applications from wind energy farms, but don't have anything in place to deal with it.
 - The biggest impact was dealing with construction. There were no issues afterwards.
 - Municipalities have a yes/no say, but AUC can override this. Municipalities don't have to give a development permit, however, if AUC has already approved it, they can't obstruct it.
- Collect information that shows all sides of the situation.
- There might not be a use for a decision based mapping tool for industry/regulators/municipalities, but there still can be a use for PCF in terms of areas that we see as a high risk for conflict between native prairie and wind farms, and what current people living in the area want.
- PCF could be that extra voice to planners and industry by showing areas to avoid because of native prairie, species at risk, etc. and areas that would be okay for wind energy development.

- The two examples presented (in Greg’s presentation) don’t include transmission lines. Transmission lines can go through sensitive land if necessary.
- There should be a requirement for a sign-off (from ESRD) on transmission lines as well. Right now there isn’t.
- Two things to go forward with – best management practices and a mapping tool.
- How do we get information/data on best places for wind energy?
- PCF wants a broader network than just PCF member organizations. Something like this would be good for AAMDC to have, then they can send it out to all of their members.

7. General Comments:

- Upgrading wind farms – they don’t like to use existing foundations, so after 20 -25 years, they usually just bury the base and build a new one. The technology of the turbines changes over the years, and there might be warranty issues. Aside from that, the bases should be able to be used again (less of a footprint).
- Can companies give rationale and constraints for wind turbine location? AUC and ESRD don’t see what they are set back from and why. Maybe it would be better to put a turbine near a wetland on cropland rather than farther from the wetland on native prairie. We don’t need a model to do this, it can be done on a case-by-case basis.

8. Three facets of assessing wind potential. Data and Scale Issues.

- A lot of the wind potential of Alberta has already been calculated and mapped. So you find your location (nearness to transmission lines is important here), do an environmental impact assessment, then send applications for approval. 2 years of wind data, 2 years for environmental data. Also have to get into a queue in regards to transmission lines and the order that they will be built in.
 - There are maps available for wind companies to look at to decide where to go. These are publicly available.
 - Site specific maps are not publicly available.
 - AESO does a study on transmission lines that wind energy companies need. AESO can’t say no, but they can lay out items specific to the wind farm (for example, the current lines might not be able to support the amount of energy coming from the wind farm, but in three years, it might). They take the application and tell the company what they can do.
 - Application comes in to AESO, a connection plan and scope is developed, a study is conducted (what are the constraints, what does the company have to do to get connected).
 - All of the current transmission lines are publicly available.
- Approvals process (AUC). Application submitted, which includes all of the requirements listed in rule 7. They have to give an environmental overview and a wind energy referral report (sign-off) – allows ESRD to work with the developer. To get the sign-off, the

developer comes to ESRD with their design. They talk about what is on the landscape, things they need to be aware of, and things they need to survey for. From this, develop a survey plan that will get at what risks are on the landscape and how to mitigate them. This process can take years. At the end, a sign-off report is provided to AUC. Some species can be mapped in more detail, but a lot can't, so at this point, this would not be mappable.

- Part of best practices would be for the industry to go to ESRD before they get their contractors to do environmental impact assessments.
- Does industry need approval from AUC or the municipality first? Municipalities give the first approval, but can call it conditional (like conditional on AUC approval for instance).

The sign-off and application documents go together and get an exhibit number. AUC makes sure requirements of environmental impact assessment are met. There is also a technical review. Public notices are issued and people that are affected have a chance to respond. A hearing could be held to help address concerns if not satisfied. The commissioner then reviews the application package and does up a decision report after they have all the information. If it is in the public interest, the project can go ahead (and any conditions will be in this report).

9. A useful mapping tool will be less of a regulatory tool and more of a courser landscape scale tool. Will dovetail more with higher strategic plans such as the SSRP than on a site-specific level. Can include things such as: economic – wind speed and transmission, and where wind development potential exists; social challenges and conflict – if you look at human footprint on the landscape, you can get a sense of where more conflict will be (more population=more conflict); environmental – species at risk. We can take some of the specific species data that we do have and plug it in and add more as they come. We can look at the intactness of native prairie, ESA's and parks and protected areas. We also need to link the mapping tool with best management practices to show different tools that are out there to support decisions and processes.
 - There are regional ESA's that can be used to make sure it is complete.
 - Social side – can land values play into this (landowners with lower land values might be more interested in wind development as additional income).
 - Highlands and ridges – might be good for wind development, but might also be important for things like flyways (info we just don't know yet).
 - There are many different things that can be mentioned in best management practices to encourage land conservation on private lands.
 - Oil sands portal – application that shows where the resources are and overlays it with other things such as caribou range. Information can be layered on top of that so that you know what needs to be done in caribou range.
 - The guidelines that Cheryl and Marilyn put together speaks to minimizing disturbance in native prairie, but when it does happen, what types of things you should be thinking about.
 - Noise levels – all major projects need a noise impact assessment done. Cumulative effects are already in place for permissible noise levels. This

information is not compiled, although AUC does have the data. AUC might be interested in a project to build a 'living' database with this data.

- Airports could be another layer. They influence where wind farms can go (not too close to airports and not in flight paths). Land use layer.
 - Public lands
 - Alberta Culture (historical, cultural areas)
 - Proximity to wells, including abandoned wells. Could be a level of too much detail.
 - ABMI's human footprint data would be useful.
- What about developing an overall values map for the entire prairie ecosystem so that it doesn't just focus on wind energy? The scope is very broad and could get difficult for oil and gas development. Solar isn't in the province yet, but it is coming. Maybe another layer looking at this would be easier to compile than oil and gas.

10. Summary:

- Best practices applied to regulatory process – something to encourage industry to contact ESRD sooner.
- Development of a baseline report for municipalities to draw upon when faced with development.
- Balance the playing field between companies that use best practices and those that don't. Perhaps some type of PCF certification for energy in general.
- Reference the SSRP as much as possible. It supports cumulative effects and biodiversity.
- Look into the availability of noise impact assessment from AER.

11. Next steps – Greg will compile a report of the workshop that will be sent to participants.