Wind Energy Development in Alberta

Suggestions for Beneficial Management Practices

INPUT BY PARTICIPANTS IN A PROCESS TO RECOMMEND GUIDELINES FOR MINIMIZING DISTURBANCE OF NATIVE PRAIRIE

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SUGGESTIONS FOR BENEFICIAL MANAGEMENT PRACTICES BASED ON FIELD TOUR OBSERVATIONS

On October 27, 2010, twenty-nine individuals from a broad range of interests participated in the field tour of a wind power development constructed in 2004-2006. The site was in foothills fescue grassland near Pincher Creek. Participants were asked to record their observations regarding practices that work, those that need improvement and any innovative ideas. The following are key ideas that were provided by the ten participants who responded. These ideas may provide a useful starting point for defining beneficial management practices with respect to construction, operation, maintenance and decommissioning of wind energy projects where avoidance of native prairie is not achieved.

Site wind energy projects to avoid native grassland

Observations/Rationale: Siting on already disturbed land may be a preferable option to siting on native grassland as there are less environmental considerations to address. Siting considerations for wind energy developments include proximity to transmission lines and substations, wind regime for energy generation, land ownership, land use, archeological/historical sites, wildlife habitat and presence/absence of native prairie.

Integrate all uses and activities on the site

Avoid traditional land use sites

Observations/Rationale: Aboriginal grave sites, dream beds and other sites occur on ridges with rough fescue grasslands. Unearthed rocks indicates disturbance. These sites need to be identified and avoided throughout the lifetime of the project.

Plan early for grazing management

Observations/Rationale: Heavy pressure from livestock grazing appears to be hampering restoration of some disturbed sites. There is a need to consider the response of cattle to the disturbances and how to avoid damage. Include grazing management details (season, intensity of use, fencing needs) in negotiations with the landholder.

Fence disturbances from livestock for a few years after seeding to assist in restoration to native community

Observations/Rationale: Grazing pressure and poor range health are impacting revegetation around the base of the towers, on the cable trench and along the access route. Microsites with higher moisture regime occur at the base of the towers and pugging, uneven surfaces caused by livestock hoofs, is occurring. The composition of vegetation communities is affected either due to the towers directing more water to the base of the structure and/or of cattle seeking shade and shelter.

Plan for all aspects of the development, including transmission
Observations/Rationale: New transmission towers on the wind energy development site have not been built with the same attention to minimizing disturbance as the original wind turbine construction. There is a need to consider all elements of the project in the planning stage and ensure that construction practices to minimize disturbance are consistently used.

Minimize the width of the access RoW
Observations/Rationale: A shadow effect, that is alteration of native vegetation due to disturbance and spread of invasive species, was observed adjacent to roads constructed for the project. Consideration should be given in project planning to minimizing the width and length of access roads during both construction and operation phases.

Use geotech mats (geo-membranes or geo-textiles) when building access for heavy equipment in the construction phase
Observations/Rationale: The environmental effects of moving heavy equipment, such as construction cranes, were still apparent even after initial reclamation was complete. Disturbance could be reduced by use of minimal disturbance construction techniques. Road width can be considerably reduced after the turbines are installed.

Consider options other than permanent access routes for operations and maintenance (e.g. access on two-track trails using ATVs)
Observations/Rationale: Surface disturbance may be minimized and the risk of invasion of non-native species reduced by utilizing alternative forms of access to sensitive areas. This is particularly important during temporary winter thaw and spring when moist soil conditions can exacerbate the disturbance caused by conventional vehicle access to the turbines.

When permanent roads are needed, use low profile construction techniques
Observations/Rationale: Moisture collecting in depressions caused by disturbance promotes invasion of non-native species. The risk of invasive species spread may be reduced by using low-profile roads without ditches compared to roads with ditches. Low profile roads could also improve the feasibility of restoring native plant community.

Avoid spreading spoil, from excavation for road construction and tower bases, on native prairie
Observations/Rationale: There was evidence of spoil overlays extending beyond the road right-of-way and around towers into native grassland. This soil admixing impedes successful restoration of native plant community.

Use biodegradable mats when needed to prevent erosion

Observations/Rationale: Matting appears to have been effective in minimizing erosion; however the nylon is not decomposing.

Install power cables along the access right-of-way to minimize surface disturbance

Observations/Rationale: Use of this practice on the site has reduced the disturbance size and edge.

> **Strip vegetation and soil only along the cable ditchline.**
> *Observations/Rationale:* Is it necessary to use sand in the cable trench? Consider plough-in of cable line.

Design seed mixes considering the need for erosion control as well as potential competition from non-native species

Minimize traffic during operations

Observations/Rationale: Vehicles contribute to the spread of propagules of invasive non-native plants.

Manage weeds to adhere to the Weed Act (2010)

Observations/Rationale: There is a legislative requirement to monitor and control non-native species listed in the *Weed Act (2010).* Monitoring and controlling invasive non-native species requires long-term commitment of personnel and resources.

Monitor success of reclamation and invasion of non-native species over time

Observations/Rationale: Having monitoring data of vegetation change over time on and adjacent to disturbances is needed to assess the success of reclamation practices and collectively build knowledge about what works and what doesn't.