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Reducing the Renewable Energy Footprint on Native Grasslands: Summary Information for Renewable Energy Developers

Introduction

This summary sheet provides industry-specific beneficial management practices for renewable energy developments in native prairie landscapes.

Practical, beneficial management practices that sustain prairie biodiversity at the species, community and ecosystem levels help maintain one of the most threatened ecosystems in the world: the native prairie ecosystem.

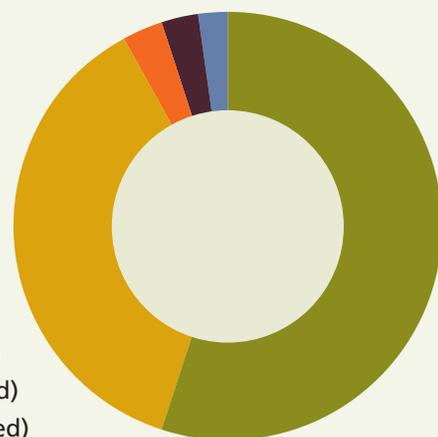
The prairie region covers an area of 156,318 km² or 24% of Alberta.

Native prairie is home to 80% of Alberta's species at risk.

Why do Alberta's Native Grassland, Parkland and Wetland Ecosystems Matter?

Temperate native grasslands are among the most threatened ecosystems in the world. In Alberta, as of 2013, native prairie region land use is as follows:

- 55.2% agriculture (converted)
- 36.9% remaining native prairie
- 2.8% transportation (converted)
- 2.5% urban and rural (converted)
- 2.3% industrial (converted)



Native prairie is valued for its biodiversity, habitat for wildlife, water storage and purification, as a reservoir for carbon and for providing a reliable and high-quality source of forage for livestock.

It is also valued for less tangible benefits including its aesthetic beauty, the recreational opportunities it provides and preservation of cultural history linked to indigenous people and Alberta's traditional ranching lifestyle.

Fostering a stewardship ethic around all current and future users of native prairie rangelands is critical to the success of prairie conservation efforts in Alberta. It demands an enlightened understanding of ecological and economic relationships and an ability to resist persistent pressures to fragment land and intensify land use for short-term economic gains. A strong stewardship ethic strives to maintain long-term values and benefits.



PHOTO: ANNETTE HERZ

How Might Renewable Energy Development Negatively Impact These Ecosystems?

When a large scale renewable energy project (solar or wind) is developed, site disturbance occurs. This involves transporting equipment to the site, in some cases stripping and re-grading the site and installing footings to secure the technology.

For wind, the disturbance is dispersed over the landscape.



For solar, the disturbance is concentrated to one intact parcel of land.



Once disturbance occurs, whether it's a temporary or permanent disturbance, it is difficult to return the affected site to native prairie. These disturbances can introduce invasive weeds, create runoff, impair species movement, and remove native vegetation permanently changing the existing ecosystem. Additionally, renewable energy development can impact these ecosystems in ways different than footprint, including noise and light pollution.

What are the Advantages of Avoiding Native Prairie Ecosystems?

By avoiding native prairie, important ecosystem services in Alberta are protected. This provides essential environmental benefits to Albertans, species and habitat.

Site restoration in native prairie can be very expensive and take a very long time to achieve positive results. As part of the approvals process, Alberta Environment and Parks (AEP) requires final reclamation plans for decommissioning and abandonment of the renewable energy infrastructure. From a project lifecycle perspective, it is potentially more economically feasible to avoid siting projects on intact native prairie if there are non-native prairie options available.

Where are Alberta's Native Grassland, Parkland and Wetland Ecosystems?

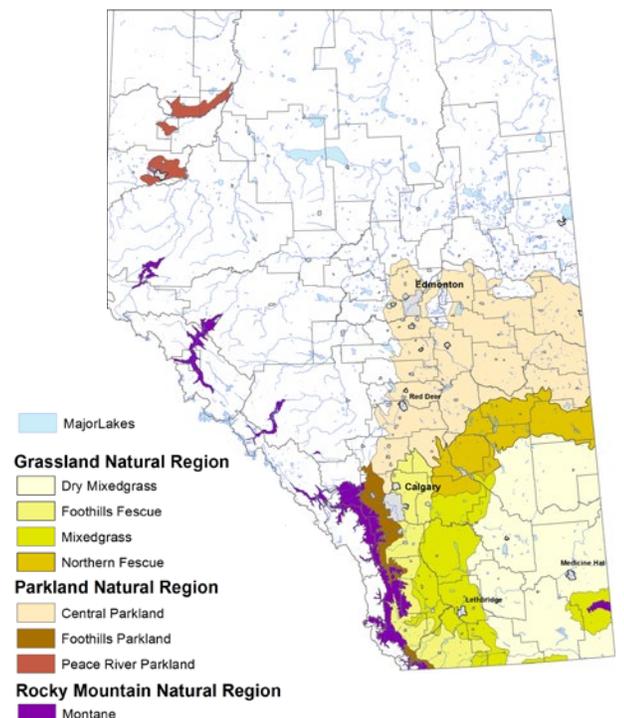


FIGURE 1: GRASSLAND AND PARKLAND NATURAL REGIONS AND MONTANE NATURAL SUBREGION (Alberta Community Development, Agri-food and Agriculture Canada)

What Can Be Done to Reduce Negative Impacts on Native Prairie Ecosystems?

Minimum disturbance practices that avoid or reduce the area of surface disturbance are essential tools in the management of cumulative impacts of native grasslands.

For lands where native plant communities remain intact and functioning, these principles are recommended:

AVOID

siting renewable energy projects on intact native prairie

Avoid native ecosystems by staying clear of isolated areas of native prairie, ridge tops, riparian areas, and watercourses and known wildlife corridors within the project footprint / **Plan site developments** close to or with in urban centers / **Minimize disruption** by utilizing existing disturbed sites such as industrial sites, brownfields, marginal croplands or re-grassed cultivated lands / **Site developments should align** with existing transmission lines with load capacity to support the project / **Use appropriate datasets** and decision support tools (see Resources on page 4) and tools listed to the right.

BENEFICIAL MANAGEMENT PRACTICES

should be utilized to reduce impact on native prairie ecosystems if avoidance of native prairie is not possible.

Adjust project boundaries to minimize disturbance / **Initiate construction** when native grassland vegetation is dormant, and the soils are dry and or frozen / **Control invasive species** / **Schedule activities** to take place at optimal times to reduce impacts on soils, native plant communities, wildlife, wetlands and water courses / **Utilize existing trails and roads** / **Monitor and adjust** the project in operation, ensure all environmental requirements are met and adapted if necessary, and convey corporate commitment to environmental protection to all staff.

RESTORATION AND RECLAMATION

is a last resort when avoidance and minimization are not possible.

Harvest native seed materials prior to construction / **Enact erosion control** procedures during construction / **Interim reclamation** to minimize surface disturbance / **Final reclamation plans** for full restoration of ecological health

REQUIREMENTS FOR RENEWABLE ENERGY DEVELOPMENT RELATED TO NATIVE PRAIRIE ECOSYSTEMS

- Water Act
- Alberta Wetland Policy
- Wildlife Directive for Alberta Solar Energy Projects
- Wildlife Directive for Alberta Wind Energy Projects



PHOTO: KATHERYN TAYLOR

About the Prairie Conservation Forum

The Alberta Prairie Conservation Forum (PCF) is a non-profit organization that is committed to conserving native prairie and parkland in Alberta and raising public awareness of the stewardship challenges faced in maintaining these ecologically important landscapes for future generations.

The membership is composed of organizations and individuals with jurisdiction or interests in the prairie and parkland landscapes including government and non-government organizations, landowners, the oil and gas industry, conservation organizations, the agricultural sector and environmental consultants.

www.albertapcf.org

This summary sheet is based on the document commissioned by the Prairie Conservation Forum titled, Beneficial Management Practices for Renewable Energy Projects: Reducing the Footprint in Alberta's Native Grassland, Parkland and Wetland Ecosystems (Neville, 2017).

Resources

[ACIMS](#) Alberta Conservation Information Management System

[FWMIS](#) Fish and Wildlife Management Information System

[GVI](#) Grassland Vegetation Inventory

[HRV](#) Historic Resource Values

[PLVI](#) Primary Land and Vegetation Inventory

[AGRASID](#) Agricultural Region of Alberta Soil Inventory Database

[Least Conflict Lands for Renewable Energy Development](#), a stakeholder driven tool to view areas of high development potential and low risk potential

[Beneficial Management Practices for Renewable Energy Projects](#) (Neville, 2017)



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