



# Assessing Impacts of Wind Turbines on Birds through the Canadian Environmental Impact Assessment process

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Environment  
Canada

Environnement  
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Canada

## Development of wind power

- Federal government in Canada is encouraging wind power as a clean source of renewable energy
- However, need to minimize adverse impacts on wildlife



# Environmental Assessment in Canada

- *Canadian Environmental Assessment Act (CEAA)*
- Federal EA triggered if:
  - federal government is proponent
  - development on federal lands
  - federal funding incentives
  - federal permits involved
- Federal authority responsible for decisions (RA) is required to ensure environmental effects are considered



# Screening Process

- Proponent prepares Environmental Impact Statement based on information requested by Responsible Authority (RA)
- RA consults with other authorities and decides whether any significant adverse impacts that cannot be justified by benefits
- Major uncertainty can lead to more detailed review (which can stop a project if it is not very large)

## Wind Power EA

- Currently, major federal trigger for EA is funding from Natural Resources Canada
- Wind Power Production Incentive (WPPI)
  - 2005 goal to encourage production of enough power for 1 million homes
- Thus, many wind projects trigger EA process
- NRCAN is thus Responsible Authority, but asks other government departments for advice



## Federal responsibility for wildlife



- Canadian Wildlife Service of Environment Canada involved in “federal” species
- “Migratory Birds” as included in Migratory Bird Convention Act (excludes some species such as corvids, blackbirds, resident game birds, raptors)
- Species at Risk under SARA

## Other Species



- Federal EA needs to consider all environmental impacts
- Consult provinces for other species
  - other birds (e.g., raptors)
  - bats
- Coordinate with provinces on information requirements for these species



**To help guide process for birds:**



# Wind Turbines and Birds

## A Guidance Document for Environmental Assessment

Environment Canada / Environnement Canada  
Canadian Wildlife Service/Service canadien de la  
faune

## Guidance document:

- Summarizes potential impacts of wind turbines on migratory birds
- Highlights risk factors that should be considered by proponents
- Outlines potential information requirements for EA process



# First Step: Preliminary Assessment

- Determine potential risk factors
- Review existing information (guidance document provides advice on potential sources)
- Must consider all aspects of project:
  - turbines, roads, power lines

# Use to determine Site Sensitivity

- Very High
  - Species at Risk
  - Large breeding colonies
  - Major concentrations of birds
  - Important Bird Areas, Parks
- High
  - Geographic concentration area
  - Important habitats



## Site Sensitivity, continued

- Medium
  - regionally or locally significant habitats or bird numbers
- Low
  - none of the above



# Site Sensitivity, continued

- Special Consideration
  - offshore sites
  - (marine and Great Lakes)



## Level of Concern

- Combine Site Sensitivity with proposed size of facility to determine “level of concern”
- This gives some idea of level of effort to be expected in assessment process, and likelihood of barriers to approval
- But, specific requirements depend on individual factors
  - e.g., SAR surveys or migration surveys

# Pre-construction monitoring

- Generally, require pre-construction monitoring over 1-year period
  - compromise between what might be desired for scientific rigour and what is reasonable to ask proponents, especially because most projects are not (currently) expected to have major impacts

# Pre-construction monitoring

- Three objectives:
  - Estimate potential adverse impacts
  - Identify any possible mitigation measures
  - Provide baseline data for post-construction evaluation of actual impacts



## Potential pre-construction surveys:

- Breeding bird surveys
  - Area Search – species presence and relative abundance
  - Point Counts – more quantitative measures
  - Possible use of microphone recordings



## Potential pre-construction surveys:

- Migration/Stopover/Wintering surveys:
  - look for major concentrations of birds
  - species presence at time of year
  - how birds are using area
- Passage Migration counts
  - only sometimes expected (e.g. raptors)

## Potential pre-construction surveys:

- RADAR
  - Not generally expected except as part of research projects or if particularly high uncertainty
  - e.g., offshore
- Requirements may change as we learn more in the future

# Post-construction monitoring

- Bird usage of area
  - similar protocols to pre-construction to allow direct comparison
- Mortality studies
  - usually carcass searches



## Post-construction monitoring

- Amount determined during screening
  - 1 to 3 years (potentially more) depending on risk factors and anticipated impact
  - for small site with few birds in area one year may be sufficient
  - requirements may decrease in future as we learn

## Standardized monitoring protocols

- To facilitate comparison of data among projects, Canadian Wildlife Service is preparing a companion document:  
“Recommended Protocols for Monitoring Impacts of Wind Turbines on Birds”

## Consultation with CWS

- Both guidelines document and protocols will be posted on web (soon!)
- Intended for use in consultation with CWS biologists:
  - determine which protocols are appropriate for a particular site (based on preliminary information)
  - determine a reasonable level of effort (e.g., number of point counts to conduct)

# Improving Decision Making

- Targeted Research Projects to reduce specific uncertainties, such as:
  - improving methods for carcass searching
  - understanding migration patterns and concentration sites
  - offshore developments
  - mountain passes
- Adaptive Management
  - learn from EA process



# Shared Database for Monitoring data

- Support from multiple partners
  - Canadian Wind Energy Association (CANWEA)*
  - Canadian Wildlife Service*
  - Industry*
- Web-based data entry and management with protection of confidential information
- Access to CWS for data analysis

# Value of Shared Database

- Enhanced statistical power
  - can detect more subtle effects by pooling data from multiple projects
  - e.g., to evaluate displacement of breeding birds
- Consistent analysis methods
  - with raw data, can use comparable methods for carcass analysis



# Web-based data bases

USGS  
PATUXENT WILDLIFE RESEARCH CENTER

**bird point count** DATABASE  A repository for bird point count data collected anywhere in North America

[data retrieval](#) [data entry](#) [more info](#)

This page is: <http://www.pwrc.usgs.gov/point> Last updated: June 2001.  
U.S. Department of the Interior, U.S. Geological Survey  
[Patuxent Wildlife Research Center](#) | [Comments and Feedback](#) | [Disclaimer](#)

- proponents could log in to enter own data
- CWS researchers can retrieve data

BIRDS ONTARIO  Ontario Breeding Bird Atlas

[Find Coordinates](#) [Reference Sheets](#) [Instructions and FAQ](#) [Contact us](#)

Site hosted by [Bird Studies Canada](#)

**ATLAS DATA ENTRY**

You are currently logged in as **Denis Lepage (#48001)**

[Log off or change user](#)  
[Review personal info](#)  
[Modify your list of squares](#)

Number of active sessions: 1

Select a square

Year: 2001

Select a square and year, and then click the type of data you would like to enter or review.

[Tools for Administrators and Regional Coordinators](#)

 **Breeding Evidence**

 **Point Count**

 **Rare/Colonial Species**

 **Nest Record**

photos courtesy of Mark Peck (KILL, HOWA), Daryl Coulson (RTHU) and Heidi den Haan (BTGHW).

## Summary

- CWS, CANWEA, Industry working together
- Desire to have consistency across country
- Learn as we go
- Minimize future impacts





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