



Bluewater Wind Energy Centre 2016 Bird & Bat Mortality Monitoring

Natural Resource Solutions Inc. (NRSI) conducted post-construction monitoring at the operational Bluewater Wind Energy Centre (Bluewater WEC or the Project) located in the Municipalities of Bluewater and Huron East in Huron County, Ontario. The Project has a generating capacity of 60MW and consists of 37 turbines. The purpose of this fact sheet is to provide a summary of the methods, analysis, and results of the second year of post-construction mortality monitoring that was conducted at the Bluewater WEC in 2016.

Methods

NRSI biologists conducted bird and bat mortality monitoring at the Bluewater WEC following Ministry of Natural Resources and Forestry (MNRF) guidelines (*Bats and Bat Habitats: Guidelines for Wind Power Projects*, July 2011; and *Birds and Bird Habitats: Guidelines for Wind Power Projects*, December 2011) and the Project's Environmental Effects Monitoring Plan (EEMP) (AECOM 2013). The implemented monitoring program was approved by the MNRF. Per the MNRF guidelines and the EEMP, the following methods were implemented for the monitoring study:

- A subset of 11 turbines were searched twice weekly from May through October, and once weekly in November;
- The remaining 26 turbines were searched monthly from May to November;
- Searches were conducted in circular plots with a 50m radius, centered at each turbine tower;
- Search plots were maintained to be generally free of crops, weeds, and debris for high visibility of potential mortalities;
- Searcher efficiency trials were conducted in each study season to assess the effectiveness of each searcher;
- Scavenger removal trials were conducted in each study season to assess the level of scavenging activity at the turbines.

Results

Birds

During the 2016 post-construction mortality monitoring at the Bluewater WEC, a total of 29 bird mortalities were found within the search radius of the subset of 11 operational turbines.

Following the MNRF Guidelines, NRSI biologists inputted the searcher efficiency, scavenger removal, and percent area searched variables into the MNRF's estimated mortality equation to determine an estimated rate of bird mortality at the Bluewater WEC of 4.04 birds/turbine/year. This is below the MNRF threshold of 14 birds/turbine/year. By comparison, the average bird mortality rate in Ontario is estimated at 6.14 ± 0.31

birds/turbine/year (*Bird Studies Canada Wind Energy Bird and Bat Monitoring Database, Summary Findings, July 2016*). No waterfowl, including tundra swan (*Cygnus columbianus*), mortalities were documented at any turbine in 2016.

Bats

During the 2016 post-construction mortality monitoring at the Bluewater WEC, a total of 37 bat mortalities were found within the search radius of the subset of 11 turbines. Bat mortalities consisted of both resident and migratory species.

Following the MNRF Guidelines, NRSI biologists inputted the searcher efficiency, scavenger removal, and percent area searched variables into the MNRF's estimated mortality equation to determine an estimated rate of bat mortality at the Bluewater WEC of 5.07 bats/turbine/year. This is below the MNRF threshold of 10 bats/turbine/year. By comparison, the average bat mortality rate in Ontario is estimated at 18.52 ± 0.79 bats/turbine/year (*Bird Studies Canada Wind Energy Bird and Bat Monitoring Database, Summary Findings, July 2016*).

Raptors

A single (1) raptor mortality was observed at the Bluewater WEC during 2016 post-construction mortality monitoring. Based on the information collected by NRSI during the monitoring period, the mortality rate was determined to be 0.09 raptors/turbine/year. This is below the MNRF threshold of 0.2 raptors/turbine/year. By comparison, the average raptor mortality rate in Ontario is estimated at 0.20 ± 0.01 raptors/turbine/year (*Bird Studies Canada Wind Energy Bird and Bat Monitoring Database, Summary Findings, July 2016*). No provincially tracked raptors were documented at any turbine in 2016.

Summary

Based on the results of the 2016 post-construction monitoring at the Bluewater WEC, none of the annual or single day mortality thresholds for birds, bats, or raptors were exceeded. These thresholds, as defined by MNRF Guidelines, and the associated results of the 2016 monitoring at the Bluewater WEC are briefly outlined below:

MNRF Mortality Threshold	Type of Threshold	2016 Summary Bluewater
14 birds/turbine/year	Annual Corrected Rate	4.04 birds/turbine/year
10 bats/turbine/year	Annual Corrected Rate	5.07 bats/turbine/year
0.2 raptors/turbine/year	Annual Rate	0.09 raptors/turbine/year
0.1 provincially tracked raptors/turbine/year	Annual Rate	0.00 provincially tracked raptors/turbine/year
10 or more birds at one turbine	Single Day Event	2 birds at one turbine (maximum single day)
33 or more birds at multiple turbines	Single Day Event	3 birds at multiple turbines (maximum single day)