



East Durham Wind Energy Centre 2016 Bird & Bat Mortality Monitoring

Natural Resource Solutions Inc. (NRSI) conducted post-construction monitoring at the operational East Durham Wind Energy Centre (East Durham WEC or the Project) near the Municipality of West Grey, in Grey County, Ontario. The Project has a generating capacity of 23MW and consists of 14 turbines. The purpose of this fact sheet is to provide a summary of the methods, analysis, and results of the first year of post-construction mortality monitoring that was conducted at the East Durham WEC in 2016.

Methods

NRSI biologists conducted bird and bat mortality monitoring at the East Durham 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) (LGL Limited 2013). The implemented monitoring program was approved by the MNRF. Per the MNRF guidelines and EEMP, the following methods were implemented for the monitoring study:

- A subset of 10 turbines were searched twice weekly from May through October, and once weekly in November;
- The remaining 4 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 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 East Durham WEC, a total of 20 bird mortalities were found within the search radius of the subset of 10 turbines.

Following the MNRF Guidelines, NRSI biologists inputted the searcher efficiency, scavenger removal, and proportion of area searched variables into the MNRF's estimated mortality equation to determine an estimated rate of bird mortality at the East Durham WEC of 4.35 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*).

Bats

During the 2016 post-construction mortality monitoring at the East Durham WEC, a total of 41 bat mortalities were found within the search radius of the subset of 10 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 East Durham WEC of 9.91 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 total of two (2) raptor mortalities were observed within the search radius of the subset of 10 turbines at the East Durham WEC during 2016 post-construction mortality monitoring. Based on the information collected by NRSI during the monitoring period, the mortality rate was estimated to be 0.23 raptors/turbine/year. This is above 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 mortalities of provincially tracked raptors were documented at any turbine. In accordance with MNRF guidelines for exceeding a raptor threshold, two years of scoped mortality and cause and effects monitoring will be conducted at the East Durham WEC.

Summary

Based on the results of the 2016 post-construction monitoring at the East Durham WEC, none of the single day mortality thresholds were met or exceeded. The annual mortality thresholds for birds and bats were not exceeded. The annual mortality threshold for raptors was exceeded. These thresholds, as defined by MNRF guidelines, and the associated results of the 2016 monitoring at the East Durham WEC are briefly outlined below:

MNRF Mortality Threshold	Type of Threshold	2016 Summary East Durham
14 birds/turbine/year	Annual Corrected Rate	4.35 birds/turbine/year
10 bats/turbine/year	Annual Corrected Rate	9.91 bats/turbine/year
0.2 raptors/turbine/year	Annual Rate	0.23 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	2 birds at multiple turbines (maximum single day)