NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Port Ryerse Wind Farm

2017 Bird & Bat Mortality Monitoring

Natural Resource Solutions Inc. conducted post-construction monitoring at the operational Port Ryerse Wind Farm near the Town of Port Ryerse, in Norfolk County, Ontario. This wind energy project is 10MW in size and consists of 4 operational turbines. The purpose of this fact sheet is to provide an executive summary of the methods, analysis, and results of the first year of post-construction mortality monitoring that was conducted at the Port Ryerse Wind Farm in 2017.

Methods

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

- All 4 turbines were searched twice weekly from May through October, and once weekly in November;
- All 4 turbines were also searched weekly from mid-February through April based on the proximity of the turbines to a nearby raptor nest;
- Searches were conducted in circular areas 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 2017 post-construction mortality monitoring at the Port Ryerse Wind Farm, 13 bird mortalities were found within the search radius of 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 Port Ryerse Wind Farm of 9.14 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 5.70 ± 0.01 birds/turbine/year (*Bird Studies Canada Wind Energy Bird and Bat Monitoring Database, Summary Findings*, July 2017).

Raptors
There were no raptor mortalities observed at the Port Ryerse Wind Farm in 2017.

Bats
During 2017 post-construction mortality monitoring at the Port Ryerse Wind Farm, 40 bat mortalities were found within the search radius of the turbines. Bat mortalities consisted of both resident and long-distant 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 Port Ryerse Wind Farm of 29.37 bats/turbine/year. This is above the MNRF threshold of 10 bats/turbine/year. By comparison, the average bat mortality rate in Ontario is estimated at 17.15 ± 0.16 bats/turbine/year (*Bird Studies Canada Wind Energy Bird and Bat Monitoring Database, Summary Findings*, July 2017).

Summary

Based on the results of the 2017 post-construction monitoring at the Port Ryerse Wind Farm, the annual bat mortality threshold was exceeded. No other annual or single day mortality thresholds were met or exceeded. These thresholds, as defined by the MNRF guidelines, and the associated results of the 2017 monitoring at the Port Ryerse Wind Farm are briefly outlined below:

MNRF Mortality Threshold	Type of Threshold	2017 Summary Port Ryerse Wind Farm
14 birds/turbine/year	Annual Corrected Rate	9.14 birds/turbine/year
10 bats/turbine/year	Annual Corrected Rate	29.37 bats/turbine/year
0.2 raptors/turbine/year	Annual Corrected Rate	0.00 raptors/turbine/year
10 or more birds at one turbine	Single Day Event	3 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)