Bald Eagle Surveys for the Cross Winds Proposed Wind Energy Site: Summary of the Winter/Spring 2012 Field Season – Progress Report

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Executive Summary

The development of wind energy has the potential to significantly reduce the emissions of harmful air pollutants, greenhouse gases, and our reliance on fossil fuels. The majority of the areas with high potential for wind energy generation are near the shorelines of the Great Lakes. These shorelines have also been documented to provide important habitat for wildlife, including Bald Eagles. Research across North America has demonstrated a relationship between the densities of birds in an area and the numbers of avian collisions. Avian collisions with wind turbines have been documented but the frequency of those collisions is site and situation specific. The United States Fish and Wildlife Service (USFWS) recently developed the Draft Eagle Conservation Plan Guidance (USFWS 2011). These guidelines provide an approach that allows agencies and wind developers to assess the risks of wind projects to eagles. This project was designed with feedback from the USFWS and is hoped to contribute to a better understanding of how this proposed project may impact Bald Eagles.

We established 81 Bald Eagle survey stations in the Project Area. We conducted 1-hour surveys at the stations starting in February and continuing throughout the year. This report focuses on data collected on and before May 31, 2012. During surveys, each Bald Eagle and sensitive status species was recorded in addition to the bird's flight path, flight direction, approximate flight altitude, and the distance to each bird from the observer. Technicians also recorded the behavior and habitat use of focal species, and weather characteristics. Examination of the Bald Eagle survey data suggests that the flight behavior of most Bald Eagles does not put them at frequent risk of collision. Additional data will expand our understanding of the risk to Bald Eagles from wind energy projects.

Table of contents **Page**

Introduction

The development of wind energy has the potential to significantly reduce the emissions of harmful air pollutants, greenhouse gases, and our reliance on fossil fuels. The U.S. Department of Energy has a goal of 10 GW of wind energy deployment in Michigan by the year 2030. The majority of the areas with high potential for wind energy generation are near the shorelines of the Great Lakes. These shorelines have also been documented to provide important habitat for wildlife, including Bald Eagles. Research across North America has demonstrated a relationship between the densities of birds in an area and the numbers of avian collisions. Avian collisions with wind turbines have been documented but the frequency of those collisions is site and situation specific. Birds that use the airspace within the rotor swept area of a turbine are at risk of a collision and therefore the frequency of avian collisions at turbine sites can be directly correlated to the density of birds in the local area. The United States Fish and Wildlife Service (USFWS) recently developed the Draft Eagle Conservation Plan Guidance (USFWS 2011). These guidelines provide an approach that allows agencies and wind developers to assess the risks of wind projects to eagles. This project was designed with feedback from the USFWS and is hoped to contribute to a better understanding of how this proposed project may impact Bald Eagles.

Study Site and Methods

Study site and description

Research was conducted in the Project Area within Tuscola and Huron Counties, located in east-central Michigan, USA (Fig. 1). The land use / land cover of the Project

Area consists mainly of agricultural fields (e.g, corn, soybeans, and sugar beets), with some pastures, forested areas, fencerows, and some small wetlands. The natural vegetation in this area is generally described as mesic forests, and wet forests. The forest overstory typically includes components of maple (*Acer* spp.), oak (*Quercus* spp.), ash (*Fraxinus* spp.) and beech (*Fagus grandifolia*). Historically, the eastern inland portion of the Project Area was vegetated with beech-sugar maple forest mixed with black ash swamps. The western portion was predominantly mixed hardwood swamp and areas of mixed conifers with hemlock-white pine. The majority of these areas are now drained for agricultural use (Comer et al. 1995). The western edge of the Project Area is approximately 2.0 miles from the Lake Huron lakeshore (i.e., Saginaw Bay), which is considered by some to be a concentration area for migratory birds. Our Study Area includes the shoreline areas thereby providing a thorough survey effort.

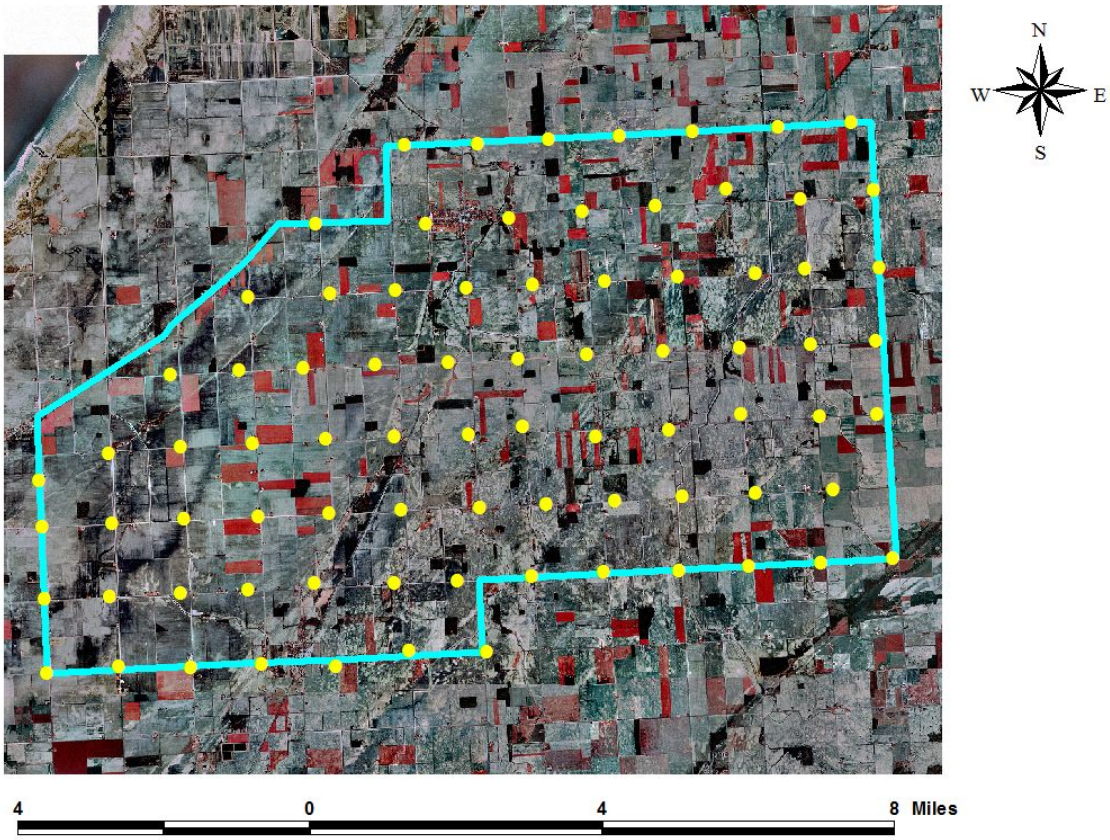

Figure 1. Bald Eagle viewing stations (yellow dots) were established in Tuscola and Huron Counties, MI in and around the Project Area proposed for wind energy development (blue boundary). Bald Eagle surveys were conducted at the viewing stations in the winter and spring 2012. The Project Area is predominantly agricultural lands with some interspersed forested areas.

Bald Eagle surveys

We established 81 Bald Eagle viewing stations in the Project Area. These stations provided the best possible viewsheds of the proposed project sites (Fig. 1). Following methods similar to those used by Hawkwatch International, we conducted 1-hour surveys at the stations starting in February and continuing through the rest of 2012. This report will summarize the data collected until the end of May 2012. When conducting outdoor research, some flexibility in scheduling is needed and some surveys were missed due to inclement weather.

During surveys each Bald Eagle and rare species was recorded in addition to the bird's flight path, flight direction, approximate flight altitude (lowest and highest flight

altitude), whether it flew within the proposed project area, and the distance to each bird from the observer. Technicians used landmarks as reference when measuring distance to birds and flight altitude (Fig. 2). Technicians also recorded the behavior and habitat use of each bird. Behavior categories were as follows: perched (PE), soaring (SO), flapping (FL), flushed (FH), circle soaring (CS), hunting (HU), gliding (GL), and other (OT, noted in comments). Any comments or unusual observations were also noted. Weather data were collected in concert with large bird surveys; specifically, temperature, wind speed, wind direction, and cloud cover. The date, start, and end time of observation period, species or best possible identification, number of individuals, sex and age class, distance from plot center when first observed, closest distance, height above ground, activity, and habitat(s) were recorded.

Figure 2. In the winter and spring of 2012 observers surveyed the viewshed for Bald Eagles from the viewing stations in the Cross Winds Project Area.

Results and Summary

Bald Eagle surveys – Winter and Spring 2012

During the 220 Bald Eagle surveys, observers detected nine Bald Eagles and 21 other individual rare large birds of 2 species (Tables 1 and 2). There was a mean of 0.04 Bald Eagles detected per survey (Table 1).

Assuming the wind turbine rotor-swept area (RSA) would be 50 – 150 m above the ground, 71% of all Bald Eagle observations were below the RSA, 29% within the RSA, and 0% flew above the RSA. The mean flight altitude of Bald Eagles was 45 m (Fig. 3).

Table 1. Bald Eagle abundance in Tuscola and Huron Counties, MI in and around the Project Area proposed for the development of wind energy by Consumers Energy. Data were collected in the winter and spring of 2012 at 81 Bald Eagle survey sites.

	Bald Eagle surveys
No. Bald Eagles	9
Mean No. Bald Eagles / Survey	0.04

Table 2. Rare species detected during Bald Eagle surveys in Tuscola and Huron Counties, MI in and around the Project Area proposed for the development of wind energy by Consumers Energy. Data were collected in the winter and spring of 2012 at 81 Bald Eagle survey sites.

Species	Number detected
Bald Eagle	9
Northern Harrier	20
Red-shouldered Hawk	1

Summary of Bald Eagle flight behavior in the Project Area

Upon examination of the winter and spring 2012 Bald Eagle survey data, it appears that their flight behavior did not put them at frequent risk of collisions (Fig. 3). The sample size of Bald Eagles was very low (Table 2), therefore caution should be used when considering the level of risk.

Data collection is ongoing and additional data will be helpful for assessing the level of risk. Due to the presence of Bald Eagles in the Project Area, I suggest that Consumers Energy continue working with the United States Fish and Wildlife Service in consideration of these records and the Draft Eagle Conservation Plan Guidance (USFWS 2011).

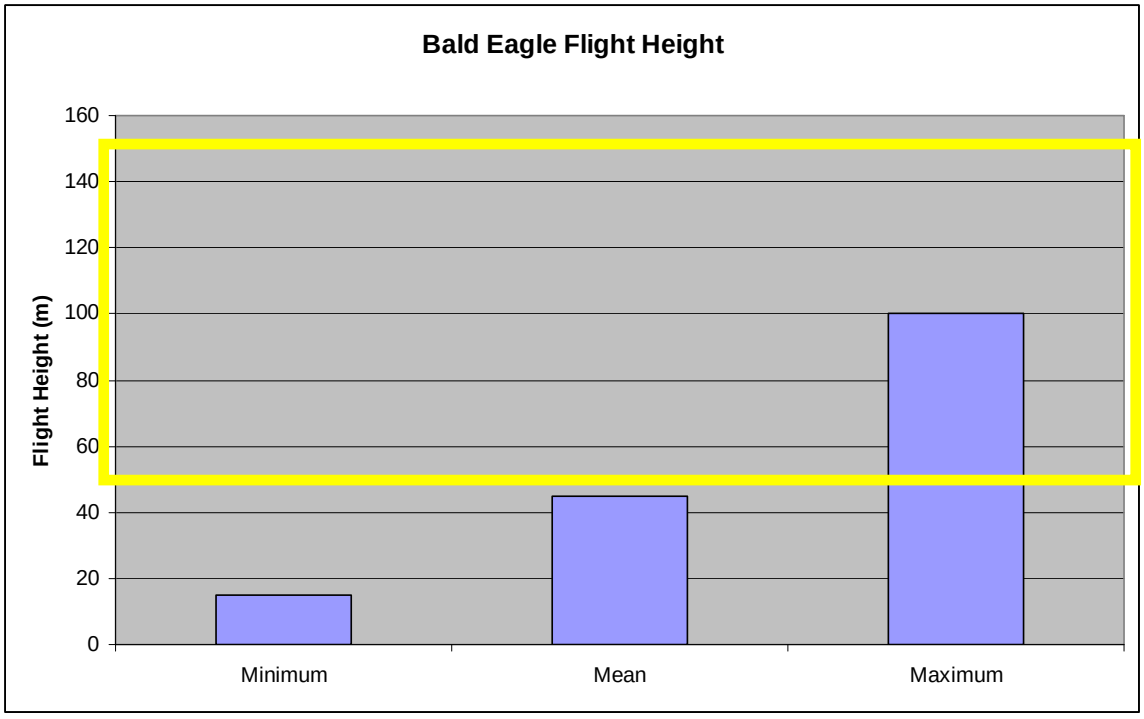

Figure 3. In the spring of 2012 Bald Eagle surveys were conducted in Tuscola and Huron Counties, Michigan, in and around the Project Area proposed for the development of wind energy by Consumers Energy. The wind turbine rotor swept area (RSA) is designated by the yellow rectangle. Seventy-one percent of Bald Eagles flew below the RSA and 29% flew within the RSA.

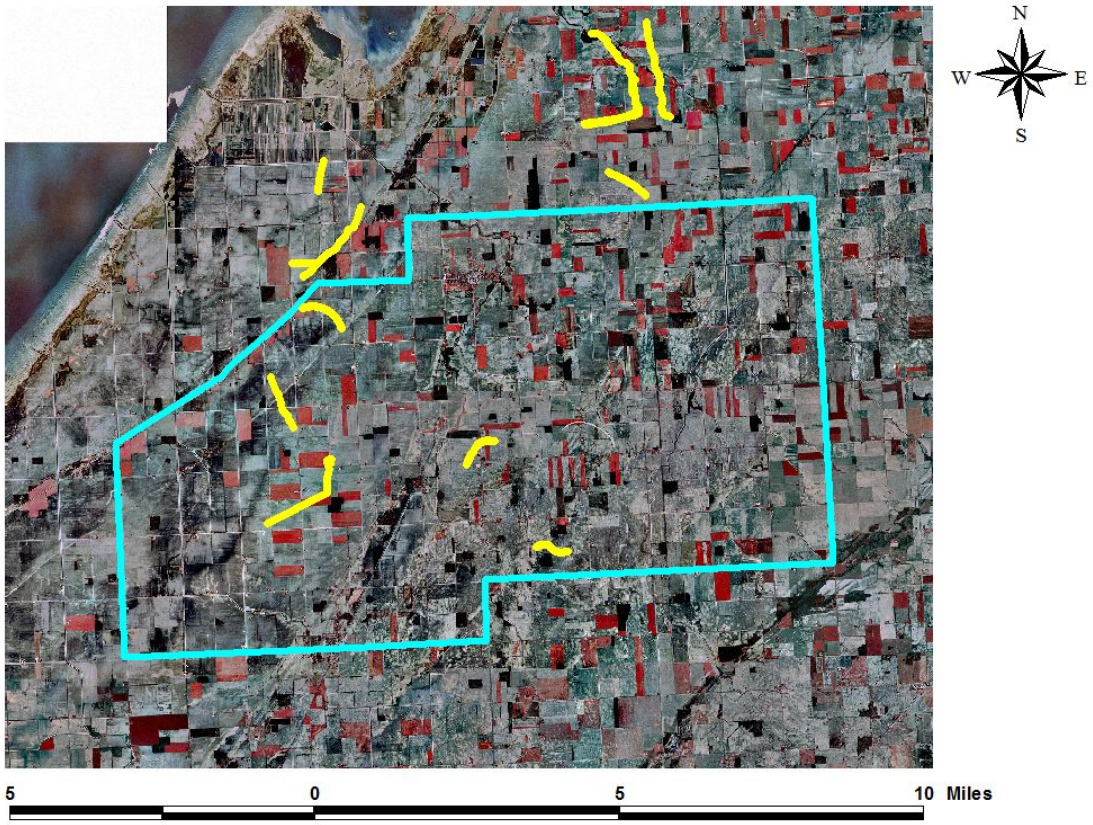

Figure 4. In 2012 Bald Eagle surveys were conducted at 81 viewing stations in the Cross Winds Project Area, Michigan. The yellow lines represent the flight paths Bald Eagles.

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