

Appendix 22-2

**CONFIDENTIAL BUSINESS  
INFORMATION**

**Fall and Winter 2015-2016 Pre-  
Construction Habitat and  
Wildlife Survey Work Plan**

Bull Run Wind Project, Clinton  
County, New York



Prepared for:  
Invenergy LLC  
One South Wacker Drive,  
Suite 1800,  
Chicago, IL 60606

Prepared by:  
Stantec Consulting Services Inc.  
30 Park Drive  
Topsham, ME 04086

August 18, 2015

## Table of Contents

1.0	INTRODUCTION .....	1
2.0	NATURAL HERITAGE PROGRAM DATABASE INQUIRY AND HABITAT ASSESSMENT SURVEY .....	2
3.0	FALL BAT ACOUSTIC DETECTOR SURVEY .....	3
4.0	FALL EAGLE AND RAPTOR POINT COUNT SURVEYS .....	4
5.0	FALL MIGRATORY SONGBIRD SURVEYS.....	5

## CONFIDENTIAL BUSINESS INFORMATION

### FALL AND WINTER 2015-2016 PRE-CONSTRUCTION HABITAT AND WILDLIFE SURVEY WORK PLAN

August 18, 2015

## 1.0 INTRODUCTION

Invenergy Wind Development LLC (Invenergy) is planning the development of the Bull Run Wind Project (Project) in the towns of Clinton and Ellenburg in Clinton County, New York. The Project, as currently proposed, would be an approximately 300-megawatt (MW) facility with 50-100 turbines. The estimated Project area of 42,000 acres will be surveyed during pre-construction wildlife and habitat surveys.

In order to assess the habitat and wildlife resources in the area, Invenergy contracted Stantec Consulting (Stantec), an independent environmental consultant, to conduct a desktop habitat and natural resource assessment as well as pre-construction wildlife surveys for the Project. Fall and winter 2015-2016 pre-construction wildlife surveys will include fall passive bat acoustic detector surveys, fall eagle and raptor point count surveys, and fall migratory songbird surveys. This Seasonal Work Plan is based on the Standard Pre-Construction Studies detailed in the New York State Department of Environmental Conservation's (NYSDEC) Guidelines for Conducting Bird and Bat Studies at Commercial Wind Energy Projects (NYSDEC Guidelines; NYSDEC 2009)<sup>1</sup>, the U.S. Fish and Wildlife Service's (USFWS) Land-based Wind Energy Guidelines (USFWS 2012)<sup>2</sup>, and the Eagle Conservation Plan Guidance (ECP Guidance, 2013)<sup>3</sup>.

This Seasonal Work Plan incorporates comments from the New York Regional Field Office of the USFWS in Cortland, New York during a Project introduction meeting between Invenergy, Stantec, and USFWS on 26 May 2015, comments from the NYSDEC during a meeting between Invenergy, Stantec, and USFWS at the NYSDEC Albany office on 28 May 2015, as well as comments from USFWS and NYSDEC during the 22 July 2015 conference call. Field work to be conducted during the spring and summer 2016 will be provided in a separate Seasonal Work Plan.

---

<sup>1</sup> NYSDEC. 2009. Guidelines for Conducting Bird and Bat Studies at Commercial Wind Energy Projects. Accessed at: [http://www.dec.ny.gov/docs/wildlife\\_pdf/finwindguide.pdf](http://www.dec.ny.gov/docs/wildlife_pdf/finwindguide.pdf)

<sup>2</sup> USFWS. 2012. U.S. Fish and Wildlife Service Land-based Wind Energy Guidelines. Accessed at: [http://www.fws.gov/ecological-services/es-library/pdfs/WEG\\_final.pdf](http://www.fws.gov/ecological-services/es-library/pdfs/WEG_final.pdf)

<sup>3</sup> U.S. Fish and Wildlife Service. 2013. Eagle Conservation Plan Guidance: Module 1 – Land-based Wind Energy: Version 2.

August 18, 2015

## **2.0 NATURAL HERITAGE PROGRAM DATABASE INQUIRY AND HABITAT ASSESSMENT SURVEY**

Stantec will conduct a New York Natural Heritage Program Database inquiry for records of rare or listed species or significant natural communities in the vicinity of the Project. Stantec will also request any available information on nesting bald eagles (*Haliaeetus leucocephalus*) in the vicinity of the Project.

Stantec will conduct a complete desktop analysis of the Project area and will incorporate the results of publically available land cover and wildlife databases (e.g., U.S. Geological Survey North American Breeding Bird Survey database, U.S. Geological Survey Land Cover Institute database, National Wetlands Inventory), the results of on-site wetland surveys, as well as applicable wildlife and habitat information from the nearby the Churubusco, Altona, Ellenburg, and Marble River wind projects in Clinton County.

Stantec will characterize habitats within the Project area by interpreting Google Earth aerial images. The habitats will be reviewed for the potential to support any state or federally listed species or state species of special concern (e.g., grassland species such as Henslow's sparrow (*Ammodramus henslowii*) and northern harrier (*Circus cyaneus*), and a wetland-associated species, sedge wren (*Cistothorus platensis*). Stantec will also review the information provided by the New York Natural Heritage Database inquiry for known records of rare or listed species or significant natural communities in the vicinity of the Project. While concerns for nesting eagles were not raised during the agency meetings, the habitat assessment will investigate the occurrence of any nesting bald eagles in the vicinity of the Project.

The habitat assessment will include the creation of a table listing the cover types in the Project area and a summary of any rare natural resources these habitats may host. Stantec will prepare a 2015 Habitat Assessment Report based on the results of the desktop analysis, New York Natural Heritage Program Database inquiry, and the Google Earth aerial image interpretation.

If habitat with the potential to support state or federally listed species is found in the Project area, Stantec will confirm that this habitat exists during a site reconnaissance visit. Stantec will contact the appropriate agencies to assess the need for additional field surveys and the appropriate field methods for those additional surveys.

August 18, 2015

### **3.0 FALL BAT ACOUSTIC DETECTOR SURVEY**

There are 29,721 acres of forested habitat within the current Project boundary of 42,000 acres; however, impacts to forested areas due to the Project are expected to be far less than the 29,721 acres. The forest types are relatively consistent throughout the Project consisting of deciduous, evergreen, and deciduous-evergreen mixed forest, as well as wooded wetlands (NLCD 2011)<sup>4</sup>. Acoustic bat detector surveys will be conducted at the Project during the fall 2015 to assess bat use of the habitats of the Project area. There is publically available information regarding bat species composition and activity in the region from the nearby Churubusco, Altona, Ellenburg, and Marble River wind projects in Clinton County. Stantec will include data from these nearby projects in the analysis of data collected at the Project for a more thorough analysis.

The objectives of passive acoustic monitoring during fall 2015 will be to characterize activity levels, timing of activity, and when possible, species guild composition during one of the seasonal periods when bats are most active in the region. Methods are based on the NYSDEC Guidelines.

#### *Passive Acoustic Monitoring*

A total of 3 acoustic bat detectors will be deployed for continuous passive monitoring from early September to mid-October 2015. Two Anabat SD1 detectors (Titley Electronics Pty Ltd.) will be deployed in the on-site meteorological (met) tower at approximately 45 meters (m) and 20 m in height, as recommended by NYSDEC Guidelines. Stantec will deploy a third detector where bat activity may be expected (i.e., on the forest edge of a linear corridor or near standing water). This detector will be affixed to a tree at approximately 3 m in height. Detectors will be programmed to record acoustic data nightly from sunset until sunrise during the survey periods. Periodic visits will be conducted to download data and maintain the detectors.

#### *Analysis*

Based on the data from passive monitoring detectors, Stantec will determine the timing of each identified bat call and will summarize activity patterns according to detector-night and month for each detector. All data files recorded by the acoustic detectors will be analyzed via visual analysis. Each call file will be qualitatively identified to guild. Wind speed, wind direction, and temperature data from the met tower will be compiled on a nightly basis to assess if these

---

<sup>4</sup> Homer, C.G., Dewitz, J.A., Yang, L., Jin, S., Danielson, P., Xian, G., Coulston, J., Herold, N.D., Wickham, J.D., and Megown, K. 2011. Completion of the 2011 National Land Cover Database for the conterminous United States-Representing a decade of land cover change information. Photogrammetric Engineering and Remote Sensing, v. 81, no. 5, p. 345-354. Accessed at <http://www.mrlc.gov/nlcd2011.php>.

## CONFIDENTIAL BUSINESS INFORMATION

### FALL AND WINTER 2015-2016 PRE-CONSTRUCTION HABITAT AND WILDLIFE SURVEY WORK PLAN

August 18, 2015

weather variables are correlated with bat activity levels. Results will be incorporated into the 2015 Seasonal Report.

## 4.0 FALL EAGLE AND RAPTOR POINT COUNT SURVEYS

There is publically available information regarding raptor and eagle migration activity in the region from the nearby Churubusco, Altona, Ellenburg, and Marble River wind projects in Clinton County. Stantec will include data from these nearby projects in the analysis of data collected at the Project for a more thorough assessment of regional raptor migration activity.

Point count surveys for bald and golden eagles (*Aquila chrysaetos*), and other species of raptor, will be used to assess the distribution, relative abundance, behavior, site use, and potential risk posed by the Project. Stantec will conduct point count surveys for eagles and raptors during the fall 2015 migration period. Methods will be based on a combination of those in the ECP Guidance and the NYSDEC Guidelines. Instead of occurring year-round as the ECP Guidance recommends, these surveys will focus on migratory periods when bald and golden eagles and raptors are known to migrate through the region; these periods will be consistent with those specified in the NYSDEC Guidelines for raptor migration surveys. Both eagles and raptors will be targeted during surveys. In accordance with the NYSDEC Guidance for the timing of fall raptor and eagle migration, fall 2015 surveys will be conducted weekly from 1 September to 1 December. We recognize there is a 2 week period in August that is recommended for survey to capture early fall migration; however this 2 week period will be sampled in 2016.

Point count surveys will consist of 2-hour visual surveys at 24 plots within the Project area, each with an 800-meter radius covering an area of 2 square kilometers per plot. Plots will be distributed throughout the Project area, where there are suitable viewsheds of the sky; plots will not be placed in forested areas unless suitable vantage points exist. Plot locations will be finalized after the first site visit and will consider viewsheds and access. Point count locations will be mapped using Global Positioning Systems (GPS).

Weekly visits for point counts will occur during the fall and spring migration periods. Stantec will survey 24 plots<sup>5</sup> within the Project area each survey cycle (1 cycle = 1 month). Accordingly, 6 plots will be surveyed each week for a total of 12 survey hours per week and approximately 48 survey hours per cycle. As there are 13 weeks during the fall 2015 survey period, there will be a total of 156 survey hours. There will be a 2 week period sampled during the late-summer/early fall 2016 (24 additional hours of survey).

---

<sup>5</sup> Per the April 2013 ECP Guidelines, the total number of proposed point count locations was determined by calculating the entire turbine area including a 1-km buffer around turbines, calculating 30% of the area, and dividing by 2 (to account for the 2 square-kilometer plots).

## CONFIDENTIAL BUSINESS INFORMATION

### FALL AND WINTER 2015-2016 PRE-CONSTRUCTION HABITAT AND WILDLIFE SURVEY WORK PLAN

August 18, 2015

Surveys will occur in all weather conditions except when visibility is poor. Surveys will target the hours of 9 am to 4 pm, the daytime hours in which eagles tend to be more active. The starting plot will change each survey cycle to enable sampling of each plot during a range of daylight hours. Though the species targeted during point count surveys are bald and golden eagles, all raptors observed will be recorded. In addition, Stantec will record incidental observations of other species (i.e., waterbirds and songbirds) observed during surveys.

During surveys, observers will record the horizontal distance of each eagle from the observer and the duration of observation of each eagle flying within plots – recorded as the duration of the observation within 800 m and equal to or less than 200 m (the hazard zone), per the ECP Guidance. In addition to distance and flight height data, each eagle's flight path will be drawn on a map of the 800 m radius count circles. The birds behavior and activity (prevalent behavior during each 1-minute interval of observation), the age class of the eagle, as well as weather data at the time of observation will be recorded (wind direction and speed, cloud cover, precipitation, and temperature).

After completion of the fall eagle point counts, data collected will be summarized. For raptors and eagles, the number of species and individuals will be summarized, as well as the flight behaviors. For eagles, the number of eagle minutes within the hazard zone will be calculated, consistent with the EPC Guidance. For the purposes of analysis, the number of minutes of observation within plots (eagle minutes) will be rounded to the next highest integer (e.g., an eagle seen for 30 seconds is rounded to 1 eagle minute). Seasonal results will be incorporated into a Seasonal Report. The report will include the eagle exposure rate per season, calculated as eagle minutes per number of survey hours within the Project area.

## 5.0 FALL MIGRATORY SONGBIRD SURVEYS

There is publically available information regarding migratory songbird species composition in the region from the nearby Churubusco, Altona, Ellenburg, and Marble River wind projects in Clinton County. Stantec will include data from these nearby projects in the analysis of migratory songbird data collected at the Project.

Stantec will conduct a September migratory songbird survey at the Project in fall 2015. Stantec anticipates that 40 transects will provide adequate coverage of the available habitats within the Project area. Each transect will be 300 m in length with 6 point count locations established every 50 m along each transect. Thirty transects will be located in proposed turbine areas and 10 transects will be located at control sites (away from turbine locations). Control transects will be positioned at least 600 m from turbine locations. Turbine and control transects will be distributed proportionately among available habitats. For example, if 75% of the Project area is

## CONFIDENTIAL BUSINESS INFORMATION

### FALL AND WINTER 2015-2016 PRE-CONSTRUCTION HABITAT AND WILDLIFE SURVEY WORK PLAN

August 18, 2015

located in forested habitats and 25% is located in grassland or other agricultural habitats, there will be 30 forest turbine transects and 10 grassland/agricultural turbine transects.

Surveys will occur during 2 site visits in September so that each transect will be sampled twice. The general location of each survey transect will be determined using a Google Earth aerial image of the Project and plotted with a Global Positioning System (GPS). The final location of each transect will be confirmed during the first site visit to each transect. A qualified biologist familiar with New York state birds by sight and sound will walk the transects during the period between a half hour before sunrise to approximately 10 am on days without inclement weather (rain, dense fog, or winds greater than 10 – 15 miles per hour). Stops will be made at every 50 m along transects at point count locations to record all birds seen and heard during a 5 minute session.

The following data will be recorded for each bird observed:

- Start and end time of the observation period;
- Weather including temperature, wind speed, wind direction, and cloud cover;
- Species identification and number of individuals per species;
- Distance from observer;
- Mode of detection (visual or auditory); and
- Behavior (nesting, flying, perching, singing, etc.).

For analysis, observation data will be pooled across transects within similar vegetation types (e.g., grassland or woodland). The following data summaries will be completed for both the turbine and control transects:

- List of all species observed;
- Species abundance (number of birds observed per transect);
- Species diversity index (density of species);
- Species richness (number of species observed); and
- Species frequency (the percent of surveys in which a species was observed).

Results will be incorporated into the 2015 Seasonal Report.