



**Jordanville Wind Farm
Avian and Bat Work Plan**

Submitted to:

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Work Plan Summary

Community Energy plans to conduct the following bird and bat studies and surveys at the proposed wind farm site in Warren, NY:

- Phase I Avian Risk Assessment
- Bird Radar Survey: 45 nights in the Spring and 45 nights in the Fall 2005
- Bat Acoustics Survey: 1 period of three nights during June or July, 30 nights in the Spring and Fall 2005
- Radar Assessment Report
- Breeding Bird Study

These surveys are intended to be compiled in a Draft Environmental Impact Statement.



Phase I Avian Risk Assessment

Community Energy proposes to conduct a Phase I Avian Risk Assessment for the planned 100 MW wind power project in southern Herkimer County, New York. The Phase I Risk Assessment will identify areas of concern, by conducting a thorough assessment, and produce a site-specific overview of potential risk at the given site. This study and subsequent surveys will be focused so that they answer specific questions about the birds or other features that may be potential risk factors at the site. The Phase I Assessment is a time and cost effective approach to evaluating avian risk at a project site. The Phase I Assessment is conducted in accordance with the terms and in spirit of the U.S. Fish and Wildlife Service interim guidelines for minimizing wildlife impacts from wind turbines.

There are four elements of the Phase I Avian Risk Assessment and related work that we are proposing: site visit reconnaissance, literature and database review, interviews with agencies and experts, and addressing the USFWS interim and voluntary guidelines. These sources of information will be integrated to determine potential risks at the site.



Radar Surveys

Radar surveys will be conducted for 45 nights from April 15 to May 31 and 45 nights from September 1, to October 14, 2005. Marine radars cannot detect birds in heavy or consistent rain, so sampling will focus on all nights with generally clear weather within that time period. A 12 kW marine radar will be operated at one site within the project area for the duration of the study. The site chosen for the sampling will be located within or as near as possible to the largest cluster of proposed wind turbines. A high, non-forested hill that provides clear views in all directions will be chosen for the radar site. Presently, a hill top northwest of the existing meteorological measurement tower has been targeted for the radar site but the final site selection will be based on on-site testing of radar visibility and performance and input from DEC.

Because the ground returns radar energy back to the antenna (called ground clutter), the system must be set up to minimize this clutter. Initially, the front edge of the radar antenna will be raised to increase the proportion of the beam being directed skyward versus toward the ground. On tower-mounted radar, a form of shield will be attached to the radar platform to mask out ground clutter. Any surrounding trees can also be used to mask out clutter by careful placement of the antenna near those trees and at a height roughly equal to the trees. The final configuration of the radar system (i.e. vehicle-mounted, tower-mounted, etc.) will be dependant on landscape characteristics around the chosen radar site.

During each night of sampling, radar operation will extend from sunset to sunrise. The radar will be operated in surveillance and vertical modes. During each hour of operation, 10 one-minute periods of the radar screen will be recorded. Also within each sampling hour, the radar antennae will be rotated vertically 90° and 10 minutes of vertical data will be recorded. The remaining time of each hour will be spent collecting weather data (wind direction and speed, cloud cover, precipitation, etc.), changing the alignment of the antenna, and collecting any other ancillary data (such as audible call note frequency, opportunistic ceilometer verification of targets, etc.).

Two forms of visual confirmation data will be collected. The first includes ceilometer observations conducted during each hour of the sampling nights. Ceilometer observations include directing a one million candlepower light beam vertically into the sky and observing



animals passing through the beam for a five-minute period. Animals observed passing through the beam will be counted and, when possible, identified as birds, bats, or insects. The ceilometer is hand-held, so individual animals can be tracked with the beam, if needed, to identify the type of animal. Ceilometer data is useful when initiating the analysis of recorded radar data as it provides a record of the general level of insect activity for each night. On cloudless nights on or near the full moon ambient light levels are typically too bright to use ceilometers. On those nights, moon watching will replace ceilometer observations. Moon-watching will include observing the moon through binoculars and counting all birds or bats seen flying across the face of the moon.

Finally, opportunistic observations and visual confirmation of radar targets by eye will be conducted to help characterize the overall performance of the radar station configuration and collect additional data that helps characterize target tracks. This is conducted only at dusk and at dawn, when light levels are bright enough to see. During this process the radar screen is monitored to observe targets. When targets are observed, the distance and bearing to each are determined using functions available within the radar system, and the sky is then searched to try to visually confirm the target. Any birds that are found during this process are recorded to species, when possible, or species group along with the distance at which they were observed. Additionally, other pertinent information, such as low flight, repeated flights, etc., will be recorded.

As noted above, the radar data will be permanently collected by recording the radar display screen during selected sample periods within each hour. The radar data will then be converted to numerical data for analysis. Data analysis will include the removal of insect data (based on flight speed) and the calculation of migration passage (traffic) rates over each study area. Traffic rates will be summarized hourly for each night and will be converted to the number of targets per kilometer of 'front' per hour. Overall nightly traffic rates and the full season traffic rate will also be calculated. The mean flight direction of recorded targets will be calculated for each hour of data collected. These will also be summarized by night and for the entire season. The average flight height of targets and percentage of targets within different height categories will be identified using the vertical data and will be summarized by hour, night, and season.



Bat Surveys

Bat surveys will be conducted during the summer breeding season and the spring and fall migration periods. A summer survey will include deploying one Anabat detector high on a met tower. One sampling period of three-nights will be sampled during the month of June or July. Weather conditions will be noted and the period extended if inappropriate conditions are encountered in the three night period. During that same time period, one Anabat detector will be used in-hand along micro-habitat features such as edges of groves of large trees, open wetlands, and stream alignments within the bounds of the wind project. These recordings will occur during the first four hours of the night, starting at sunset. These data will be reviewed each morning to determine the overall abundance and species assemblage sampled. If any calls indicate the potential presence of Indiana bats¹, then limited mist-netting in areas where questionable calls have been recorded will be conducted. At this time, it is anticipated that three nights of mist-netting conducted as soon as possible after call collection will be conducted. Summer and Fall surveys will include recording echolocation calls with detectors. Summer surveys will include limited mist-netting, based on echolocation data analysis.

During the spring survey, three Anabat detectors will be deployed in the project area for 30 nights from April 15 to May 15. One detector will be deployed at a forest/field edge and at a height of approximately 5-10 meters (near canopy height). The two other detectors will be deployed on a met tower located within the field that is being sampled by the forest/field edge detector. Those detectors will be deployed at heights of approximately 20 and 50 m. Deployment in this configuration will provide directly comparable data, in the form of call detections per hour, between these three different micro-sites.

¹ As recommended by Al Hicks, NYSDEC, software functions designed by Erik Britzke will be used to make the assessment of the potential occurrence of Indiana bats. Reference calls from Mr. Britzke and calls to be collected by field biologist at known Indiana bat locations in the Spring of 2005 will be used as comparative information for this assessment.



For the fall survey, three Anabat detectors will be deployed in the project area for 30 nights, from August 15 to September 15. One detector will be deployed at a forest/field edge and at a height of approximately 5-10 meters (near canopy height). The two other detectors will be deployed on a met tower located within the field that is being sampled by the forest/field edge detector. Those detectors will be deployed at heights of approximately 20 and 50 m. Deployment in this configuration will provide directly comparable data, in the form of call detections per hour, between these three different microsites.

Following the field survey period, bat detector data will be summarized for each detector for each night. The number of call detections per hour will be calculated. High detection rates can indicate many bats in an area. However, high detection rates can also represent only one to two bats in an area circling and feeding around a detector. Consequently, during the data analysis we will look at not only the overall detection rates but also time spans between individual detections to more accurately characterize bat activity.

Call data will also be analyzed to identify species. This is possible only when clear calls are recorded and only with certain species. The tree-roosting bats are typically easy to identify to species while those of the genus *Myotis* are not. Call rates by species, as well as total detections and trends in species' presence in the data set will be reported. Comparisons between call rates and species composition will also be compared between the three detectors.



Radar Assessment Report

Community Energy plans to review Spring and Fall migration data and produce a separate report for the Warren, NY project site. The review will evaluate the results of the bat surveys and avian radar surveys relative to the Phase I Avian Risk Assessment. This report will provide a critical assessment of the survey results, identify potential impacts of the proposed site and provide recommendations to mitigate impacts to night migrating songbirds and bat species.

The elements of the report will include a review of the findings of the on-site studies as well as on the results of other radar studies, and fatality findings at other wind power project sites, and develop an assessment of risk to migrants at the Warren site from the proposed development.

Findings and conclusions from the review will be interpreted in terms of risk to birds and bats at the site and then incorporated into an addendum to the Phase I Risk Assessment.



Breeding Bird Study

The objective of the breeding bird surveys is to estimate the spatial and temporal use of the proposed development area by breeding resident birds. U.S. Geological Survey Breeding Bird Survey (USGS 2001) methods will be used for the surveys. The emphasis of the surveys will be locating and counting breeding resident birds within the area proposed for development. The surveys will be conducted during the first two weeks of June based on the regional timing recommended for USGS BBS in western New York (USGS 2001).

Up to 30 survey points will be established at proposed turbine locations. The survey points (proposed turbine locations) will be selected to cover as much of the proposed development area and habitat types as possible. Survey points will be evenly spaced over the entire study area. Each survey station will be marked on a map and GPS coordinates will be recorded for each point. A description of the station will be written to assist in locating the point on subsequent surveys. A description of the habitat at each selected survey point will be provided to examine the applicability of the site to represent other areas within the proposed development area.

Each survey plot will be a variable circular plot centered on the observation point. All birds observed will be recorded, however, the survey effort will concentrate within an approximate 400 m (0.25 mi) radius circle centered on the observation point. Observations of birds beyond the 200 m radius will be recorded, but may be analyzed separately from data within the plot.

Survey periods at each point will be 3-minutes long, similar to the BBS method. The date; start and end time of the observation period; and weather information such as temperature, wind speed, wind direction, and cloud cover will be recorded for each survey. Species or best possible identification, number of individuals of each species,



how observed (visual or auditory), and behavior (flying, perching, singing, etc.) will be recorded for each observation during the 3-minute count of each survey point.

Because the survey method will follow the USGS BBS method, the timing of the surveys will be the same as those recommended for western New York. All points will be surveyed twice during the recommended survey period, while attempting to avoid later sampling dates when the presence of early fledglings could bias the counts. At least 7 days will be skipped between the surveys to spread the effort over the breeding season.