



# Illinois Department of Natural Resources

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Pat Quinn, Governor  
Marc Miller, Director

May 24, 2013

Mr. Chris Henkel, Zoning Officer  
Lee County Zoning Office  
112 East Second St.  
Dixon, IL 61021

**RE: GSG 6 LLC Shady Oaks Wind Energy, Lee County  
Endangered Species Consultation Program  
EcoCAT Review #1314208**

Dear Mr. Henkel:

The Department has received a submission from GSG 6 LLC pertaining to its intention to seek a consolidated Special Use Permit for this existing facility, for the purpose of consultation between the Department and Lee County pursuant to the *Illinois Endangered Species Protection Act* [520 ILCS 10/11], the *Illinois Natural Areas Preservation Act* [525 ILCS 30/17], and Title 17 *Illinois Administrative Code Part 1075*.

The following protected resources occur in the vicinity of the wind energy facility. To minimize or avoid potential adverse impacts, the Department recommends the measures described below be implemented by GSG 6 LLC and incorporated in Lee County's project authorization.

**Indiana Bat, *Myotis sodalis***

Turbines in the Shady Oaks project stand slightly more than 20 miles of the Blackball Mine, east of the City of LaSalle, the only federally-designated Critical Habitat for the federally-listed and state-listed endangered Indiana Bat in Illinois, also classified as Priority 2 Hibernaculum in the Indiana Bat Recovery Plan published by the U.S. Fish & Wildlife Service.

Developments in Illinois and elsewhere since the prior consultation (2010) for this project are relevant to considerations of its potential effects on the Indiana Bat.

Indiana Bats have died from collisions with commercial wind turbines in West Virginia (2012), Ohio (2012), Pennsylvania (2011), and twice in Indiana (2009; 2010). Three of these occurrences have been in agricultural landscapes very similar to eastern Lee County where bat habitat is virtually absent. Fatalities occurred in July (1), September (3), and October (1). The July fatality was a male on a mountain ridge; the remaining four were females in fall migration, suggesting that (a) fall migration poses the greatest risk of collision, and (b) that females are

more likely than males to die in this fashion. The loss of reproductive capacity represented by the deaths of female bats creates additional concern.

In April 2011, IDNR participated in a large scale radio-telemetry study of emerging gravid Indiana Bats at the Blackball Mine. While most female bats were tracked down the Illinois River Valley to various points, several migrated no farther than the riparian forest along the Little Vermilion River north of LaSalle-Peru, for the first time documenting the presence of maternity colonies in northern LaSalle County. Most female Indiana Bats had already left the hibernaculum before the study began, so it is possible cohorts that departed earlier may have migrated farther. Suitable habitat along the Little Vermilion extends as far north as a point within eight miles of the Shady Oaks turbine array.

In February 2013, IDNR documented the presence of White-Nose Syndrome at the Blackball Mine. This fungal disease has produced severe mortality among hibernating bats elsewhere in North America, and a severe decline of bat populations using the Blackball Mine is anticipated, increasing the value of those which survive which remain at risk of wind turbine collision.

At the current time, the U.S. Fish & Wildlife Service is evaluating whether to list the **Northern Long-Eared Bat**, *Myotis septentrionalis*, and the **Little Brown Bat**, *Myotis lucifugus*. Both of these species are present in Lee County, and elsewhere have demonstrated vulnerability to wind turbine collision.

In light of these developments, the Department of Natural Resources' earlier biological opinion that the current range of the Indiana Bat does not extend north of the Illinois River must be revised to reflect an increased probability the Indiana Bat may be present within the Shady Oaks turbine array during the fall migration, which typically occurs between August 1 and October 15 in most areas.

The Department earlier recommended a program of acoustic monitoring to identify and quantify the species and numbers of bats using the Shady Oaks project area, followed by mortality studies to quantify collision risk, noting that no such studies had been performed for adjacent wind energy facilities. The Department is not aware that pre-construction studies were performed for the Shady Oaks facility, and is not aware that avian-bat mortality studies are now underway following commercial operation of the facility.

The Department has the following recommendations pertaining to the Indiana Bat and other bats.

***Recommendation #1:** The Department recommends the County require GSG 6 LLC to implement Tier 4 bat activity (acoustic monitoring) and mortality studies for a minimum of one April –October period to quantify use of the area by Indiana Bats and other bat species, as well as to determine the timing and significance of turbine-related avian/bat mortality. Any detection or recovery of Indiana Bats should result in prompt notification to the Department.*

***Recommendation #2:** The Department recommends the County require GSG 6 LLC to “feather” turbine blades below the manufacturer’s recommended turbine cut-in wind speed between sunset and sunrise whenever temperatures are above 60°F, between April 1 and October 15. Research*

has consistently shown that 50% or more of bat mortality can be avoided when turbines are not allowed to “freewheel” below generator cut-in speed. “Feathering” greatly slows or halts turbine rotation without use of the mechanical brakes. Turbines with adjustable pitch blades can easily implement this measure through their SCADA systems, and this measure does not result in any lost productivity. Bats are much less active when air temperatures fall below 60°F, and typically are absent or inactive in the months outside this window.

*Recommendation #3: The Department recommends the County require GSG 6 LLC to “feather” turbine blades below a wind speed 1.5 meters/second greater than the “cut-in” wind speed recommended by the manufacturer by between sunset and sunrise whenever temperatures are above 60°F, between August 1 and October 15. (If the recommended cut-in wind speed is 3.5 m/s, blades should be feathered below 5.0 m/s.)* Research has shown that this approach can avoid 75% or more of bat mortality during peak migration season, when most bat mortality occurs. It does result in some lost electric generation opportunity but significantly reduces the risk of endangered species mortality during the period that risk is highest.

### **Blanding’s Turtle, *Emydoidea blandingii***

The state-listed endangered Blanding’s Turtle has been documented from at least four locations within 12 miles of the Shady Oaks turbine array, to the northeast, the northwest, and the west. The two closer locations are both less than three miles from the array, with records within the last ten years. However, given the terrain within the array, the Department believes the species is unlikely to occur within the array and that off-site effects, such as acoustic vibration and flicker, are unlikely to extend far enough at significant levels to adversely modify habitat. “Unlikely” does not mean impossible, however.

*Recommendation #4. Site workers should be provided with a photograph and description of the species’ behavior and instructed to notify supervisors if the species is observed, whereupon the Department should be notified for additional consultation.*

### **Ornate Box Turtle, *Terrapene ornata***

Lee County has numerous documented records of the Ornate Box Turtle, though none closer than 12 miles to the west of the Shady Oaks facility. The Ornate is one of Illinois’ two Box Turtle species (the other is the **Eastern Box Turtle, *Terrapene carolina***). The habitats of the two species often overlap; the Ornate can be distinguished by a mid-back yellow stripe following the line of the spine, as well as by its distinctive scute markings.

The Ornate Box Turtle is a terrestrial animal, having no particular affinity for water or wetlands. Although the scientific literature makes frequent reference to sandy soils as the preferred habitat for this species, it is distributed far more widely in Illinois than are sandy soils, demonstrating that it is not limited by a lack of sand, so long as soils remain friable and burrows can be easily excavated. The Department considers the presence of this species unlikely within the facility, but not impossible.

*Recommendation #5. Site workers should be provided with a photograph and description of species behavior and instructed to notify supervisors if the species is observed, whereupon the Department should be notified for additional consultation.*

### **Regal Fritillary Butterfly, *Speyeria idalia***

The Regal Fritillary Butterfly is documented from several sites in Lee County (Nachusa Grassland Preserve; Green River SFWA, and the Ryan Sand Prairie and Wetlands Land & Water Reserve).

While the Regal Fritillary is a strong flier, sometimes found up to 20 miles from the nearest known breeding site, the most essential habitat component is a tall-grass prairie community containing Violets (*Viola* spp.) in its understory. Caterpillars of this species eat violets exclusively, but are not found feeding on violets outside tall-grass prairie communities; community structure appears to be as important as the presence of violets. Most literature specifies only one or two species of violets as host plants, but feeding on more than eight species has been documented; the species of violet appears less important than their ecological context.

The remnant prairie along West Brooklyn Road between West Brooklyn and Compton offers suitable habitat for this species and is within extended flight distance of known locations for this species.

*Recommendation #6. Site workers should be provided with a photograph and description of species behavior and instructed to notify supervisors if the species is observed.*

### **Migratory Birds**

Hundreds of species of birds migrate through Illinois every year. Most movements in Illinois are considered “broad-front,” meaning that bird passage is not concentrated by geographical features into a relatively few important migration corridors. And, while most migratory movements occur at altitudes well-above the height of turbine rotors, birds must rest and feed along the way; at these points they may be vulnerable to collision with turbines or to displacement from preferred staging habitats. Some species breed locally, and these birds are vulnerable to collisions, displacement, noise, and other potential effects of wind turbines on the landscape.

Thirty migratory bird species are listed by Illinois as endangered or threatened. It is difficult or impossible to quantify the risk to these species as they migrate. An immature state-listed endangered Osprey was injured by a turbine collision in September 2007, and a state-listed threatened Black-Billed Cuckoo was killed by a wind turbine in July 2012. In both cases, there were no prior breeding records for these species in the counties where the losses occurred, demonstrating the potential for wind turbines to take almost any species at any time.

It is appropriate for wind energy developers to perform avian use surveys of proposed wind farm locations to identify which portions of the project area may experience significant levels of avian activity over the course of the year, and to identify any patterns peculiar to species of interest or concern, particularly endangered or threatened birds.

State-listed bird species which may breed, forage, or winter in the vicinity of the Shady Oaks project include: **Loggerhead Shrike**, *Lanius ludovicianus*; **Upland Sandpiper**, *Bartramia longicauda*; **Black Rail**, *Laterallus jamaicensis*; **Short-eared Owl**, *Asio flammeus*; and the **Northern Harrier**, *Circus cyaneus*. The site is also only 40 miles southwest of the main breeding areas for Illinois' small population of the **Swainson's Hawk**, *Buteo swainsoni*.

Lee County may also serve as a staging area for higher-than-usual numbers of the migratory **American Golden Plover**, *Pluvialis dominica*, which appears only in the spring and may be particularly vulnerable to displacement impacts.

The GSG 6 LLC turbine array has the distinction of being the only operating wind farm in Illinois to be constructed between to existing wind farms. Hence, the pre-construction avian use assessment reflected the potential displacement effects of the adjacent energy facilities. GSG 6 LLC provides a unique opportunity in this state to assess the effects of completing a potential wind turbine "barrier."

*Recommendation #7. The Department recommends GSG 6 LLC perform post-construction avian use surveys of the project area for both spring and fall migration periods to identify the species and numbers of birds routinely using the project area, with post-construction surveys intended to identify potential impacts to birds. In late April and early May, particular attention should be given to the presence of the American Golden Plover. [Recommendations pertaining to non-listed species are offered under the authority of 20 ILCS 805/ 805-105 and the Wildlife Code, 520 ILCS 5.]*

**American Burreed, *Sparganium americanum*; Ear-leaved Foxglove; *Tomanthera auriculata***

The endangered American Burreed and the threatened Ear-leaved Foxglove are plants documented to occur about three miles northwest of the proposed project area. The documented locations are unlikely to be modified in any way by the wind farm.

### **Bartlett's Woods Nature Preserve and INAI Site**

The 27-acre Bartlett's Woods Nature Preserve, owned by the Lee County Soil & Water Conservation District, is located near the intersections of Knox and Henkel Roads, about three miles southwest of the project area, along Big Bureau Creek.

Turbines in the Shady Oaks wind energy project are clearly visible from the perimeter of the Nature Preserve, but this was already the case with the wind turbines operated by Infigen Energy, the nearest of which in LaSalle County is only about 1.5 miles away. Consequently, the visual impact to visitors in the Preserve is a matter of degree. No turbines associated with Shady Oaks are capable of producing noise or flicker shadow impacts to Bartlett's Woods.

This Preserve is nearly the sole surviving remnant of the once-extensive Knox Grove, a rare forested portion of the Grand Prairie geophysical division. Its primary significance to the Shady Oaks project is that this Grove has served as a migratory bird staging area since before pre-

settlement times, and still is important to migratory birds staging through the area. It is a focal point for birds whose location may place them at greater risk for collision with nearby turbines. It likely also serves as habitat for tree-nesting raptors and as day-time roosting habitat for bats.

The Department offers no specific recommendations pertaining to Bartlett's Woods.

### **Conclusion**

Consultation on the part of the Department is terminated, unless the County desires additional information or advice related to this proposal. In accordance with 17 Ill. Adm. Code 1075.40(h), Lee County must notify the Department of its decision regarding these recommendations, whether it will:

- Allow the action to proceed as originally proposed;
- Require the action to be modified per Department recommendations (please specify which measures if not all will be required); or
- Forgo the action.

This consultation is valid for two years unless new information becomes available that was not previously considered; the proposed action is modified; or additional species, essential habitat, or Natural Areas are identified in the vicinity. If the project has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary.

The natural resource review reflects the information existing in the Illinois Natural Heritage Database at the time of the project submittal, and should not be regarded as a final statement on the site being considered, nor should it be a substitute for detailed site surveys or field surveys required for environmental assessments. If additional protected resources are encountered during the project's implementation, the applicant must comply with the applicable statutes and regulations. Also, note that termination does not imply IDNR's authorization or endorsement of the proposed action.

Please contact me if you have questions regarding this review.

Sincerely,



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cc: Jenny Skufca, Illinois Nature Preserves Commission  
Laurel Bergren, ARC Perspectives, Inc.