Authorization for Incidental Take and Implementing Agreement

Pursuant to the Illinois Endangered Species Protection Act (520 ILCS 10/5.5), on behalf of the Adam's Electric Cooperative (AEC), authorization for the incidental take of the State (and Federally) listed Indiana bat (*Myotis sodalis*); gray bat (*Myotis grisescens*); northern harrier (*Circus cyaneus*); loggerhead shrike (*Lanius ludovicianus*); short-eared owl (*Asio flammeus*); and upland sandpiper (*Bartramia longicuada*) in Adams and Brown Counties, Illinois is hereby granted, subject to the terms and conditions described in the attached Authorization/Implementing Agreement. The Illinois Department of Natural Resources has determined that this authorized take is incidental to the construction of the AEC wind turbine project in Adams and Brown Counties, Illinois.

As background information, the Adam's Electric Cooperative (AEC) is in the process of constructing two wind driven turbines in Illinois: one northeast of Payson in Adams County and one southeast of Mt. Sterling in Brown County. This incidental take authorization (ITA) shall be inclusive of both facilities; however, the Payson facility is the primary driver of the Habitat Conservation Plan (HCP) and this subsequent ITA. The Payson facility is located near the Mississippi River valley which is a major migratory flyway and approximately five miles from Burton Cave which is a known (Indiana) bat hibernaculum.

The AEC, as a cooperative organization, is tasked with providing reliable energy service to its members. The co-op has over 8,000 members serving communities in seven Illinois Counties (Adams, Brown, Schuyler, Pike, Hancock, McDonough, and Fulton County). Sustainability is part of maintaining reliability and the co-op continually explores ways to utilize developing 'green' energy from sources such as solar and wind. The construction of the two wind turbines will serve to enhance the co-op's ability to tap into a sustainable energy source while reducing the carbon footprint needed to produce that energy. While a wind turbine provides a source of emission free, renewable energy, it may have an environmental downside: avian and bat species are known to be killed by striking the tower structures (primarily the spinning rotor blades) and/or as a result of barotraumas.

Procedural History

AEC, through its environmental consultant – the Kaskaskia Engineering Group - prepared a conservation plan for the AEC wind turbine project as described by the Illinois Endangered Species Protection Act (520 ILCS 10/5.5). That plan and AEC's request for authorization for incidental take of the Indiana bat (*Myotis sodalis*); gray bat (*Myotis grisescens*); northern harrier (*Circus cyaneus*); loggerhead shrike (*Lanius ludovicianus*); short-eared owl (*Asio flammeus*); and upland sandpiper (*Bartramia longicuada*) in Adams and Brown Counties, Illinois were received by the Illinois Department of Natural Resources (Department) on September 16, 2009. Public notice of AEC's request for authorization of incidental take of these State/Federally listed species was published in the Northwest/Arlington Heights Daily Herald (Official State newspaper) and the Liberty Bee (Adams County) on January 27, 2010, as well as on February 3, 2010 and February 10, 2010. Public comments on AEC's conservation plan were accepted by the Department until March 10, 2010. No comments were received by the public during the period of January 27, 2010 through March 10, 2010.

Target Species

Indiana bat (*Myotis sodalis*) – Federally Endangered; (Illinois) State Endangered

Gray bat (*Myotis grisescens*) – Federally Threatened; State Endangered

Northern harrier (*Circus cyaneus*) – State Endangered

Loggerhead shrike (*Lanius ludovicianus*) – State Endangered

Short-eared owl (*Asio flammeus*) – State Endangered

Upland sandpiper (*Bartramia longicauda*) – State Endangered

The USDA has not requested preparation of either an Environmental Assessment or Environmental Impact Statement for these two wind turbines. Although wind turbines are in general known to be hazardous to avian and bat species, the specific impacts of wind turbines on migratory species and/or threatened and endangered species have not been clearly documented and are still under scientific study.

The USFWS issued an interim guidance memorandum for avoiding and minimizing wildlife impacts from wind turbines in 2003, which is used by all review personnel. The USFWS has not objected to the project nor has it requested formal consultation under the Section 7 process for the two proposed turbines; however, this does not release AEC from the potential for responsive action from the USFWS (or IDNR) at any point in the future should a federally threatened or endangered species be found to be killed by the wind turbines.

Initial coordination with the IDNR, through the online resource Ecological Compliance Assessment Tool (Eco-CAT), identified state listed threatened and endangered species in the general proximity of the turbine locations. The presence of protected species triggered an additional information request by the IDNR to assess potential impacts. Subsequent coordination with the IDNR determined that although official consultation could be considered terminated, a voluntary implementing agreement/ITA with the IDNR for the 'taking' of selected species of concern was strongly recommended. The highest level of concern is in regard to the Federal and Illinois' endangered Indiana bat (*Myotis sodalis*). The growing body of scientific literature on the interaction between wind turbines and wildlife is further defining/refining the risks posed to wildlife, but there is not a comprehensive understanding of the risks posed. The IDNR has expressed the desire to enter into an implementing agreement/ITA due to the known populations of Indiana bats declining at a precipitous rate.

The AEC has chosen to be proactive in its approach to the concerns raised regarding the identified species and has engaged in consultation with the IDNR to enter into an implementing agreement to subsequently receive an incidental take permit/authorization via the preparation of a Habitat Conservation Plan (Plan) for this project. This agreement will be between the IDNR and AEC; however, the USFWS has been encouraged to participate in the process by providing comments for incorporation into this document. The Plan will serve to document the existing and proposed conditions of the project area, describe the potentially affected species of concern, and provide proposed mitigating actions in the unfortunate event a species of concern is 'taken'. It has been requested that the implementing agreement/incidental take authorization be held active for the life expectancy of the turbines (twenty years). After the terms of the implementing agreement expire, any 'take' as a result of the turbines will require reauthorization unless previously deferred based on future agreements between AEC and the IDNR.

Compliance with the Endangered Species Protection Act

The Illinois Endangered Species Protection Act includes six (6) criteria which must be met for the authorization of incidental take of an endangered or threatened species. These criteria and the Department's determination for each criteria are listed below.

1. The taking will not be the purpose of, but will only be incidental to, the carrying out of an otherwise lawful activity:

The wind turbines selected for use at each site include one AWE 900 kilowatt ("kW") wind turbine (or comparable unit) mounted on a 75-meter hub-height tower. The rotors are 54 meters, which results in a 108 meter diameter blade arc. The Payson turbine will be located in the northeast 1/4 of Section 3 of Payson Township in Adams County, Illinois. The Mt. Sterling turbine will be located in the southwest 1/4 of Section 13 of Mt. Sterling Township in Brown County, Illinois. Both sites are east of Quincy and lie between the Mississippi and Illinois River Valleys. The Payson site is closer to the Mississippi River while the Mt. Sterling site nearer the Illinois River.

Physiography

Physiographic regions were developed nearly a century ago to use major landforms to define landscape scale areas. The process uses a tiered approach to classify landforms based on geologic structure and history. The project lies within the Galesburg Plain of the Till Plains Section of the Central Lowland Province.

The Central Lowland Provinces covers much of the upper mid-west of North America. The Till Plains Section encompasses most of Illinois (about four-fifths), and is characterized by broad till plains from continental glaciations which are generally uneroded or geologically youthful. The Till Plains Section in Illinois is subdivided into seven areas with distinctly differing surface deposits. The Galesburg Plain includes the western segment of the Illinoisan drift-sheet which is notable for its few morainic ridges. The Illinoisan drift is generally thick and is underlain by Kansan and Nebraskan deposits which result in few observable features of the bedrock topography. Prominent glacial topography in this plain is limited to distinct local features (primarily along river valleys).

Ecoregion

Ecoregions have been defined for the North American Continent over the last several years to provide ecosystem boundaries using a holistic classification system which encompasses all the primary components of an ecosystem. The purpose of this system is to produce an effective way to place environmental concerns within a framework which is ecologically meaningful from a continental scale all the way down to a local scale.

Transitional zones between various ecosystems are used to create the boundaries of ecoregions. A hierarchical classification system has been established to be able to address environmental issues according to scale. There are three hierarchal levels that have been currently developed for the North American continent, with each level further refining the details of the ecological zones within them. Level I Ecoregions use very broad ecological zones to define 15 regions within North America. Level II subdivides Level I regions based on nationally defined characteristics and results in 52 distinct regions. Level III regions are further defined using regionally distinguishable ecological characteristics.

The hierarchal classification continues beyond Level III; however, these classifications are being completed on a state by state basis. Level IV Ecoregions have recently been developed for Illinois and provide more relevance to localized land use planning.

The project area lies within the following Ecoregion hierarchy:

- Level I – Eastern Temperate Forests
- Level II – Southeastern USA Plains
- Level III – Interior River Valleys and Hills
- Level IV – Western Dissected Illinoisan Till Plain

The Western Dissected Illinoisan Till Plain is a well dissected, pre-Wisconsonian till plain with broad, nearly level interfluves, and many forested slopes, ravines, and floodplains. The dissected environment is more forested than the Level IV ecoregions to the east and is physiographically distinct from the hills and broad flats of the Southern Illinoisan Till Plain. This ecoregion is capped with loess and till, and underlain by Pennsylvanian and Mississippian limestone, sandstone, shale, and coal. Rocky outcrops are common in the valleys and ravines. Alfisols make up the dominant soil types. These soils are associated with forested environments and are low in organic matter, acidic, and well drained. The Mollisols within this area developed in thick loess and are high in organic matter. Sheet erosion can be severe on cultivated slopes.

Oak–hickory forests covered the well-drained slopes prior to European settlement, while prairies were found on nearly level interfluves. Marshes and wet prairie occurred, but were less common than in the Central Corn Belt Plains. Since settlement, cropland and pastureland have almost entirely replaced the native prairies. Corn and soybeans are the primary agricultural crops. Steep slopes and ravines remain largely wooded, but forested acreage is less than it was at the time of settlement. Artificial drainage is less extensive than in neighboring Ecoregions and, partially as a result, nitrate concentrations in the surface waters tend to be lower than in adjacent ecoregions.

Local Land Cover

Payson

Adams County, as is most of central Illinois, is dominated by agricultural lands. Of the approximately 560,000 acres in the county, 50 percent are in some form of agricultural production with the predominant crops being corn and soybeans. The Payson facility will be located in the southwest corner of Adams County in an agricultural field (row crop). The turbine will be situated on a knoll within the field, generally surrounded by other agricultural parcels. Forested cover is limited to buffers along unnamed tributaries or upland swales passing through or along the edges of the fields. There are no large contiguous stands of forest within several miles of the turbine location. The wooded areas present along the drainageways are composed of early successional tree species that are typically all of the same age (young) and relative size (diameter). The composition is indicative of areas that were either unforested or clear-cut in the past.

The project is located 3-4 miles east of the Mississippi River valley/floodplain. There are narrow, but higher quality forested lands along the bluffs. Large tracts of floodplain forest are present along the length of the Mississippi River. While pastures are present in the lands surrounding the turbine, these are heavily grazed; there are no fallowed or lightly grazed grasslands.

Mt. Sterling

Brown County is also dominated by agricultural lands but is less than half the size of Adams County. Of the approximately 200,000 acres of land in the county, 47 percent are in some form of agricultural production. The Mt. Sterling facility is located in the central part of the county within an agricultural

field. The turbine will be located near the center of a 20 acre row crop parcel which is bordered to the south and west by more farm fields, to the north by a perennial waterway with an adjacent pasture, and a large contiguous forested area to the east (~150 ac). There is also a small (<1 ac) pond present in the northeast corner of the 20 acre parcel.

The large contiguous block of woods has been heavily disturbed in the past and has been highly fragmented internally. The stand was formerly a dry-mesic upland hardwood (oak-hickory) forest but has been systematically logged over time. Some areas were clear-cut; other areas have been selectively harvested. The removal of the canopy resulted in a flush of early successional trees which moved in and colonized the hillsides (some portions of the forest are quite difficult to traverse because of this dense growth). The disturbance activities have severely degraded the ecological integrity of the woods.

The project is located 8-9 miles west of the Illinois River valley/floodplain. The percentage of forested lands to agricultural lands increases steadily from the project location to the river bluffs. The floodplain of the Illinois River does not contain as large of tracts of floodplain forest as does the Mississippi River.

The parties to the conservation plan will, to the maximum extent practicable, minimize and mitigate the impact caused by the taking.

I. Habitat Requirements/Species Status:

A. Indiana bat (*Myotis sodalis*) – Federally Endangered; (Illinois) State Endangered

Habitat Requirements:

The Indiana bat has two distinct annual habitats: winter hibernacula in caves and summer roosting sites located in forested areas along or near waterways. Preferred hibernation sites have the following characteristics: medium to large limestone caves with pools present, shallow passageways, mean mid-winter temperatures between 3-6 degrees C (early studies identified a preferred mid-winter temperature range of 4-8 degrees C / 39-46 degrees F, but more recent examination of long-term data suggests that the slightly lower and narrower range of 3-6 degrees C / 37-43 degrees F may be ideal for the species; IBRT, 1999), and relative humidity greater than 66 percent. Hibernating individuals characteristically form large, compact clusters of as many as 5,000 individuals - averaging 500 to 1,000 bats per cluster, which may move to cooler or warmer areas of cave during winter. After arousal from hibernation, migration to the summer habitat ensues. Although there have been a number of studies of summer habitat of the Indiana bat, such a small percentage of the total population has been observed that the information known to date presents more generalities than specifics.

Summer roosts typically are not found in forests with less than 10-30 percent canopy cover or in old fields with less than 10 percent canopy cover. In Missouri, primary maternity roosts occur in standing dead trees exposed to direct sunlight (Callahan et al., 1997). Maternity colonies select multiple roosting sites within their home range, divided into primary and alternative sites. Each colony may have 1-3 primary roosts and numerous more alternate roosts. The roost trees used by each colony are typically not widely dispersed (observed less than 1.5 km radii). Primary and alternate roost trees are similar with the exception of location (open vs. interior) and status (living vs. dead). Trees used as primary roosts can be characterized as dead, located in the open, have relatively large diameter trunks, and on average have 75 percent of their bark attached (Callahan et al., 1997). Alternate roosting sites may be living or dead, tend to have slightly smaller diameter trunks than primary, are located in the interior of the forest, and appear to be used during periods of inclement weather. Colonies move to the interior / alternate roosting trees

during prolonged days of precipitation, cold, or heat. Live trees seem to be the preferred alternate roosting sites during prolonged precipitation or cold while dead trees the preferred alternate roosting sites during periods of high temperatures. Selection of multiple roosting sites of differing characteristics infers separate, specific thermodynamic advantages for each chosen roost. It is suggested that as many as 30 percent of roost trees may deteriorate in any given year with most primary roost trees lasting only 6-8 years (Humphrey and Cope, 1977).

Species Status in the Action Area:

The Indiana bat has been found in 27 states throughout much of the eastern United States. Based on the 2005 winter census taken at hibernacula, the total known Indiana bat population was estimated to number about 457,000 bats (USFWS, 2007). This represents an overall decline since population surveys began in the 1960s but an increase from the population lows in the 1990s when the population was estimated to have experienced a decline of 60 percent. The most severe declines have occurred in two states: Kentucky, where 180,000 bats were estimated lost between 1960 and 1997; and Missouri, where an estimated 250,000 Indiana bats may have been lost between 1980 and 1997. Significant hibernacula are classified into "Priority Sites" (P1, P2, P3, or P4). The Priority Sites have recently been reclassified by the USFWS within the 2007 draft Indiana Bat Recovery Plan. P1 sites are "essential to recovery" and have current or historical observed numbers of 10,000 or more. In 2005 there were P1 hibernacula in 7 states (IL, IN, KY, MO, NY, TN, and WV). Currently, Illinois has only one P1 site. In 2005 more than 90 percent of Indiana bats hibernated in 5 states (IL, IN, MO, NY, and KY) and nearly half in Indiana alone. The top ten P1 sites in 2005 accounted for 71.6 percent of the total population. P2 sites are those which currently have or had documented 1,000-10,000 Indiana bats. P3 sites are those which have or had documented 50-1,000 Indiana bats. P4 sites are considered the "least important to recovery and long-term conservation" and have or had documented less than 50 Indiana bats. Burton Cave (Adams County) is classified as a P4 site.

B. Gray bat (*Myotis grisescens*) – Federally Threatened; State Endangered

Habitat Requirements:

The gray bat inhabits caves at all times of the year, although requirements for winter and summer caves differ. Winter / hibernating caves are generally deep vertical pits which contain a large volume below the lowest entrance thus acting as a cold sink to trap air (MDOC, 2004). Temperatures in winter caves remain stable between 42-52 degrees (F). Summer / maternity caves are more variable in size and structure, but generally have entrances lower than roosting areas and have domed ceilings which can trap warm air. High humidity appears to be a requirement and streams are typically present in preferred maternity caves. Temperatures range from mid-50 to 80 degrees (F) with relative humidity greater than 80 percent. Although temperature and humidity ranges are variable from site to site, these two parameters are highly stable within each site. There is generally no discernable air movement at the selected roosting site. Non-reproductive females, juveniles, and males are not as selective in their summer roosting sites and form smaller bachelor colonies separate from maternity colonies (bachelor colonies may be present in same cave but in a 'non-preferred' area). A small percentage of this non-reproducing part of the population, however, will exist within a maternity colony. Bachelor colonies, as a result of selecting 'less-desirable' sites, tend to be cooler or have more variable temperature and humidity levels and individuals in most bachelor colonies tend to become torpid during the day. Undisturbed maternity colonies generally remain active and do not enter torpor. A single record exists for a maternity colony of gray bats using a barn (Gunier and Elder, 1971). Bachelor colonies can select sites up to 2 miles away from foraging areas but maternity colonies are generally not more than a mile from foraging areas. The gray bat has been observed to forage within forests but over-water areas along forested sections of streams and reservoirs are preferred. Forest corridors and buffers appear to play a crucial role in selection

of colony sites and foraging areas for the protection they provide against predators such as the screech owl. Gray bats have been observed to fly a much longer distance in order to stay along fencerows or any clump of trees between roosting and foraging areas. In addition to providing cover against predation, forested areas provide 'rest-stops' for newly-volant young as they learn to fly and hunt. Former preferred foraging habitats have been reported abandoned when areas become deforested (NatureServe, 2004).

Species Status in the Action Area:

The range of the gray bat is primarily limited to Alabama, Kentucky, Tennessee, Missouri, and northern Arkansas. Nine winter caves are known to harbor approximately 95 percent of the total population during hibernation; one cave alone harbors 50 percent (NatureServe, 2004). Because of the specific roost and habitat requirements, fewer than five percent of available caves are suitable for occupation by this species. This results in patchy distribution of the species within its range.

C. Northern Harrier (*Circus cyaneus*) – State Endangered

Habitat Requirements:

Northern Harriers prefer relatively open habitats consisting of dense, tall vegetation and abundant residual vegetation. They are found in native and tame vegetation in wet or dry grasslands, lightly-grazed pastures, and fallow fields. Most nests are found in undisturbed wetlands or grasslands dominated by thick vegetation as nest success may be lower in cropland and fallow fields. In a study in Illinois, nest placement was determined less by whether the dominant grass was native or tame than it was by whether the field was idle or disturbed by mowing, fire, harvesting, or grazing.

Species Status in the Action Area:

The distribution of breeding Northern Harriers extends across most of Alaska and Canada, except the extreme northern extents (NatureServe Explorer, 2009d). The range is bounded to the south by a line that extends southwest from northern Virginia, across southern Texas to southern California. Wintering grounds extend across the southern half of the U.S. into Mexico and Central America.

Undisturbed area is needed for nesting (though not for hunting; Slater and Rock, 2005). Nests are heavily concealed in dense vegetation in the upland. Because the nests are at ground level, they are vulnerable to predation by coyotes, skunks, minks, domestic dogs, and other raptors. Nests have been trampled by white-tailed deer and livestock. Mowing or harrowing may cause adults to abandon or destroy nests. Conversely, there are nests built over wet areas and the most successful of those nests are less concealed. This may be due to the decreased risk of predation, trampling, etc. There is a tradeoff in nest site selection between reducing predation pressure by choosing wet sites and the desire to reduce transit times to dry areas where vole abundance is higher. In a study that compared the two factors, females appeared to prefer the wetter sites even though prey habitat was farther away. No known records of brood parasitism by Brown-headed Cowbirds exist.

As with many grassland species, harriers are rarely found in tracts smaller than 250 acres. The reliance on undisturbed, dense vegetation with dense residual growth suggests that the species is particularly sensitive to fire and would require unburned within partially burned grasslands as refuge for nesting. Nests may be found in smaller tracts, but the studies that document fragmented habitat suggest that the individuals were reliant on the surrounding matrix of larger contiguous grasslands. In Missouri, studies documented nesting densities ranging from 1 nest per 125-300 acres.

Aside from habitat destruction from fragmentation or forest succession, Northern Harriers have faced other threats. The effects of pesticides known as organochlorides are well-documented in the U.S. The toxins cause eggshell thinning, reproductive failure, and death. Declines in both breeding and migrating harriers and the occurrence of behavioral changes coincided with heavy use of DDT at multiple sites across the U.S (Laughlin and Kibbe, 1985; Dowhan and Craig, 1976; Dunne and Sutton, 1986). There are few studies on the long term effects of DDT and other biocides. Shooting by humans, once common, is no longer a serious threat in the U.S (Bildstein, 1988). Deaths from collisions with automobiles and overhead wires have been documented (Watson, 1977).

D. Loggerhead shrike (*Lanius ludovicianus*) – State Endangered

Habitat Requirements:

Lanius ludovicianus is a species of open pastures, fields, or meadows that are interspersed with or bordered by trees, hedgerows, electrical wires, and/or fences. In Illinois, most nests are found in tree lines containing Osage orange, honey locust, and red cedar (Smith, 1991). Trees with thorns or thorn-like structures are key habitat features as this species commonly impales its prey near prominent perches. Territories average 15-20 acres.

Species Status in the Action Area:

Loggerhead shrikes breeding grounds range from Washington and southern Canada, south to California and Florida, and east across Missouri, southern Illinois, western Kentucky, and western Tennessee (NatureServe, 2009e). Historical ranges extended further into the northern Midwest, into the Mid-Atlantic States, and into New England. The species is no longer found in New England states and disappearing in the Mid-Atlantic and Midwest (Bartgis, 1992).

In the early to mid-1900s, farms were relatively small and diverse which created ideal habitat for shrikes. As agriculture production intensified and became more uniform (i.e. conversion to strictly row crops), farms expanded into native grasslands and also eliminated the hedgerows and wind breaks that bordered smaller farms, thereby eliminating large areas of former shrike habitat. A contributing factor of the intensification was the dramatic emphasis on pesticide use. Pesticides have been blamed for reducing the shrike's insect-prey populations and potentially for the effects of pesticide accumulation in the shrike's tissues to toxic levels (Yosef, 1994). Organophosphates and their metabolites, the suspect class of toxins, were prohibited in the 1970's, but shrike populations have not shown a corresponding benefit. In Illinois, shrike populations decline at a rate of 5.4 percent per year as determined by Breeding Bird Surveys, 1966-1998 (Pruitt, 2000). Shrikes can still be found statewide but most recorded nesting locations are isolated and non-persistent (Smith, 1991). Preservation of hedgerows and large, open grasslands are the primary management recommendations (Pruitt, 2000).

E. Short-eared owl (*Asio flammeus*) – State Endangered

Habitat Requirements:

Short-eared owls require large, open grassland or wetland habitat. In Illinois, nests were found in blocks as small as 70 acres, but it is believed that small blocks will only be used if there is an adjacent expanse of contiguous grassland (Dechant, 2001). The owls generally nest on the ground in dry upland grasslands. Nests may be fully concealed by dense vegetation or poorly concealed in open fields, but they are usually located in vegetation 30-60 cm tall. The habitat of the Short-eared owl's primary prey, the vole, requires grassland with ample residual vegetation consistent with periodic disturbance (i.e. fire, mowing) at 2-5 year intervals.

Fragmented openland habitat either from fire disturbance or man-made fragmentation increases the likelihood of nest predation by skunks, raccoons, foxes, and coyotes; therefore, management strategies recommend leaving the large majority of the habitat undisturbed as refuge for the target species and its prey (Dechant, 2001).

Species Status in the Action Area:

The Short-eared owl is one of the most widely distributed owls in the world (Doan, 1999). It occurs on every continent except Australia and Antarctica. In North America, the Short-eared owl breeds from northern Alaska and Canada, south to central California and east to Maryland. The range of non-breeding residents extends across the southern half of the continental U.S. and into northern Mexico.

Forage primarily by flying low, typically into wind, and dropping down onto prey, sometimes after brief hover similar to northern harriers. When not on foraging flights hovering over vegetation, the owls may occasionally hunt from low perches. From fence posts or shrubby vegetation, they will scan open areas, spot prey, and fly out to capture it. Short-eared owls are attracted to areas with abundant food resources, and may breed opportunistically and sporadically in such areas. When they do find areas of especially abundant resources they may breed in large numbers and produce super-normal clutches (NatureServe, 2009b).

Unlike most owls that nest in holes or take over the abandoned nests of crows or other birds, the short-eared owl is unique within Strigidae family by building a ground nest. Females build the nests which may be lined with grass, leaves, twigs or feathers. Nests generally do not last long after the young have dispersed. Between four and nine eggs are typically laid. Two broods may be raised if the nest is destroyed or depredated (NatureServe, 2009b).

Nest predators of the Short-eared owl include raccoons, foxes, coyotes, and mustelids (skunks). The populations of these predators have been augmented by the man-made increase in other food sources for these species. Predation from domestic animals is also concern. Mortality from collisions with trains, automobiles, and structures like radio antennas have been reported, but are not considered as major a threat as habitat loss.

Probably the most diurnal of owls and may be observed from late afternoon until the following dawn. Habitat is useful in separating short-eared owls from long-eared owls (*Asio otis*) as the latter is predominantly a woodland dweller. Short-eared owls can often be found roosting alongside Northern Harriers and may compete negatively with barn owls (NatureServe, 2009b). Short-eared owls show associations with species other than the vole.

F. Upland sandpiper (*Bartramia longicauda*) – State Endangered

Habitat Requirements:

The Upland Sandpiper is a shorebird of the grassland. Generally, this species prefers dry grasslands with low-moderate forb cover, moderate grass cover, low woody cover, high litter cover, and little bare ground (Dechant, 2002). Vegetation is usually 10-40 cm highs, but sandpipers avoid vegetation higher than 70 cm. In general, the species forages within shorter vegetation (<30 cm), and nests and rears broods in taller vegetation (10-63.5 cm). The species often uses native and tame grasslands, wet meadows, haylands, pastures, and planted cover (CRP lands, highway/railroad ROW, and grassy areas of airports). Some trees and woody vegetation are tolerated as long as the canopy remains open and grasses dominate.

The species is highly sensitive to habitat fragmentation, requiring areas greater than 75 acres. Occurrence and population size are correlated to field or patch size and inversely correlated to perimeter-area ratio.

Species Status in the Action Area:

Upland Sandpipers breed from north-central Alaska across central Canada, south into eastern Washington and Oregon, Idaho, Colorado, Oklahoma, and Texas, and east into Missouri, southern Illinois, northern Kentucky, southern Ohio, West Virginia, central Virginia, and Maryland. Historically, the range extended further south.

This species is a long-distance, neotropical migrant. Wintering grounds extend across South America, from northern Brazil south to central Argentina. The highest concentrations occur in Argentina and Uruguay.

The Upland Sandpiper is the most territorial of the sandpipers, often using its shrill flight call ("quip-ip-ip-ip") as a warning to intruders. Because the species nests semi-colonially, the territoriality serves to divide up the habitat into usable patches. Densities of 0.6-6.1 ha/nest have been documented and suggest loose grouping (NatureServe, 2009c). Adjacent to the nesting semi-colonial nesting site is a feeding area that is also shared communally. Breeding densities of up to 20 pairs/ sq mi have been recorded. Brood parasitism by Brown-headed Cowbirds is infrequent. Documented rates of brood parasitism range from 0-5%. Upland Sandpipers are not suitable hosts because their young are precocial.

Due to the construction of nests on the ground, Upland Sandpipers are vulnerable to nest predators. Common predators include coyotes, skunks, minks, raccoons, badgers, and domestic animals. The nests are also vulnerable to mowing and livestock trampling. Adults and juveniles alike are susceptible to predation by crows, raptors, and owls. Pesticides that reduce the abundance of prey species may threaten the species as well, though there is no evidence that ingestion of pesticides in prey tissue is harmful. The primary threat to the species is from habitat destruction due to changes in agricultural practices, grassland fragmentation and urbanization, and natural forest succession. No clear pattern of preference for native versus tame vegetation over the breeding range of the Upland Sandpiper is discernible. In central Wisconsin and central Minnesota, Upland Sandpipers were found nesting in tame vegetation; study areas, however, may have contained little or no native vegetation. In Illinois, Upland Sandpipers preferred stands of Kentucky bluegrass (*Poa pratensis*) and other tame grass species as opposed to tallgrass prairie, and preferred older (>5 yr) plantings of tame grasses and forbs (NatureServe, 2009c).

3. The parties to the conservation plan will ensure that adequate funding for the conservation plan will be provided:

In the official Habitat Conservation Plan prepared by AEC and its environmental consultant, the Kaskaskia Engineering Group, Section 5.5 states that "appropriate methods to guarantee funding of the HCP will be identified in consultation with the IDNR and will be included in the final version of this document". Appendix A of the HCP – Section 10.0, includes a DRAFT implementing agreement stating that "Adams Electric Cooperative will provide the funds to carry out the terms identified in the HCP for takes within the Permit Area". Therefore, official acceptance of and signature by AEC official(s) on this Authorization document means that AEC will take all means necessary for the life of this ITA to provide all necessary funds to carry out the terms identified in this final authorization package. The IDNR will NOT, nor shall be bound in any way, to submitting annual budget requests of any kind related to fulfilling the obligations of the HCP, the final ITA, and/or any related statutory requirements to protect the species of concern named in this final authorization document.

4. Based on the best available scientific data, the Department has determined that the taking will not reduce the likelihood of the survival or recovery of the endangered species or threatened species in the wild in Illinois, the biotic community of which the species is a part, or the habitat essential to the species' existence in Illinois:

A. General Overview – Impacts to Birds and Bats from Wind Plants/Farms

The proposed project will result in the construction of two (2) wind turbines. The construction of the wind turbines will more than likely not destroy or degrade any habitat used by any of the species of concern described within this plan. The potential for impact is more than likely limited to the physical risk posed by the individual turbines/towers.

As background, Altamont Pass, California was one of the first commercial generating wind plants/wind farms in North America. Wind turbines began being built in Altamont Pass after the energy crisis occurred in the 1970's. As the wind farm was being developed, a significant number of raptor deaths were found to be occurring from collisions with the spinning turbine blades (Weller, 2007). Environmental studies began to be conducted based on the concerns about the observed avian fatalities, especially populations of golden eagles (*Aquila chrysaetos*), at Altamont Pass; however, research beyond California was relatively limited until the mid-1990's when wind resource areas began to be developed nationally.

Turbine technology has evolved since the 70's and the newer generations of wind turbines are more efficient, significantly larger, but have slower spinning rotors. The most common generators at Altamont Pass are 18 meter tall downwind turbines which spin at 60 revolutions per minute (rpm) and many have blade tips within 9 meters of the ground. In contrast, current generators are more than twice as tall, have 3-8 times the same rotor swept area, and spin at significantly slower speeds (less than 20 rpm). Studies have shown the new generation turbines produce far less fatalities than the older units (Erickson, 2002); however, fatalities still occur.

It is estimated that 200-500 million birds die annually from collisions with manmade structures (Erickson 2002). Of the total fatalities, it is calculated that only 0.01-0.02 percent (or 1-2 out of every 10,000) are a result of a collision with a wind turbine. Passerines (i.e. songbirds) are apparently the most vulnerable, as they comprise 80 percent of the fatalities found at wind turbines. Excluding California, raptors accounted for only 2 percent of avian fatalities nationally at wind farms. American kestrels/sparrow-hawks (*Falco sparverius*) are the most common raptors observed and impacted. Based on a synthesis of data collected, the national annual average per-turbine mortality rate is 2.19 birds (1.83 excluding California). No bald eagle (*Haliaeetus leucocephalus*) or falcon fatalities have been documented at a wind turbine in the United States (Erickson, 2002). The combination of slower blade rotations and raised hub height on the new generation turbines has dramatically reduced the number of fatalities. In the process of conducting avian studies at wind farms with the build out of wind resource areas in the 1990's; however, researchers began noting numerous bat (Chiroptera) fatalities.

Researchers generally presupposed bats would have a low vulnerability to colliding with wind turbines based on their ability to navigate around tightly spaced objects (even moving objects). As avian studies continued to document bat fatalities, the focus of studies began to shift to impacts to bat populations. A synthesis of the information collected nationally provides relatively consistent results: migratory tree roosting species are the most likely to be killed (hoary, eastern red, and silver-haired bat), fatalities occur almost exclusively during the fall migratory period (mid-July to mid-September), fatalities do not tend to be concentrated at specific turbines (i.e. same relative probability of observed fatalities at any turbine within a wind farm), and the highest number of fatalities tend to occur on nights with wind speeds below 6 meters per second (mps). Although the data collected are consistent, the reason is not entirely understood.

The 'Anabat®' audio monitoring system has been used with many of the studies to determine bat activity at turbine sites. Use of the Anabat® system has found no avoidance behavior demonstrated at turbine areas or any significant difference between use of airspace in turbine and non-turbine sites (Jain, 2005). Additionally, studies have identified resident bat populations immediately surrounding wind farms and actively foraging around turbine areas. The presence of bats around turbines through much of the year with no fatalities has produced numerous hypotheses; however, there are more questions than answers remaining and the resulting fatalities may be a combination of several factors.

The presence of a fatality spike of migratory species in the fall has created some confusion for researchers as there is not a corresponding spike in the spring. Studies have not been able to conclusively determine, but it is believed that bat species migrating over long distances may do so relying on sight rather than echolocation. Bats exhibit differences between seasonal migratory behaviors as spring migration tends to occur slowly and sporadically with individuals meandering their way to the northern feeding ranges, while fall migration tends to occur in large waves of individuals over a short period of time. It is theorized that some species may not be using echolocation during fall migration which results in them being more susceptible to impacts with spinning turbine blades or other tall objects within their flight path. A study at a tall building in Chicago found 50 dead eastern red bats over one year with only 2 occurring outside of the fall migration period (Erickson, 2002).

Field studies have also observed that bat activity around the turbines increases during the fall migratory period. A current working theory supposes that the migratory tree roosting bats are exhibiting a roosting behavior which triggers them to search for the tallest available tree snag during fall migration. The species most impacted are generally solitary and the behavior may be an adaptation for selecting a location with the highest probability of meeting sexual partners. This triggered behavioral response results in mistaking turbines for dead tree snags. Studies using infrared cameras have documented bats investigating and landing on all parts of the towers. While not a confirmed behavior for the bat species, males of other species which display a similar 'roosting' behavior often tend to exhibit territorial behavior. This territorial behavior would trigger increased activity of the males at the roost site which increases the risk of being struck by the spinning blades. The roosting behavior theory is partially supported from the evidence that adult males are disproportionately impacted over juveniles or females.

Seasonally the highest number of fatalities occurs during the fall migratory period but within that period peak fatalities occur on calm nights with wind speeds of less than 6 mps. Current turbines are generally designed to 'freewheel' or spin under very low wind speeds without generating electricity. While the blades may be spinning at slow rpm's during this period, the blade tips may still be moving at speeds exceeding 100 mph. Bat activity tends to increase as winds speeds decrease. This is a direct reflection of the behavior of their prey as insect activity decreases as wind speed increases. It is theorized that the correlation between low wind speed and increased fatalities could be a reflection of concentrated bat activity and possibly a change in foraging behavior (potentially taking higher risks to increase fat reserves) at the turbines during the fall migratory period.

The national annual average of bat fatalities is 3.4 per turbine (AWEAABC, 2004). The national averages indicate that bats are more likely to be killed than birds by the turbines. Bat fatalities have been found not to be limited to striking the turbines or being struck by the spinning blades. Necropsies performed on bat carcasses collected during studies have found *pulmonary barotrauma* to be a leading cause of death (Baerwald, 2008). Barotrauma results from decompression of living tissue during a rapid change in air-pressure, which in turn can cause internal hemorrhaging. Vortices of extremely low air pressure occur around the edges of the rotating blades. Pulmonary barotrauma can occur as a bat enters one of these vortices, effectively causing the air sacs within the lungs to explode.

The anatomy of bird lungs is significantly different and does not leave them very susceptible to pulmonary barotraumas. Searches typically find bird carcasses twice as far from the turbines as bat carcasses; whether it is related to this phenomenon or not is unknown.

B. Measures Proposed to Minimize Harm to Species of Concern

Only two alternatives were studied for the analysis of proposed impacts: The construction and no-action (no construction) alternatives.

1. The no-action alternative would not result in the installation of two wind turbines for electrical generation. The Adams Electric Cooperative would continue to use the existing electrical capacity. This alternative would result in the removal of any potential harm to any of the species of concern by not constructing the turbines; however, this alternative would not promote the use of alternative renewable wind energy.

2. The construction alternative would result in the installation of two (2) wind turbines for electrical generation. One turbine will be located in the northeast 1/4 of Section 3 of Payson Township in Adams County, Illinois; the other turbine will be located in the southwest 1/4 of Section 13 of Mt. Sterling Township in Brown County, Illinois. The wind turbines selected for use at each site include one AWE 900 kilowatt ("kW") wind turbine (or comparable unit) mounted on a 75-meter hub-height tower. The rotors are 54 meters which results in a 108 meter diameter blade arc.

C. Minimization Proposed Within Selected Alternative

The turbines are located within agricultural fields and their construction will not require tree clearing or any other form of disturbance to any high quality natural habitat. The construction of the access roads will remove a few isolated trees but will not create any substantive habitat degradation. The potential negative impacts to the species of concern are primarily limited to physical harm posed by striking the tower or being struck by the spinning blades while in flight. Minimization of impacts is centered on the selected location and construction material of the turbines:

- Turbines are located within agricultural fields away from forest edges, perennial waterways, and bluff lines that could be considered 'high risk' locations.
- The base of the tower will be fenced and maintained in gravel to discourage vegetative growth that could encourage small mammal populations from migrating into the area which would in turn promote use of area by avian predators.
- The towers are not guyed to reduce potential for fatal strikes.
- The support structures are solid towers and not a lattice network to discourage nesting or perching.
- The turbine blades are situated upwind rather than downwind from the generator to limit risk of fatality if perching on the generator does occur.

D. Mitigation Proposed Within Selected Alternative

The potential for a 'take' to occur is, at this time, limited to the risk of being maimed or fatally injured by the operation of the turbines. The construction of the towers will more than likely not destroy or degrade any habitat used by the species of concern; therefore, no direct replacement or enhancement of habitat will be included as part of the mitigation plan.

The national annual average per-turbine mortality rate for birds is 2.19 (1.83 excluding California) and 3.4 for bats. However, none of the species of concern have been documented as a fatality at a wind turbine in Illinois as of June, 2010. Of the six species of concern (Indiana bat, gray bat, short-eared owl, upland sandpiper, northern harrier, and loggerhead shrike), the Indiana bat has the highest risk of being 'taken' based on their life history profile: Bat fatalities are almost exclusively limited to migratory tree roosting species and the Indiana bat is categorized as such. The mitigation proposed is a mixture of monitoring, operational protocols, and monetary donations.

E. Monitoring

The Payson turbine was constructed late summer of 2009 and the Mt. Sterling site will be constructed in 2010. An intensive two (2) year monitoring program will be initiated in 2010 to establish a baseline for all wildlife fatalities caused by the turbines. The study will be completed to assess the overall impacts/ fatalities caused by the turbines and will not be limited to only identifying fatalities of any of the species of concern. The study will help establish whether the turbines are below, at, or above the national average for per turbine fatalities. The study will serve to identify whether any species of concern are being impacted and assist in developing an overall risk assessment for the turbines. Based upon the results of the 2010 monitoring data, the IDNR maintains the sole authority and discretion to require AEC to alter its monitoring plan outline (below) to better meet the needs and requirements of local ecological resources. An "outline" has been created to begin the process and is as follows:

Post-construction monitoring will consist of fatality searches twice a week from May through September of 2010 and 2011. AEC will partner with John Wood's Community College (located in Quincy, IL.) to conduct field surveys. Sharon DeWitt of JWCC will be the primary field supervisor and will arrange for one to two students to assist in conducting the field surveys. Permanent transects will be established surrounding each turbine and pertinent information such as species, sex, relative age (juvenile / adult), location, and condition will be documented. Additionally, weather information such as wind speed, humidity, cloud cover, precipitation data for the day of and the previous day will be recorded. The length and number of transects will be determined as the detailed monitoring plan is developed. All bat and bird carcasses will be collected, tagged, frozen, and shipped to a bat and/or bird specialist for verification of species identification. Prior to beginning the surveys each May, a mock search will be conducted to determine searcher efficiency as well as scavenging pressure. The monitoring is limited to carcass surveys and no mist netting or audio monitoring will be conducted as part of the surveys in 2010. In 2011, post-construction monitoring shall include audio monitoring via the use of Anabat technology. All data collected will be summarized in a report which will be submitted to the IDNR each October. This shall also include a detailed analysis of all Anabat recorded calls collected in 2011. Recall that based upon the results of the 2010 monitoring data, the IDNR maintains the sole authority and discretion to require AEC to alter its monitoring plan outline to better meet the needs and requirements of local ecological resources.

> *The 'Anabat®' audio monitoring system has been used with many of the studies to determine bat activity at turbine sites. Use of the Anabat® system has found no avoidance behavior demonstrated at turbine areas or any significant difference between use of airspace in turbine and non-turbine sites.*

If the surveys produce fatalities at or below national averages and no species of concern is documented, surveys may be reduced to periodic fatality searches and audio monitoring surveys to be conducted by AEC personnel. The extent as to which all future annual monitoring surveys will be conducted shall be determined solely by the IDNR.

F. Operational Changes

National studies have found that weather conditions can affect the risk factors for impacts. Large, single event occurrences of bird fatalities have been documented in the migratory seasons during periods of exceptionally heavy fog. Fog has not been correlated with bat fatalities, but the majority of fatalities have occurred on nights with wind speeds below six (6) mps. A recent and ongoing study at the Casselman Wind Project in Pennsylvania has been investigating the effect of altering the operation of the turbines during different wind speeds (Arnett, 2009). The preliminary results have found reductions in fatalities of 50 to nearly 90 percent by idling or 'feathering' the blades when wind speeds are below five mps.

If at any time the monitoring study determines that above average bird and/or bat fatalities are occurring, or the fatality of any species of concern is documented, then operation of the turbines shall be altered from July 1 to October 1 to idle the turbines from sundown to sunrise during periods with wind speeds below 6 mps.

The turbines shall be idled during periods of dense fog during the spring and fall migratory periods (March-May: August-October).

G. Donations

AEC has proceeded forward with their final HCP in the hopes of developing a plan to reduce or avoid any fatalities of the species of concern; however, the possibility remains. Should an unfortunate 'take' occur, AEC shall provide a donation of one thousand dollars ($1,000.00) to any not-for-profit organization that the IDNR chooses which is directly related to the study, education, and/or preservation of any avian and/or bat species. Examples are not limited to but would include organizations such as the National Audubon Society, Organization for Bat Conservation, Midwest Bat Working Group, or the Southeastern Bat Diversity Network. Additionally, donations could go to any entity for land purchases which would serve to provide or expand habitat for endangered species. A donation (of $1,000.00) would be provided for each 'take' that occurs.

H. Adaptive Management Plan

Studies are ongoing across the nation regarding the impacts of wind turbines on avian and bat species. As technological advances continue to improve the efficiency of wind electrical generation and the scientific community continues to gather information improving the understanding between the interaction of wind turbines and those negatively affected species, new knowledge will be discovered on how to best minimize and mitigate negative impacts. Additionally, the wind turbines as they presently exist are not anticipated to produce significant numbers of fatalities from the species of concern or otherwise. An Adaptive Management Plan shall remain intact between AEC and the IDNR throughout the duration of this Authorization to address any unforeseen events. An adaptive management plan will allow alterations in the mitigation methods. Committing to an adaptive management plan allows AEC and the IDNR to accommodate the uncertainties which may occur through the mitigation process. There are no specific alternative measures identified at this time; however, the plan ensures coordination of new mitigation policies should they be deemed warranted by changing national policies or impacts found to be above those anticipated.

5. Any measures required under Section 5.5 of the Illinois Endangered Species Protection Act [520 ILCS 10/5.5 – 17 IL. Adm. Code Part 1080.40(b)], will be performed. Additional measures are listed below under "Authorization." This authorization is, by definition, subject to those terms and conditions and official AEC signature(s) on this authorization indicates their commitment to performing those measures.

6. The public has received notice of the application and has had the opportunity to comment before the Department made any decision regarding the application:

AEC, through its environmental consultant – the Kaskaskia Engineering Group – prepared a conservation plan for the AEC wind turbine project as described by the Illinois Endangered Species Protection Act (520 ILCS 10/5.5). That plan and AEC's request for authorization for incidental take of the Indiana bat (*Myotis sodalis*); gray bat (*Myotis grisescens*); northern harrier (*Circus cyaneus*); loggerhead shrike (*Lanius ludovicianus*); short-eared owl (*Asio flammeus*); and upland sandpiper (*Bartramia longicuada*) in Adams and Brown Counties, Illinois were received by the Illinois Department of Natural Resources (Department) on September 16, 2009. Public notice of AEC's request for authorization of incidental take of these State listed species was published in the Northwest/Arlington Heights Daily Herald (Official State newspaper) and the Liberty Bee (Adams County) on January 27, 2010, as well as on February 3, 2010 and February 10, 2010. Public comments on AEC's conservation plan were accepted by the Department until March 10, 2010. No comments were received by the public during the period of January 27, 2010 through March 10, 2010.

Authorization

It is the determination of the Department that the measures to be implemented by AEC will more than likely adequately minimize and mitigate for the anticipated taking (disturbance/harassment) of a small number of the State listed Indiana bat (*Myotis sodalis*); gray bat (*Myotis grisescens*); northern harrier (*Circus cyaneus*); loggerhead shrike (*Lanius ludovicianus*); short-eared owl (*Asio flammeus*); and upland sandpiper (*Bartramia longicuada*) in Adams and Brown Counties, Illinois. The Illinois Department of Natural Resources has determined that this authorized take is incidental to the construction of the AEC wind turbine project in Adams and Brown Counties, Illinois. Further, it is our opinion that the take (disturbance/harassment) authorized herein would more than likely not diminish the likelihood of the survival of either these aforementioned species in the wild within the State of Illinois, the biotic community of which the species is a part, or the habitat essential to the species' existence in Illinois.

Pursuant to Section 5.5 of the Illinois Endangered Species Protection Act [520 ILCS 10/5.5 – 17 IL. Adm. Code Part 1080.40(b)], this authorization is issued subject to the following additional terms and conditions:

1. This authorization is effective upon signature of the Department and shall remain in effect for a period of twenty (20) years, unless terminated pursuant to Section 5.5. of the Illinois Endangered Species Protection Act [520 ILCS 10/5.5 – 17 IL. Adm. Code Part 1080.80].

2. The following measures shall be implemented with regards to the AEC Wind Turbine Project:

A. An intensive two (2) year monitoring program shall be initiated in 2010 to establish a baseline for bird and bat fatalities caused by the turbines. The study will be completed to assess the overall impacts/ fatalities caused by the turbines and will not be limited to only identifying fatalities of any of the species of concern. The study will help establish whether the turbines are below, at, or above the national average for per turbine fatalities. The study will serve to identify whether any species of concern are being impacted and assist in developing an overall risk assessment for the turbines.

Based upon the results of the 2010 monitoring data, the IDNR maintains the sole authority and discretion to require AEC to alter its monitoring plan outline (see *Authorization Section 4E* above) to better meet the needs and requirements of local ecological resources.

B. Post-construction monitoring shall consist of fatality searches twice a week from May through September of 2010 and 2011. AEC will partner with John Wood's Community College (located in Quincy, IL.) to conduct field surveys. Sharon DeWitt of JWCC will be the primary field supervisor and will arrange for one to two students to assist in conducting the field surveys. Permanent transects will be established surrounding each turbine and pertinent information such as species, sex, relative age (juvenile / adult), location, and condition will be documented. Additionally, weather information such as wind speed, humidity, cloud cover, precipitation data for the day of and the previous day will be recorded. The length and number of transects will be determined as the detailed monitoring plan is developed. All bat and bird carcasses will be collected, tagged, frozen, and shipped to a bat and/or bird specialist for verification of species identification. Prior to beginning the surveys each May, a mock search will be conducted to determine searcher efficiency as well as scavenging pressure. The monitoring is limited to carcass surveys and no mist netting or audio monitoring will be conducted as part of the surveys in 2010. In 2011, post-construction monitoring shall include audio monitoring via the use of Anabat technology. The data collected will be summarized in a report which will be submitted to the IDNR each October. This shall also include a detailed analysis of all Anabat recorded calls collected in 2011.

The 'Anabat®' audio monitoring system has been used with many of the studies to determine bat activity at turbine sites. Use of the Anabat® system has found no avoidance behavior demonstrated at turbine areas or any significant difference between use of airspace in turbine and non-turbine sites.

If the surveys produce fatalities at or below national averages and no species of concern is documented, surveys may be reduced to periodic fatality searches and/or audio monitoring surveys to be conducted by AEC personnel. The extent as to which all future annual monitoring will be conducted shall be determined solely by the IDNR.

C. If at any time the monitoring study determines that above average bird and/or bat fatalities are occurring, or the fatality of any species of concern is documented, then operation of the turbines shall be altered from July 1 to October 1 to idle the turbines from sundown to sunrise during periods with wind speeds below 6 mps.

The turbines shall be idled during periods of dense fog during the spring and fall migratory periods (March-May: August-October).

D. Should an unfortunate 'take' of any species of concern identified in this document occurs, AEC shall provide a donation of one thousand dollars ($1,000.00) to any not-for-profit organization that the IDNR chooses which is directly related to the study, education, or preservation of any avian or bat species. Examples are not limited to but would include organizations such as the National Audubon Society, Midwest Bat Working Group, Organization for Bat Conservation, or Southeastern Bat Diversity Network. A $1,000.00 donation shall be provided for each individual 'take' that occurs.

E. An Adaptive Management Plan shall remain intact between AEC and the IDNR throughout the duration of this Authorization (20 years) to address any unforeseen events. An adaptive management plan shall allow alterations in the mitigation methods. The IDNR, in conjunction with any and all appropriate Federal Agencies (i.e. USFWS), shall maintain sole discretion over this plan and the implementation of new mitigation policies should they be deemed warranted by changing state and/or national policies and/or impacts found to be above those anticipated.

3. The following Party Responsibilities shall be in effect with regards to the AEC wind turbine project in Adams and Brown Counties, Illinois:

AEC (and its environmental consultants) will be responsible for overseeing all minimization, monitoring and mitigation efforts identified within the Conservation Plan and this Authorization document. AEC (and its environmental consultants) will also be responsible for planning, contract execution and construction supervision for the entire project.

In the official Habitat Conservation Plan prepared by AEC and its environmental consultant, the Kaskaskia Engineering Group, Section 5.5 states that "appropriate methods to guarantee funding of the HCP will be identified in consultation with the IDNR and will be included in the final version of this document". Appendix A of the HCP – Section 10.0, includes a DRAFT implementing agreement stating that "Adams Electric Cooperative will provide the funds to carry out the terms identified in the HCP for takes within the Permit Area". Therefore, official acceptance of and signature by AEC official(s) on this Authorization means that AEC will take all means necessary for the life of this ITA to provide all necessary funds to carry out the terms identified in this final authorization package. The IDNR will NOT, nor shall be bound in any way, to submitting annual budget requests of any kind related to fulfilling the obligations of the HCP, the final ITA, and/or any related statutory requirements to protect the species of concern named in this final authorization document.

4. The effective period of this authorization may be altered by mutual agreement between AEC and the Department.

5. This authorization may be revoked pursuant to Section 5.5 of the Act if the Department finds that AEC has failed to comply with any of these terms and conditions or has been responsible for the take of any Illinois State or Federally Listed Species beyond that which is incidental to the construction of the AEC wind turbine project in Adams and Brown Counties, Illinois.

6. Please note that: The USFWS issued an interim guidance memorandum for avoiding and minimizing wildlife impacts from wind turbines (dated 2003), which is used by all review personnel. The USFWS has not objected to the project nor has it requested formal consultation under the Section 7 process for the two proposed turbines; however, this does not release AEC from the potential for responsive action from the USFWS (and/or IDNR) at any point in the future should a Federally or Illinois State threatened or endangered species be found to be killed by the wind turbines.

7. The AEC official(s) identified below is/are authorized to execute this agreement. Execution by an official from any one of these organizations indicates acceptance of all terms and conditions described in this document.

For the IL. Department of Natural Resources

Dr. Jim Herkert, Director
IDNR/Office of Resource Conservation

8/11/10
Date Signed

For Adam's Electric Cooperative (AEC)

Signature

James H. Thompson, General Manager
Please print name and official title

8/10/10
Date Signed