

Appendix I Comments Received on the DEIS, DHCP and Responses

On April 4, 2013, the Service published a notice in the Federal Register stating the availability of and a request for comments on a Draft Environmental Impact Statement (DEIS) and Draft Habitat Conservation Plan (DHCP) as part of an application for an incidental take permit. The notice contained information on how to obtain the documents and how to submit a comment. The public comment period ended on June 4, 2013. The Service received comments through the Federal Rulemaking Portal at <http://www.regulations.gov> and via hard copy comments mailed in to the Public Comments Processing Center. All comments submitted electronically and in hardcopy were posted on <http://www.regulations.gov>. This appendix includes all comments received and the Service's responses to each.

This appendix is organized into two sections: Section 1 includes a table of the comments received and related information (commenter name, organization if applicable, the document ID number that was assigned on the Federal Rulemaking Portal docket, and itemized comment numbers and related comments). Section 1 is organized numerically according to the comment number. Section 2 includes copies of the individual comments, which were mailed in or submitted as a PDF document, arranged numerically by the Document ID number.

Provided below is a list of revisions to the DHCP that are now incorporated into the final HCP, including any changes in response to public comments. Specific responses to public comments and associated revisions are addressed in Section 1 of this Appendix.

- Updated date of document to "November 2013" on Title page and in header
- Added Appendix J to list of appendices on Page v
- Move list of appendices in Table of Contents on Page v
- Added sentence "The BBCS will be in effect through the life of the Project." on Page 5 of 167
- Changed permit term from 22 years to 21 years throughout the document. This change was necessary because the Draft HCP anticipated that the ITP would be issued in 2013; however, it is now anticipated that the permit would be issued in 2014
- Updated Table 1.1 to reflect updated permit term of 21 years on Page 7 of 167
- Updated Figure 1.2 on Page 8 of 167
- Revised phrase "At the end of the operating life of the Project (20 years)..." on Page 16 of 167
- Revised phrase "The Permittees anticipate that each Phase will operate for a minimum of 20 years, for a total permit term of 21 years for all phases of the Project covered by the ITP." on Page 16 of 167
- Deleted phrase "and subsequent monitoring of bat activity at the cave opening," from the statement "Specifically, covered mitigation activities include installation of a new bat gate at Wyandotte Cave, as well as protection, restoration, and monitoring of summer habitat for Indiana bats." on Page 17 of 167
- Added phrase "(predominantly males)" to the statement "In Kentucky, Gumbert et al. (2002) recorded 463 roost switches over 921 radio-tracking days of tagged Indiana bats (predominantly males) - an average of one switch every 2.21 days." on page 18 of 167
- Updated USFWS 2011a citation and Indiana bat population trends on Pages 23, 27, 28, 152, 153 of 167

- Deleted "and a church in Pennsylvania" on Page 24 of 167
- Added word "historic" to Figure 3.1 title. "Figure 3.1 Approximate historic range of the Indiana bat in the US." on Page 24 of 167
- Added phrase "in spring" to statement "Chenger and Turner (J. Chenger, Bat Conservation Management [BCM], and G. Turner, PA Game Commission, pers. comm. 2011, as cited in USFWS 2011e) indicate that Indiana bats migrating in spring in the northeast closely follow topographic features, such as meandering stream corridors and utility ROWs for miles, and over multiple years." on page 26 of 167
- Added phrase "or at least contemporaneously" to statement "Because female Indiana bats are likely cued into the same climatic or environmental stimuli during the spring and fall migration, there may be migratory pulses of Indiana bats moving through an area, and it is reasonable to assume that at least some individuals leave summer colonies together or at least contemporaneously (L. Pruitt, pers. comm. 2011; R. Reynolds, pers. comm. 2010; as cited in USFWS 2011e)." on Page 26 of 167
- Changed "Frick et al. 2010" to "Turner et al. 2011" on Page 28 of 167
- Changed WNS mortality rate to the average for Indiana bats from Turner et al. 2011 on Page 28 of 167
- Changed "a" to "five" in the statement "Caused by the fungus *Geomyces destructans*, WNS is estimated to have caused the deaths of over five million bats in the northeastern US, including Indiana bats (USFWS 2012d)." on Page 28 of 167
- Due to the decrease in the permit term, the overall expected level of take had to be adjusted from 193 to 184 throughout the document
- Revised phrase "This estimated level of take is approximately nine Indiana bats in Year 1 of the permit when only 355 turbines are operational, 11 Indiana bats per year during Years 2-17 when 449 turbines are operational, and two Indiana bats per year in Years 18-21 when only 94 turbines are operational." on Page 29 of 167
- Revised phrase "The estimated reproductive capacity of females taken by the Project is 152 Indiana bats, resulting in a total estimated impact of 336 Indiana bats (see Chapter 4.2 for a discussion of the impact of the taking). Collectively, take from the FRWF and lost reproductive capacity of females represents the loss of approximately 16 Indiana bats per year over the 21-year ITP." on Page 30 of 167
- Added phrase "statistically significant" to statement "There was no statistical difference in fatality reductions at the two cut-in speeds, although the authors noted that the average wind speed at the site was between 5.0 and 6.5 m/s (wind speeds during which the two curtailment treatments were operationally distinct) only 10% of the study period, which may have explained in part why they found no statistically significant difference in bat fatalities between the two treatments (Arnett et al. 2010)." on Page 42 of 167
- Revised Table 4.7 to reflect 21-year permit term and revised take limit from 193 to 184 on Page 46 of 167
- Added phrase "during the fall migration period" to the statement "The only Project activity expected to result in Indiana bat take is operation of the wind facility during the fall migration period" on Page 46 of 167

- Added word "fall" to the statement " To facilitate responsiveness in management actions that will ensure that the 21-year take limit is not exceeded, this HCP includes annual fall monitoring and annual and within-year adaptive management take thresholds, which are described in detail in Chapter 5." on Page 46 of 167
- Changed "S. Pruitt, pers. comm." to "Appendix D" on Page 48 of 167
- Revised phrase "The Permittees estimate a total of 184 Indiana bats will be taken during the 21-year ITP term. Approximately 75% of the incidental take is expected to be attributed to females, for a total of 138 female Indiana bats taken over the operational life of the Project." on Page 49 of 167
- Revised phrase "Based on these assumptions, it is expected that the reproductive capacity of the 138 females that would be taken by the Project would have resulted in the production of an additional 152 bats by Year 21 of the Project. Thus, the total impact of the taking would be the loss of 336 Indiana bats (i.e., estimated take of 184 bats, plus the loss of 152 bats from the reproductive loss of taken female bats). Mitigation actions, therefore, will have a target increase of 336 Indiana bats, or 16 bats per year on average, to account for this lost reproductive capacity." on Page 49 of 167
- Deleted phrase "Implement a mitigation project that will protect and restore a minimum of 97 ha (240 ac) of summer habitat in blocks with a minimum size..." on Page 51 of 167
- Deleted phrase "It is expected that" from the statement "It is expected that turbines will begin operating under normal conditions when the 5- to 10-minute rolling average temperature drops below 10° C; raised cut-in speeds will be resumed if the 5- to 10-minute rolling average temperature goes above 10° C during the course of the night." on Page 53 of 167
- Revised phrase "Turbines will begin operating under normal conditions when the 5- to 10-minute rolling average temperature drops below 10° C; raised cut-in speeds will be resumed if the 5- to 10-minute rolling average temperature goes to 10° C or above during the course of the night" on Page 53 of 167
- Deleted phrase "It is expected that..." from the beginning of the statement "Turbines will begin operating under normal conditions when the 5- to 10-minute rolling average wind speed is above 5.0 m/s; turbines will be feathered again if the 5- to 10-minute rolling average wind speed goes below 5.0 m/s during the course of the night." on Page 53 of 167
- Revised temperature-bat activity numbers to reflect 10 degree C threshold on Page 55 of 167
- Changed temperature to reflect new threshold, i.e. old temperature was 15.5° C (60° F) and new temperature is 10° C (50° F) on Pages 53 and 55 of 167
- Added word "average" and changed temperature threshold in statement "However, if greater than 10% of documented fatalities occur on nights when average temperature is below 10° C in any given year, as determined through analysis of mortality data at the conclusion of the fall monitoring period, then turbine operational adjustments (i.e., turbines feathered up to a cut-in speed of 5.0 m/s) will be resumed for the entire night during the fall, regardless of temperature, in future years." on Page 55 of 167

- Added word “Indiana” to statement “The Permittees will: 1) preserve and restore summer maternity habitat in the vicinity of existing maternity colonies in Putnam County, Tippecanoe County, Vermillion County, or Warren County, Indiana;...” on Page 56 of 167
- Revised phrase “The actual take over the life of the permit at the FRWF is estimated at 184 Indiana bats and the estimated impact of that taking is 336 Indiana bats. Mitigation measures will be designed and implemented to compensate for this level of impact. Summer habitat mitigation is expected to compensate for 34% of the estimated impact of take (114 bats) and winter habitat mitigation is expected to compensate for 66% of the estimated impact of take (222 bats).” on Page 56 of 167
- Revised phrase “According to this formula, 73 ha ($114/39 = 2.9$, rounded up to 3, multiplied by 24.2 ha = 72.6 ha) of summer habitat need to be protected and restored to compensate for the take of 114 bats.” on Page 57 of 167
- Added phrase “However, the Permittees will protect and restore an additional 24.2 ha of summer habitat to provide additional conservation benefits to Indiana bats. Therefore, a total of 97 ha of summer habitat will be protected and restored.” on Page 57 of 167
- Revised phrase “The Permittees may have the option to contribute to the mitigation bank at a level sufficient to offset the impacts of taking 114 Indiana bats. A mitigation bank would only be considered if all of the following conditions are true: 1) the mitigation bank is established prior to when summer habitat mitigation is needed; 2) use of the mitigation bank has been approved by USFWS; 3) the mitigation bank includes lands within Indiana, unless otherwise approved by the USFWS; and 4) the mitigation bank has established a ratio of Indiana bat habitat required to offset the impact of 114 Indiana bats, and such ratio is approved by the USFWS BFO. If the mitigation bank has not established such a relationship, the Permittees and the USFWS may agree upon a number of acres within the mitigation bank that could be used to offset the take of 114 Indiana bats.” on Page 59 of 167
- Added phrase “one of” to statement “Wyandotte Cave is currently one of the largest known Indiana bat hibernaculum, with an estimated population of 61,618 bats in 2011 (L. Pruitt, pers. comm.).” on Page 59 of 167
- Removed statement “The current gate at Wyandotte Cave will be removed prior to installing the new gate.” on Page 60 of 167
- Added phrase “outside of” to statement “The portion of the cave outside of where the current gate sits has a thermal profile that is suitable for hibernating Indiana bats (although temperatures are probably more variable than those further inside the cave) and has been used by several thousand Indiana bats over the last decade (S. Pruitt, pers. comm.).” on Page 60 of 167
- Removed phrase “Removal of the old gate and” from the statement “Installation of the new gate will occur between May 15 and July 31, 2013.” on Page 60 of 167
- Removed phrase “and conducted by Karst Solutions (Jerry Grant),” from statement “Cave gating will be planned and coordinated by Bat Conservation International (BCI),”

with general oversight and project management performed by BCI in cooperation with O'Bannon Woods State Park (OWSP) and the IDNR." on Page 60 of 167

- Added word "current" to statement "To prevent the spread of *Geomyces destructans*, the current USFWS decontamination protocol will be followed during gate construction (USFWS 2012f)." on Page 60 of 167
- Revised phrase "Two years of intensive monitoring will be conducted that will add to the four years of research monitoring that was conducted during 2010, 2011, 2012, and 2013." on Page 63 of 167
- Revised phrase "Similar to the 2010 and 2011 monitoring, the 2012 and 2013 monitoring efforts, developed in coordination with and approved by the USFWS, was also conducted under a 10(a)(1)(A) research permit (Permit # TE73598A-0). In 2012, the majority of the facility (346 out of 355 turbines) was operating with the same operational and monitoring protocols that would have been implemented if the HCP were in place; turbines were feathered under a cut-in speed of 5.0 m/s and fatality monitoring conducted at 118 turbines followed the methods for Evaluation Phase monitoring described in this chapter. In 2013, 352 out of 355 turbines operated with the same operational and monitoring protocols that would have been implemented if the HCP were in place. Additional research was conducted in 2012 and 2013 at the FRWF at the other nine and three turbines respectively, to test if facilities operation management strategies were effective at reducing *Myotis sodalis* and other bat fatalities at wind farms." on Page 63 of 167
- Revised phrase "It is expected that the Evaluation Phase, along with the five years of mortality monitoring conducted from 2009-2013, will provide sufficient information to accurately assess the level of risk to Indiana bats by confirming the effectiveness of the operational curtailment." on Page 63 of 167
- Revised Table 5.2 to be consistent with new permit term of 21 years on Page 65 of 167
- Added "Bats not used for searcher efficiency and carcass removal trials may be provided to researchers if permissible within the conditions of the state salvage permit" on Page 67 of 167
- Added phrase "bats/turbine" to statement "The estimates were 24.17 bats/turbine (90% CI 19.50 – 30.02) for the cleared plots and 20.96 bats/turbine (90% CI 17.52 – 28.78) for road and pad searches." on Page 69 of 167
- Revised Table 5.5 on Page 76 of 167 to reflect delay of Year 1 of the ITP and to be consistent with Table 1.1
- Added phrase "(i.e. turbines that remain feathered below a cut-in speed of 5.0 m/s)" to statement "A set of control turbines (i.e. turbines that remain feathered below a cut-in speed of 5.0 m/s) will be used to determine whether or not the adaptive management trigger was reached at the end of the monitoring period." on Page 76 of 167
- Revised phrase " This is based on Monte Carlo simulations that showed that over 1,000 21-year periods using the adaptive management strategy described below, the mean number of Indiana bat fatalities was 170, with a corresponding 90% CI of 157 to 183 fatalities, assuming a conservative 50% reduction in fatality when feathering blades

below a 5.0 m/s cut-in speed. Given that a 57% (90% CI = 39% - 70%) reduction in bat fatality was achieved by feathering blades below a 4.5 m/s cut-in speed in the 2011 FRWF study, a more realistic reduction in bat mortality of 60% by feathering blades below 5.0 m/s was also simulated. Using the same simulation methods (i.e., 1,000 21-year periods that assumed the adaptive management described herein), an average of 144 Indiana bat fatalities over a 21 year period with a 90% CI of 129 to 160 total Indiana bat fatalities could occur, assuming a 60% reduction in all bat mortality when blades are feathered below 5.0 m/s." on Page 77 of 167

- Revised Table 5.7 on Page 79 of 167 to reflect delay of Year 1 of the ITP and to be consistent with Table 1.1
- Added footnote to Table 5.7 "Hypothetical, based on 2010 bias correction results; actual within-season thresholds will be based on previous year's bias correction results." on Page 81 of 167
- Revised phrase: "One thousand 21-year periods were simulated based on the adaptive management strategies described above. Assuming a conservative 50% reduction in fatality when blades are feathered below a 5.0 m/s cut-in speed, the mean number of Indiana bat fatalities was 170, with a corresponding 90% CI of 157 to 183 fatalities from estimated 5th and 95th percentiles of simulated results. A 60% reduction in all bat mortality when blades are feathered below 5.0 m/s resulted in an average of 144 Indiana bat fatalities over a 22 year period with a 90% CI of 129 to 160 total Indiana bats (Table 5.8; Figure 5.2)." on Page 82 of 167
- Table 5.8 revised to be consistent with the 21-year permit term on Page 82 of 167
- Revised Figure 5.2 to reflect revised take limit on Page 83 of 167
- Changed phrase "during two critical periods: 1) fall migration, and 2) fall swarming" to "during fall migration/swarming" in statement "...the entrance of the cave will be monitored with night-vision equipment during fall migration/swarming." on Page 84 of 167
- Add statement "Thermal cameras will be placed in the cave and will record bat behavior throughout the night." on Page 84 of 167
- Changed phrase "two full" to "multiple" and changed word "each" to "this" in statement "The cave entrance will be monitored for multiple nights during this critical period." on Page 84 of 167
- Combined sentences "During monitoring, exit counts will be conducted for the first two hours after sunset and flight behavior will be observed for the entire night." and "The timing, frequency and duration of abnormal flight behaviors during egress and ingress (e.g., bats landing on the cave gate or crawling, rather than flying, through the gate) will be recorded using night vision video equipment." to read "During monitoring, the timing, frequency and duration of abnormal flight behaviors during egress and ingress (e.g., bats landing on the cave gate or crawling, rather than flying, through the gate) will be recorded." on Page 85 of 167
- Deleted the statement "All personnel involved in this monitoring must first be approved by the IDNR and the USFWS." on Page 85 of 167

- Added the statement “This work will be conducted by the IDNR, in cooperation with the USFWS.” on Page 85 of 167
- Added word “unauthorized” to statement “The IDNR will ensure the gate is in place and no unauthorized human visitation will be permitted during the winter for the life of the permit (Appendix I).” on Page 85 of 167
- Revised phrase in title of Table 5.9 “To mitigate for the take of Indiana bats, the summer mitigation project will be implemented at least five years prior to the first season summer habitat will be required (approximately Year 10 in the ITP term).” on Page 87 of 167
- Added phrase “by FRWF” to statement “The Surety will be made payable to the independent consultant selected by FRWF, and approved by USFWS, to conduct the monitoring.” on Page 92 of 167
- Deleted phrase “and monitoring activities” from statement “The Permittees have received cost estimates for the cave gating required for the winter habitat mitigation...” on Page 92 of 167
- Deleted the statements “...monitoring the cave entrance during the fall migration and swarming periods during the first year following gate installation to ensure that the newly installed gate is not negatively affecting the flight behavior of bats; and reporting in any year in which a mitigation action or monitoring occurs (see Table 6.2 for funding timing). Costs were estimated based on 2012 costs and increased by 2.9% annually to account for estimated inflation.” on Pages 92 and 98 of 167
- Revised Table 6.1 to reflect delay of Year 1 and 21-year permit term on Page 93 of 167
- Deleted “Wyandotte Cave Entrance Monitoring & Reporting” and associated information from Table 6.1 on Page 94 of 167
- Adjusted the “Winter Mitigation Subtotal” to \$48,399 on Page 94 of 167
- Adjusted the “Total HCP Costs” to \$4,922,180 on Page 97 of 167
- Deleted phrase “and monitoring” from statement “Funding for winter habitat mitigation will be guaranteed by increasing the cash of the Surety...” on Page 98 of 167
- Deleted “Cave Entrance Monitoring & Reporting” and associated information from Table 6.2 on Page 99 of 167
- Revised Table 6.2 to reflect delay of Year 1 and 21-year permit term on Page 99 of 167
- Revised phrase “The cost estimate for funds placed in the Surety for changed circumstances is based on acquisition of 46.8 ha in Year 10 (at an estimated cost of \$8,649/ha [\$3,500/ac]) in 2013 (and adjusted for inflation at 2.9% per year –total of \$558,989) and restoration and maintenance in subsequent years (\$723,765 – see Table 6.1 for breakdown of costs for restoration and maintenance), for a total changed circumstance Surety of \$1,331,153.” on Page 101 of 167
- Revised phrase “Consequently, this equals a total contingency base of \$1,352,449; 5% of which equals \$67,622.” on Page 102 of 167
- Revised Table 6.3 to reflect delay of Year 1 and 21-year permit term on Page 102 of 167
- Added word “completely” to statement “Completely curtailing the WTGs during night time hours of the fall migration season reduces annual availability by approximately 9%,”

which has potential contractual consequences that would result in the project not being economically viable.” on Page 103 of 167

- Added reference to Appendix J on Page 104 of 167
- Added phrase: "Take compliance will be determined by tallying the annual estimated Indiana bat fatality rates to derive a cumulative take that occurred over the 21-year operational life of the Project. If the within-season adaptive management trigger is reached in a given year, annual take for that year that will count towards the life of Project total will be based on both control and non-control turbines (i.e., those that were subject to increased cut-in speeds). Note that this is different than the fatality rate based on only the 20 control turbines that will be used to determine whether or not the end of season adaptive management trigger has been reached (i.e., the 95th percentile has been exceeded and cut-in speeds of all turbines need to be increased by 0.5 m/s in the subsequent year). In other words, the fatality rate based on control and non-control turbines will be used to determine actual take that has occurred in a given year, but only the 20 control turbines will be used as the basis for adaptive management decisions during years when the within season adaptive management trigger has been reached." on Page 106 of 167
- Revised paragraph "Winter habitat mitigation will offset the impacts of 66% of the total estimated take from the Project. Sixty-six percent of the 21-year permit term equates to approximately 14 years, whereas summer habitat mitigation will account for the remaining 34% of the take, which equates to approximately seven years of the 21-year permit term." on Page 106 of 167
- Removed *Myotis velifer* from list of bat species affected by WNS on Page 123 of 167
- Revised WNS population declines to reflect Turner et al. 2011 results on Page 123 of 167
- Changed phrase "have tissue" to "be" in statement "For this changed circumstance to be triggered, the following three conditions must occur: 1) Indiana bats from the hibernaculum must be infected by *Geomyces destructans* confirmed by genetic testing,..." on Page 125 of 167
- Added Turner et al. 2011 to Lit Cited on Page 152 of 167
- Added Appendix J to end of Appendices

Appendix I, Section 1: Comments received on DEIS and DHCP with responses. Comments all include the federal document ID number which was assigned via the online portal, and comments with this number in bold indicate that the PDF of the full/written comment is included in section 2 of this appendix; otherwise the comment was received electronically and is listed in full in this table.

Comment No.	Commenter (Organization)	Comment (Document ID #)	Response
1	Longo, Carissa	<p>The best for bats would be to shut down the turbines during prime bat season, but if the turbines could be feathered this would be an appropriate compromise. They should be feathered till wind speed reaches 6 m/s. This will also protect songbirds and raptors. (FWS-R3-ES-2013-0032-0005)</p>	<p>There is data to support that shutting the turbines off during “prime bat season”, which the Service in this case interprets as the fall migration period, would reduce impacts to bats. Shutting the turbines off entirely (day and night) would likely result in additional protection for diurnal raptors (there have been documented fatalities of raptors during the fall) and could over the long-term result in some additional protection for song birds, which with the exception of the few birds that use the agricultural habitat at FRWF, are most often killed during episodic events of inclement weather. The applicant, however, is not required to completely eliminate take of HCP covered species nor to completely eliminate risk to other species (e.g., non-listed bats, raptors and song birds) The applicant has developed and has committed to implement a bird and bat conservation strategy (BBCS) (final EIS Appendix D). The applicant has also proposed a conservation strategy (avoidance, minimization, and mitigation) that the Service has preliminarily determined meets the maximum extent practicable (MEP) standard relative to Indiana bats, the only species covered by the HCP (see response to Comment 29 for a discussion of MEP). This will require the applicant to feather the turbines up to a cut-in speed of 5.0 m/s at night during the fall migration season for Indiana bats. Based upon monitoring studies conducted at the Fowler Ridge Wind Farm in 2011, it is reasonable to assume that a cut-in speed of 5.0 m/s, feathered, would result in a mortality reduction between 57% and 73%. It is unknown what additional reduction in take might be achieved by implementing a 6.0 m/s rather than a 5.0 m/s cut-in speed. This statistical analysis was not conducted because an independent analysis by the FWS indicated financial and contractual reasons why cut-in speeds higher than 5.0 m/s are not practicable for the applicant.</p>

Comment No.	Commenter (Organization)	Comment (Document ID #)	Response
2	Pennycoff, Darrell	<p>There are bats throughout Indiana but wind energy companies downplay the existence of the endangered Indiana bats. I know for a fact the wind energy companies, JUWI and E-on, are developing wind farms in Tipton and Howard Counties with little regard for the endangered Indiana bat. Their local officials, Mr. Heck and Mr. Andy Melka, say they haven't found any Indiana bats in these counties. But, they'll submit kill counts to the appropriate agencies. Indiana bats are found in this area per Northwestern High School, Howard Co., Indiana. Their 325 ft tall turbine is programmed at night to operate only if wind speed is 11 mph because the bats are fragile flyers. JUWI and E-on don't alter their 500 ft tall turbines to save the Indiana bats! The reckless disregard for an endangered species is very sad. (FWS-R3-ES-2013-0032-0006)</p>	Thank you for your comment.
3	Weth, Ray	<p>I agree with your plan and see no reason why it will not work. We need to take care of our environment. (FWS-R3-ES-2013-0032-0007)</p>	Thank you for your comment.
4	Davis, Elinor	<p>I am in favor of allowing BP Wind Energy to proceed with their plans with the Fowler Ridge Wind Farms in Indiana. (FWS-R3-ES-2013-0032)</p>	Thank you for your comment.

Comment No.	Commenter (Organization)	Comment (Document ID #)	Response
5	Wealing, Dean and Beverly	<p>In 2007 we signed an agreement with Fowler Ridge Wind Farm, Benton County, Indiana, to have 2 windmills placed on our farm. Because of a thesis written by someone at Purdue University, Lafayette, Indiana, the whole project was halted to examine the flight of the Golden Plover. We have waited patiently to receive the windmills and do not believe that birds or bats are environmentally affected by a windmill. If bats can sense insects, in flight, and are able to feed and birds can travel across fields, roads, and around buildings and survive, we do not believe that the windmills are detrimental to either species. Let Fowler Ridge Wind Farm finish the project. (FWS-R3-ES-2013-0032-0010)</p>	Thank you for your comment.
6	Kirsch, Linda	<p>As a landowner, I endorse BP Wind Energy's effort to get the Incidental Take Permit. (FWS-R3-ES-2013-0032-0011)</p>	Thank you for your comment.
7	Record, Charles	<p>We, as land owners of the Fowler Wind farms, support the application by BP Wind Energy for an Incidental Take Permit. The population growth will need more energy in the coming years and what better clean energy can be produced than wind. (FWS-R3-ES-2013-0032-0012)</p>	Thank you for your comment.
8	Benham, Rebecca	<p>As a landowner, I endorse BP Wind Energy to be granted the Incidental Take Permit. (FWS-R3-ES-2013-0013)</p>	Thank you for your comment.
9	Wetli, Don and Sally	<p>We support the the BP Wind Energy Incidental take Permit application as landowners. (FWS-R3-ES-2013-0014)</p>	Thank you for your comment.

Comment No.	Commenter (Organization)	Comment (Document ID #)	Response
10	Puetz, Kevin (Fowler Pest Control, Inc)	We believe you should grant an Incidental Take Permit in this case as we have found minimal wildlife impact in our area. (FWS-R3-ES-2013-0015)	Thank you for your comment.
11	Puetz, Alma (American Turf)	I believe the impact, made by the wind turbines, to the wildlife in our area is minimal. Therefore, I believe you should grant an Incidental Take Permit in this case. (FWS-R3-ES-2013-0016)	Thank you for your comment.
12	Mullett, Kristie	There is no way to know at this time how White Nose Syndrome will affect the Indiana Bat population other than to know the endangered Indiana bat population is severely declining due to the fungus causing WNS, and is not expected to recover anytime soon if at all. Therefore, any incidental take should not be permissible. The incidental take permit should be declined in order to assure the Fowler Ridge Wind Farm stays focused on protecting the Indiana Bat. (FWS-R3-ES-2013-0017)	The Service recognizes the severe threat posed by WNS. In certain populations (in the Northeast Recovery Unit) impacts to Indiana bats have been significant. WNS has now been documented in the Midwest Recovery Unit (MRU) for four years with some impacts to Indiana bats, but not large scale declines. The Service's biological opinion (under Section 7 of the ESA) will determine whether the level of take FRWF is requesting would appreciably reduce the survival or recovery of the Indiana bat in the wild (cause jeopardy). Provided the biological opinion does not determine jeopardy and provided the Service issues an incidental take permit to FRWF, the HCP has a Changed Circumstances section (see Section 8.4.6) focused on WNS. This will help insure that if WNS begins to have a greater effect on Indiana bats in the MRU, the HCP can adapt to those changes. Finally, issuance of an ITP does not preclude the Service from re-initiating consultation should impacts from WNS necessitate that step.
13	Mullett, Kristie	Any fines allowable by law should be assessed for each bat killed. (FWS-R3-ES-2013-0017)	If the Service issues an incidental take permit to FRWF, bats that are killed within the limits of that permit are considered to be taken legally incidental to the operation of the facility. The permitted level is carefully evaluated by the Service during the review of the HCP, the Service's EIS, and in the Service's Section 7 consultation on the federal action of issuing the permit (biological opinion). In addition, the adaptive management component of the HCP has specific triggers and responses designed to preclude FRWF from exceeding the permitted take. Indiana bats killed legally (i.e., within permitted levels) will be mitigated as described in the HCP (see response to Comment 14). If the take limit is exceeded, the Service has recourse to various options including revocation of the permit.

Comment No.	Commenter (Organization)	Comment (Document ID #)	Response
14	Mullett, Kristie	[M]ore stringent incidental take mitigation plans should be required for each 1% decline in the Indiana Bat population to prudently protect the species as it continues to decline in the state from whatever cause. (FWS-R3-ES-2013-0017)	The HCP outlines the steps that FRWF will take to mitigate the impact of the taking (See Section 5.3). The Service must determine that the mitigation fully compensates for the impact of the taking prior to issuing a permit to FRWF. This "impact of the taking" takes into consideration, for example, the effect on the Indiana bat population of killing female bats. In addition, the adaptive management and changed circumstances sections of the HCP address a variety of circumstances that have the potential to affect the HCP over the life of the permit.
15	Mullett, Kristie	We also do not want the Fowler Ridge Wind Farm to set precedent for other wind farms to permit incidental kills of the Indiana Bat. (FWS-R3-ES-2013-0017)	Thank you for your comment. The purpose of Section 10 (a) (1) (b) is to authorize incidental take of listed species.
16	Mullett, Kristie	Shut down all turbines from August 1 to Oct 15 from sunset to sunrise. (FWS-R3-ES-2013-0017)	See response to Comment 1 (and 29) for an explanation of why the HCP does not propose to shut turbines down.
17	Pennycoff, Darrell	I am opposed to the conditional approval for bat killing especially of our endangered Indiana bat. The wind farms are creating a slaughter house which will annihilate birds of prey and bats. The best for bats would be to shut down the turbines from dusk to dawn during prime bat season between July 1 and October 1. (FWS-R3-ES-2013-0018)	See response to Comment 1 (and 29) for an explanation of why the HCP does not propose to shut turbines down. In addition, the best available scientific information indicates that the beginning of the risk period during fall migration for Indiana bats is August 1 not July 1.
18	Watson, Lori	Stop the wind turbines. (FWS-R3-ES-2013-0019)	Thank you for your comment.
19	Garr, Jane	I am asking you to implement the "no-action" alternative for Fowler Ridge. (FWS-R3-ES-2013-0020)	Thank you for your comment. The Service has not made a decision at this point whether an ITP will be issued or if so, for which alternative.
20	Webb, Sherry	US fish and wildlife to implement the No Action alternative for Fowler Ridge. (FWS-R3-ES-2013-0021)	See response to Comment 19.

Comment No.	Commenter (Organization)	Comment (Document ID #)	Response
21	Sondgeroth, Justin J.	It is unfathomable to think a project of this magnitude delivering clean energy to over 220,000 homes could be vulnerable to any type restriction or temporary limited operation. . . . Let us utilize the clean energy producing qualities of this project and encourage them to develop more facilities of this nature being mindful and considerate of the environment and its inhabitants as they are and were with the Fowler Ridge projects. (FWS-R3-ES-2013-0022)	Thank you for your comment.
22	Smith, Norman K.	As a landowner in the BP Fowler Ridge Wind Farms, Indiana, I support BP's efforts and conservation plans. I think they are doing good- and I support their effort for a Incidental Take Permit, and I think it should be granted. (FWS-R3-ES-2013-0023)	Thank you for your comment.
23	Ellis, Marcia	To protect the bats- please turn the turbines off. (FWS-R3-ES-2013-0024)	See response to Comment 1 (and 29) for an explanation of why the HCP does not propose to shut turbines down.
24	Aprill, Grace	Please shut down turbines from July 1 thru Oct 15 from dusk to dawn to protect the endangered Indiana bat. (FWS-R3-ES-2013-0025)	See response to Comment 1 (and 29) for an explanation of why the HCP does not propose to shut turbines down. In addition, the best available scientific information indicates that the beginning of the risk period during fall migration for Indiana bats is August 1 not July 1.
25	Anonymous	Shut the turbines down from July 1 thru Oct 15 from dusk to dawn. (FWS-R3-ES-2013-0026)	See response to Comment 1 (and 29) for an explanation of why the HCP does not propose to shut turbines down. In addition, the best available scientific information indicates that the beginning of the risk period during fall migration for Indiana bats is August 1 not July 1.
26	Hyman, Jeffrey B. (Conservation Law Center [CLC])	The DHCP's proposed alternative does not minimize take of Indiana bats because the DEIS demonstrates that according to the best available science, the 6.5 m/s cut-in speed alternative can reduce take of Indiana bats significantly more than the proposed cut-in speed of 5.0 m/s. (FWS-R3-ES-2013-0027)	The Service does not agree that the proposed cut-in speed of 5.0 m/s with feathering does not minimize take (see response to Comment 29 for a more thorough discussion of this issue in relation to MEP). Furthermore, the DEIS demonstrates that a 6.5 m/s cut-in speed can reduce take of ALL BATS significantly more than the proposed cut-in speed of 5.0 m/s. Your comment provides no support for the statement that a 6.5 m/s cut-in speed can reduce take of Indiana bats <i>significantly</i> more than the proposed cut-in speed of 5.0 m/s. Thus, the FWS can neither concur with nor dispute the comment.

Comment No.	Commenter (Organization)	Comment (Document ID #)	Response
27	Hyman, Jeffrey B. (CLC)	[T]he Applicant's proposed measures outlined in the DHCP are likely to not meet the § 1539(a)(2)(B)(ii) minimization requirement. (FWS-R3-ES-2013-0027)	Thank you for your comment, however, the Service disagrees and believes that the HCP meets the minimization standard. See response to Comment 29.
28	Hyman, Jeffrey B. (CLC)	The DEIS, which presumably reflects the best available science, predicts that a cut-in speed of 6.5 m/s (Alternative 3) will reduce Indiana bat fatalities to less than half of what the fatalities would be with a cut-in speed of 5.0 m/s. . . . the best available science as reflected in the DEIS and the studies of cut-in speed at Fowler Ridge shows that the DHCP's proposed operational alternative does not minimize the take of Indiana bats when compared to the DEIS's Alternative 3. (FWS-R3-ES-2013-0027)	See response to Comment 26.
29	Hyman, Jeffrey B. (CLC)	According to Gerber v. Norton, to approve the Applicant's proposed 5.0 m/s cut-in speed and still satisfy the ITP minimization requirement, the FWS must find, based on substantial evidence in the record, that higher cut-in speeds causing significant further reduction in take are "impracticable." (FWS-R3-ES-2013-0027)	The Service Habitat Conservation Planning (HCP) Handbook states that "The applicant will, to the maximum extent practicable (MEP), minimize and mitigate the impacts of such taking." and that "This finding typically requires consideration of two factors: adequacy of the minimization and mitigation program, and whether it is the maximum that can be practically implemented by the applicant". The HCP Handbook further states "To the extent maximum that the minimization and mitigation program can be demonstrated to provide substantial benefits to the species, less emphasis can be placed on the second factor". The HCP and EIS both provide irrefutable evidence that the proposed feathering of the turbines and implementation of a 5.0 m/s cut-in speed minimizes take of Indiana bats compared to the an un-feathered cut-in speed of 3.5 m/s, which represents the manufacturer's specified cut-in speed, and the speed at which FRWF would operate the turbines were an HCP and ITP not required. The Conservation Law Center (CLC) comments appear to define minimize as reduction to the lowest possible amount. The HCP Handbook employs a definition synonymous with "to lessen" (see the first definition under "minimize" in the Merriam Webster On-line Dictionary (http://www.merriam-webster.com/dictionary/minimize , accessed 06-21-13) "1: to reduce or keep to a minimum". Implementing a 5.0 m/s cut-in speed is estimated to reduce take of Indiana bats by more than 50% based on data collected over a number of years of actual turbine operation at FRWF. The Service maintains that a minimum 50% reduction meets the definition of substantial. Merriam Webster On-line Dictionary (http://www.merriam-webster.com/dictionary/minimize , accessed 06-21-13) "3 b: considerable in quantity: significantly great <earned a substantial wage>". FRWF has also proposed a mitigation plan in coordination with the Service that will offset and fully compensate for

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			<p>the residual take of Indiana bats proposed in the HCP. The information provided by FRWF will allow the Service to evaluate the impact of that level of take prior to issuance of an incidental take permit (ITP) and to determine the adequacy of the conservation plan (avoidance, minimization, and mitigation). The Service made a preliminary determination during HCP development that the minimization and mitigation provide substantial benefits to the species. While this lessens Service reliance on establishing practicability, it did not excuse FRWF from providing evidence to support their contention that the minimization and mitigation proposed is "...the maximum that can be practically implemented by the applicant". This aspect of HCP development involves negotiation between the Service and the applicant that presumes both parties are acting in good faith. It is not within the purview nor is it the policy of the Service to conduct a financial investigation of applicants, but to make them aware of their obligations under Section 10 of the ESA to be forthcoming and truthful in their approach to MEP as in all other parts of the HCP process. In accordance with this, FRWF provided the Service with confidential business information (including their final MEP document), protected under Exemptions 4 of the Freedom Of Information Act (FOIA), which demonstrates financial and contractual reasons why cut-in speeds higher than 5.0 m/s are not practicable. A redacted (under Exemption 4) version of the final MEP document along with relevant email communications were provided to the CLC on 10 June 2013. These are available as Appendix J to the HCP. While conducting its independent analysis over the course of several months, the Service reviewed and requested multiple clarifications and revisions to the final MEP document (see emails in Appendix J) before ultimately reaching a determination that the submission met the standard under Section 10 of the ESA. Although the Service must routinely make decisions based on information that is not provided to the public, versions of seven different MEP drafts that were redacted pursuant to FOIA Exemption 4 were provided to CLC on 24 October 2013 in response to their original FOIA request. In summary, the Service must conduct an independent analysis and determine whether an incidental take permit applicant will minimize and mitigate the impacts of take to the MEP. MEP cannot necessarily be determined based on generalizations from other facilities. It should be evaluated independently for each facility. Each facility must demonstrate what MEP is based upon relative to their unique circumstances. FRWF is unusual in this respect in that the majority of the facility was operational, with contracts and other financial arrangements in place when the HCP was begun.</p>

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30	Hyman, Jeffrey B. (CLC)	The data show that the more effective Alternative 3 is known and available, and its superior effectiveness for protecting Indiana bats is supported by the best available science. Thus, pursuant to §1539(a)(2)(B)(ii), the Applicant must show, and the agency must find, that reducing take further than proposed in Alternative 2 is not “practicable.” (FWS-R3-ES-2013-0027)	See response to Comment 29.
31	Hyman, Jeffrey B. (CLC)	Neither the DHCP nor the DEIS presents or references any substantial evidence in the record that Alternative 3 is impracticable. (FWS-R3-ES-2013-0027)	The USFWS has conducted an independent analysis of confidential business information provided by FRWF that illustrates the financial and contractual reasons why cut-in speeds higher than 5.0 m/s are not practicable. This confidential business information is protected under Exemption 4 of FOIA. Redacted versions of these confidential documents were provided to the CLC and relevant emails and a redacted version of FRWF’s final MEP document are available as Appendix J to the HCP.
32	Hyman, Jeffrey B. (CLC)	The Applicant’s claim that 5.0 m/s cut-in speed is the highest cut-in speed that allows for project viability is suspect and is currently unsupported by substantial evidence. (FWS-R3-ES-2013-0027)	See response to Comment 29.
33	Hyman, Jeffrey B. (CLC)	[T]he Applicant agrees to implement an adaptive management plan that includes raising cut-in speeds in 0.5 m/s increments, if needed, to assure that bat mortality does not exceed what is deemed to be acceptable limits. How is it possible for the Applicant to promise to implement higher cut-in speeds than the proposed 5.0 m/s as part of an adaptive management plan if the Applicant is correct that such higher cut-in speeds would cause the Project to be economically nonviable? This apparent inconsistency begs the question of what the Applicant means by “Project viability.” The DHCP fails to explain this apparent inconsistency. (FWS-R3-ES-2013-0027)	This comment and question requires more thorough consideration of both the expected effectiveness of the MEP cut-in speed and the structure of the adaptive management response. First, because FRWF has multiple years of post-construction data at the site, there is reasonable certainty on their part that the 5.0 m/s cut-in speed will exceed the minimum reductions in take expected. The applicant is confident that implementing the adaptive management response (increased cut-in speeds) will be used rarely if at all. Because turbine cut-in speed is the key component of the conservation plan, however, the Service and FRWF agreed that it is prudent to have adaptive management in place. Second, the adaptive management plan permits FRWF to revert to the 5.0 m/s cut-in speed, as early as, the following migratory season under specific circumstances (see HCP Section 5.4.2) thus minimizing the time the facility would have to operate at a higher cut-in speed. FRWF expects that even if needed, increased cut-in would be in response to a limited-time event and the project would revert to pre-adaptive management levels to begin the next season. Also, any permittee must stay within their authorized take limits or be out of compliance with their ITP. Increasing the cut in speeds would ensure they would remain in compliance with their ITP.

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34	Hyman, Jeffrey B. (CLC)	<p>[P]ublished evidence indicates that operational alternatives with 6.5 m/s cut-in speed are indeed practicable. . . . [P]ublished results indicate that, by applying a cut-in speed of 6.5 m/s to an array of turbines, lost power revenues would be relatively small while bat mortality would be significantly reduced when compared to a 5.0 m/s cut-in speed.</p> <p>(FWS-R3-ES-2013-0027)</p>	See response to Comment 29.
35	Hyman, Jeffrey B. (CLC)	<p>[T]he DHCP does not present or reference any evidence that the DEIS's Alternative 3, or any other alternative that uses a cut-in speed of 6.5 m/s, is economically nonviable or impracticable. It is of course likely that the cost of implementing a 6.5 m/s cut-in speed will be higher than the cost of implementing a 5.0 m/s cut-in speed. But the fact of the increased cost associated with raising the cut-in speed is not alone sufficient to find that the increase in cost is not practicable. Costs must be viewed in relation to the resources and financial ability of the applicant.</p> <p>(FWS-R3-ES-2013-0027)</p>	See responses to Comments 29 and 31.
36	Hyman, Jeffrey B. (CLC)	<p>The Applicant's claim of impracticability is not supported by substantial evidence currently in the record. . . . The non-redacted portion of the [Fowler Ridge Financial Impact] document released to date pursuant to our FOIA request does not present substantial evidence to support the Applicant's claim that 5.0 m/s is the highest cut-in speed that can be practicably achieved.</p> <p>(FWS-R3-ES-2013-0027)</p>	The Service believes the confidential business information provided by FRWF does support their position that 5.0 m/s meets the MEP standard in conjunction with Service assessment of the adequacy of the minimization and mitigation outlined in the HCP (see response to Comment 29).

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37	Hyman, Jeffrey B. (CLC)	<p>The first argument in the released document is that the Fowler Ridge Wind Farm contracts were negotiated when neither the Applicant nor the agency expected to discover the presence of an Indiana bat at the Project site, and so the contracts did not consider the costs of minimization and mitigation under the ESA. If this argument is made in good faith, the failure to foresee the possibility that Indiana bats might migrate through the Project area and the failure to incorporate ESA considerations into the Fowler Ridge contracts is simply unreasonable and possibly legally negligent. (FWS-R3-ES-2013-0027)</p>	<p>The FRWF project development team sited the project out of suitable Indiana bat habitat and consulted with the USFWS, who agreed in a letter dated October 13, 2006 (see Appendix D of the HCP), that there were no records of Indiana bats in Benton County. Indiana bat migration routes at the time were largely unknown and remain so. The project team used best available resources to site the project. In addition, at the time of project development, no Indiana bats had been found as fatalities at wind farms; therefore, there was no reason to include ESA considerations into power purchase contracts.</p>

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38	Hyman, Jeffrey B. (CLC)	<p>The second argument in the released document is that reducing the opportunity for turbines to generate power by raising the cut-in speed “directly reduces income and hence profitability.” Granted, implementing a cut-in speed of 6.5 m/s may reduce the income of the Applicant relative to a 5.0 m/s cut-in speed because the turbine blades are expected to be generating electricity for fewer hours with the higher cut-in speed. In fact, the actual reduction in yearly income associated with using the higher cut-in speed will depend on the observed wind speeds throughout the fall season – specifically, on the number of hours in which wind speeds are between 5.0 m/s and 6.5 m/s. Without considering this and other factors, the expected reduction in income due to implementing Alternative 3 rather than Alternative 2 is speculative. In any event, increased cost does not necessarily imply that a measure is impracticable pursuant to § 1539(a)(2)(B)(ii). (FWS-R3-ES-2013-0027)</p>	<p>When calculating reduction in profitability, the Fowler team did, in fact, use actual wind speed distribution to determine the profitability of multiple cut-in speeds. The following from the MEP negotiations with the Service reflects the process used:</p> <p>[FRWF] based the financial impact resulting from each Alternative on observed wind speeds. As shown in the table below, the average wind speed for August and September is only 5.8 m/s with over 60% of the observed winds occurring during night time hours.</p> <table border="1" data-bbox="919 706 1470 787"> <thead> <tr> <th><u>Month</u></th> <th><u>Average Wind</u></th> <th><u>% Day</u></th> <th><u>% Night</u></th> </tr> </thead> <tbody> <tr> <td>August</td> <td>5.4</td> <td>37%</td> <td>63%</td> </tr> <tr> <td>September</td> <td>6.4</td> <td>39%</td> <td>61%</td> </tr> </tbody> </table> <p>In addition, see response to Comment 29.</p>	<u>Month</u>	<u>Average Wind</u>	<u>% Day</u>	<u>% Night</u>	August	5.4	37%	63%	September	6.4	39%	61%
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39	Hyman, Jeffrey B. (CLC)	<p>The third argument is . . . simply a bare conclusion that a cut-in speed of 5.0 m/s is considered by the Applicant to be “the absolute maximum extent practicable operational change that can be made and still maintain a healthy cash flow, as expected by our investors.” This bare conclusion is stated without any supporting evidence or discussion of what constitutes “healthy” cash flow and why. (FWS-R3-ES-2013-0027)</p>	<p>During discussion with FRWF concerning MEP, FRWF’s Vice President of Asset Management conveyed over the course of multiple meetings that for a business entity to be viable, it is required to manage cash to fund planned operating expenses, unplanned operating expenses, service debt and provide a positive return to investors. Healthy cash flow is that level that allows the business to achieve this objective. Further, financing agreements require the venture to achieve at least a minimum debt service coverage ratio (the ratio of funds available to service debt as compared to the principle and interest payments required under the loan documents). Should debt service coverage ratios fall below prescribed levels (which is often times greater than 1.0), the loan could be in default and the financial viability of the venture would be at risk.</p>												

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40	Hyman, Jeffrey B. (CLC)	<p>[T]he Applicant appears to argue that investor expectation of profit is, or should be, a determining factor in the practicability determination under § 1539(a)(2)(B)(ii). [W]hat rate of return is reasonable to expect and whether practicability depends on investor expectation. . . . [T]he Applicant unreasonably led investors to believe that the Project, built in the state with by far the largest number of recorded maternity colonies and the largest hibernating population of the highly mobile endangered Indiana bat, would incur no costs associated with ESA compliance. (FWS-R3-ES-2013-0027)</p>	See response to Comment 37.
41	Hyman, Jeffrey B. (CLC)	<p>[F]or the agency to make a final finding regarding the practicability of the DEIS's Alternative 3 under § 1539(a)(2)(B)(ii), the agency must support its finding with substantial evidence in the record. Moreover, the public is entitled to fully evaluate any evidence on which the agency relies to make a finding regarding practicability. The agency cannot rely upon evidence that is withheld from the public. In other words, the agency cannot make a finding regarding practicability and then contend that the evidence underlying its finding, and on which it relies, is secret and cannot be disclosed to the public. Therefore, FWS cannot rely on information in the redacted portions of any document released under FOIA to support the agency's ultimate finding on the practicability of Alternative 3. (FWS-R3-ES-2013-0027)</p>	The Service had available the full text of the MEP documents provided by FRWF on which to base its decision. Redacted versions of these confidential documents were provided to the CLC and relevant emails and a redacted version of FRWF's final MEP document are available as Appendix J to the HCP (see response to Comment 31). By necessity, agencies routinely make decisions based on confidential information or other information that is not generally available to the public.

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42	Hyman, Jeffrey B. (CLC)	<p>The Applicant's "commensurate" or "good enough" approach to minimization under 16 U.S.C. § 1539(a)(2)(b)(ii) contravenes the plain meaning of the ESA and is invalid. . . . [T]he DHCP's proposed operational strategy is more effective at reducing take than the manufacturer programmed settings or "normal" operation at 3.5 m/s cut-in speed. But doing some good is not sufficient. The proper comparison for the proposed strategy is instead with a measure that the best available science reasonably indicates is significantly more effective – e.g., Alternative 3. (FWS-R3-ES-2013-0027)</p>	See response to Comment 29.
43	Hyman, Jeffrey B. (CLC)	<p>We incorporate by reference CLC's submitted "Comments on Final EIS and Final HCP for Buckeye wind power project, Champaign County, Ohio, FWS-R3-ES-2012-0036," Document ID: FWS-R3-ES-2012-0036-0099, which discusses this ["good enough" approach to minimization under 16 USC 1539(a)(2)(b)(ii)] in further detail. (FWS-R3-ES-2013-0027)</p>	See response to Comment 29. Neither the applicant nor the Service adopted a "commensurate" or "good enough" approach in the development of the HCP for FRWF.
44	Hyman, Jeffrey B. (CLC)	<p>To the extent that the DHCP also appears to suggest that Alternative 2 is good enough because the take of Indiana bats will be mitigated, such an approach is invalid. Mitigation is selected only after the impact of take is minimized to the maximum extent practicable. (FWS-R3-ES-2013-0027)</p>	See response to Comment 29.

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45	Hyman, Jeffrey B. (CLC)	The DHCP states it will mitigate the level of take that is “unavoidable.” Table 5.5 in the DEIS shows, however, that by implementing Alternative 3 (i.e., 6.5 m/s cut-in speed) rather than the proposed Alternative 2 (i.e., 5.0 m/s cut-in speed), the Project can avoid the take of 107 Indiana bats (Alternative 2’s 193 bats minus Alternative 3’s 86 bats). The proposed level of take is thus avoidable. (FWS-R3-ES-2013-0027)	See response to Comment 29.
46	Hyman, Jeffrey B. (CLC)	The DHCP seems to suggest that the proposed Alternative 2 is sufficient in part because cut-in speed will be increased in 0.5 m/s increments if the proposed take limit is exceeded. To the extent that the DHCP suggests that the Applicant can rely on adaptive management to satisfy the minimization requirement in § 1539(a)(2)(B)(ii), such an approach is invalid. (FWS-R3-ES-2013-0027)	See response to Comment 29. The adaptive management strategy is designed to ensure that FRWF does not exceed a specified level of take in any one year and that they remain in compliance with the ITP.
47	Hyman, Jeffrey B. (CLC)	[T]he take limit that serves as the threshold or trigger for implementing an adaptive increase in cut-in speed will itself be the result of selecting an inferior non-minimizing option. By the time the selected threshold is exceeded, more Indiana bats will already have been killed than would have been killed under the true minimizing alternative. (FWS-R3-ES-2013-0027)	See response to Comment 29.

Comment No.	Commenter (Organization)	Comment (Document ID #)	Response
48	Hyman, Jeffrey B. (CLC)	The HCP must instead implement what the current best available science reasonably indicates is the most effective yet practicable alternative – which is likely to be Alternative 3 or another similar alternative – and work from there. If monitoring or experimentation then shows that cut-in speeds lower than 6.5 m/s can produce a statistically equivalent reduction in take, this new information might then be used to amend the minimizing strategy in the future. This is the proper use of adaptive management in the ITP/HCP context. (FWS-R3-ES-2013-0027)	See response to Comment 29.
49	Hyman, Jeffrey B. (CLC)	FWS's Preferred Alternative should be Alternative 3, the "6.5 m/s Cut-In Speed Alternative." (FWS-R3-ES-2013-0027)	Thank you for your comment, the Service will identify a Preferred Alternative in the final EIS.
50	Hyman, Jeffrey B. (CLC)	[T]he DHCP fails to explain how it will be possible to simultaneously minimize incidental take of Indiana bats to the maximum extent practicable and maximize power output from the facility. . . maximizing output of the Project seems to preclude, or at least conflict with, minimizing take of Indiana bats to the maximum extent practicable. (FWS-R3-ES-2013-0027)	See response to Comment 29.

Comment No.	Commenter (Organization)	Comment (Document ID #)	Response
51	Hyman, Jeffrey B. (CLC)	<p>The DHCP's Goal 5 appears to claim that optimizing electrical output of the Project will have a positive effect on climate change and reduce risk to Indiana bats. Such a claim is not credible. Nothing in the DHCP or the DEIS shows or even suggests that increased power output from the Fowler Ridge facility would reduce GHG emissions from other energy sources. Such a claim would require that one megawatt of coal-produced power will be taken permanently offline in exchange for each megawatt of power produced by the Project. Absolutely no evidence is presented that this will occur. Thus, this causal link is just speculation.</p> <p>Even if the aforementioned offset of coal-fired power generation did occur for the Project, nothing referenced in the DHCP or DEIS shows that such an offset would slow or ameliorate environmental changes that may occur in Indiana or the Midwest region due to GHG emissions. No evidence is presented of a relationship between reducing GHG emissions in Indiana specifically and any climate-related habitat changes in recovery units of the Indiana bat.</p> <p>(FWS-R3-ES-2013-0027)</p>	<p>While it is true that we know of no data showing a direct relationship between the benefits of wind energy facilities to recovery units of the Indiana bat, it is reasonable to maintain that energy generated by wind energy facilities will necessarily offset energy generated from other sources that produce carbon emissions. Indiana has a voluntary clean emissions portfolio standard program for which energy produced at FRWF would qualify. In addition, 550 MW of the power and associated renewable energy credits (RECS) generated by the FRWF are sold under long term contracts to utilities with service territories in Ohio, Michigan and Virginia, states that have either mandated or voluntary renewable energy portfolio standards. Ohio requires that 25 percent of energy sold by electric distribution utilities come from alternative energy sources, Michigan has a renewable energy standard of 10 percent and Virginia has a voluntary energy renewable goal of 15 percent. There is evidence that carbon emissions contribute to global climate change, which has been identified as a potential risk to Indiana bats (see USFWS 2007, Indiana Bat Draft Recovery Plan). Therefore, increased output of wind energy promotes the health of Indiana bat populations by reducing the potentially harmful effects of emissions associated with other energy generation technologies.</p>

Comment No.	Commenter (Organization)	Comment (Document ID #)	Response
52	Hyman, Jeffrey B. (CLC)	<p>[A]ccording to FWS’s own research and publications, current climate and species modeling cannot support a species-specific analysis to assess the impacts of greenhouse gas emitters on species take, and by the same reasoning, the models cannot support a species-specific analysis to assess the benefits of decreased GHG emissions attributable to actions such as wind power facilities. The court in <i>In re Polar Bear Endangered Species Act Listing and § 4(d) Rule Litigation</i>, 818 F.Supp.2d 214 (D.D.C. 2011), agreed with FWS’s position that the best available science does not allow the agency to draw a causal link between greenhouse gas emissions from a particular facility and take of a species. (FWS-R3-ES-2013-0027)</p>	See response to Comment 51.
53	Hyman, Jeffrey B. (CLC)	<p>[T]he long time scale of the relationship between GHG emissions and climate change effects casts serious doubt on the ability to rely on the “wind power effect” at a particular wind facility to minimize or mitigate take or to benefit Indiana bats. (FWS-R3-ES-2013-0027)</p>	See response to Comment 51.

Comment No.	Commenter (Organization)	Comment (Document ID #)	Response
54	Hyman, Jeffrey B. (CLC)	<p>What the Applicant has done in Goal 5 is to use the tenuous relationship between an aspirational renewable energy policy and potential future climate change benefits to justify allowing increased take of Indiana bats from a specific facility simply because that facility is consistent with that energy policy. There is absolutely no evidence that the Project itself will benefit Indiana bats. It is arbitrary and capricious to allow an actual cause of take of a listed species to increase based on such unsupported claims. FWS knows that Indiana Bats are at risk of harm from the Fowler Ridge turbines. FWS does not know, however, that the bats would benefit from maximizing the output of the facility.</p> <p>(FWS-R3-ES-2013-0027)</p>	See response to Comment 51.

Comment No.	Commenter (Organization)	Comment (Document ID #)	Response
55	Hyman, Jeffrey B. (CLC)	<p>The BBCS describes a risk assessment for Whooping cranes [and] adopts a conclusion that the Project's overall risk to Whooping cranes is low for two reasons: first, because the population size is small, and second, because the quality of habitat within the Project area is marginal. The adoption of this conclusion . . . is unwarranted. (FWS-R3-ES-2013-0027)</p>	<p>The conclusion in the BBCS that the risk is insignificant is not arbitrary. The Service agrees that a risk analysis, as conducted in the BBCS (Johnson and Tidhar 2007) would normally evaluate the consequences of even a low-probability event occurring if the consequences would be important. The consequences to the species of the loss of animals of a non-essential experimental population (NEP), however, is by definition inconsequential. Moreover, the birds have limited protection under the ESA. The NEP is small (about 106 animals), which contributes to the small probability of a whooping crane being killed at FRWF. That probability is further reduced because for whooping cranes to be vulnerable they first have to migrate through the area and suitable habitat must be present for them to stop (cranes fly well above power lines and the rotor swept zone except when landing and taking off). There is suitable nightly stopover wetland habitat on and around FRWF, but it is limited and of marginal quality for whooping cranes. Since the reintroduction project began in 2001, the Service has found only one record documenting a whooping crane in Benton County. The Whooping Crane Management Plan 2006 (http://dnr.wi.gov/topic/endangeredresources/documents/wc_mgmt_plan.pdf) states that collision with power lines is a significant cause of mortality to migrating cranes. It documents 41 fatalities or serious injuries attributed to power lines among all populations in the last 50 years (17 or 41% of these, however, were from the non-migratory Florida population). Only two fatalities have been documented from the eastern migratory population. FRWF infrastructure is comparatively minor (approximately 35 miles of above-ground transmission lines) which in combination with factors previously discussed also reduces the probability of a collision. There have been no documented collisions of whooping cranes with FRWF power lines (or with any power lines in Benton County, Indiana). While the Service disagrees with the assertion that the conclusion in the BBCS is arbitrary, we recognize that the probability of whooping crane collision with power lines or turbines is very low, but not zero. Moreover, although there is no prohibition on incidental take of the NEP, the Service agrees that an adaptive management component to the BBCS is prudent. The Service has worked with FRWF to develop an adaptive management strategy (see BBCS, Section 5.3.4).</p>

Comment No.	Commenter (Organization)	Comment (Document ID #)	Response
56	Hyman, Jeffrey B. (CLC)	<p>The error in concluding that the risk to Whooping cranes is low because the population size is small is that such use of the term “risk” considers only one half of the risk equation. To compare risk across different species and to manage that risk, the agency must consider not only the probability of exposure but also the consequences of exposure.⁵⁸ To narrow a comparative risk assessment to the probability of exposure alone leaves out much valuable information. Because the consequences of losing members of a rare species are relatively severe, the overall risk due to even a low-probability event is properly perceived as relatively high. Low-probability but high-consequence events require a different response than low-probability but relatively inconsequential events in terms of prevention and mitigation. Thus, a valid assessment of the overall risk that the Project poses to Whooping cranes must consider both probability of collision and the consequences of such take.</p> <p>(FWS-R3-ES-2013-0027)</p>	See response to Comment 55.

Comment No.	Commenter (Organization)	Comment (Document ID #)	Response
57	Hyman, Jeffrey B. (CLC)	<p>The DEIS and BBCS indicate that the main threat of the Project to Whooping cranes is collision with power lines and turbines, particularly during periods of inclement weather. . . . The BBCS also recognizes that “marking power lines reduces collision rates.” Yet despite such information on existing threats of collision and potential remedies, the DEIS and BBCS have decided, arbitrarily, that the risk of collision of Whooping cranes with Project infrastructure is so insignificant that no minimization, mitigation, or adaptive management measures need be considered or evaluated. The BBCS does not attempt to reduce or mitigate the threat of Whooping crane collision with power lines or turbines, either by marking overhead transmission line or, as suggested by Indiana DNR, by possibly shutting down during migratory peaks. (FWS-R3-ES-2013-0027)</p>	See response to Comment 55 and Comment 91.
58	Hyman, Jeffrey B. (CLC)	<p>The MBTA requires at least that above ground power lines associated with the project be marked to reduce collisions by raptors and whooping cranes. (FWS-R3-ES-2013-0027)</p>	The Service is not aware of any requirement in the MBTA to mark above-ground power lines.
59	Hyman, Jeffrey B. (CLC)	<p>The DEIS and BBCS fail to seriously consider marking of Project power lines and the reduction in mortality that marking may produce, even though the Project is known to kill raptors and may pose a significant threat to migrating Whooping cranes. This failure is likely to lead to continued violations of the MBTA. (FWS-R3-ES-2013-0027)</p>	The applicant has made a good faith effort to address the expected minor risk to whooping cranes, raptors, and other migratory birds through development of a BBCS (final EIS, Appendix D). The Service, however, agrees that amending the BBCS with an adaptive management section designed to address potential impacts to whooping cranes is a prudent measure, which has been included in the version attached to the FEIS.

Comment No.	Commenter (Organization)	Comment (Document ID #)	Response
60	Hyman, Jeffrey B. (CLC)	<p>The draft documents under review will facilitate continued violations of MBTA § 703 by the Project. The FWS Office of Law Enforcement focuses its resources on investigating and prosecuting those who take migratory birds without identifying and implementing reasonable and effective measures to avoid the take of species protected under the MBTA and BGEPA. Courts have found MBTA violations in such circumstances. Marking of overhead transmission lines associated with the Project is a reasonable and effective measure to minimize and mitigate the take of Whooping cranes, raptors, and other bird species, yet this measure has not been incorporated at Fowler Ridge or seriously considered in the DEIS. The MBTA and NEPA require at least that such violations of MBTA § 703 and such measures be given serious consideration. (FWS-R3-ES-2013-0027)</p>	<p>A BBCS was developed in conjunction with the EIS (final EIS, Appendix D). FRWF used guidance from the Wind Turbine Guidelines Federal Advisory Committee, APLIC, U.S. Fish and Wildlife Service, and the IDNR particularly in project planning and construction to minimize potential impacts to migratory birds. As Reducing Avian Collisions with Power Lines: State of the Art 2012 (APLIC 2012) points out, marking power lines is only one aspect of avoiding avian collisions (see Chapters 4 and 5 and Figure 5.1). The following discussion of power lines is taken from the BBCS:</p> <p>The design of the transmission line follows spacing recommendations included in the 2006 Avian Power Line Interaction Committee (APLIC) <i>Suggested Practices for Avian Protection on Power Lines, the State of the Art in 2006</i> (APLIC 2006).” As a best practice, the amount of aboveground collection and transmission lines were minimized across all Project sites. Six miles (9.7 km) of 345 kV overhead transmission line connect Phase II turbines to the Phase I substation. This line was built to the spacing guidelines recommended in the Avian Power line Interaction Committee’s <i>Suggested Practices for Avian Protection on Power Lines, the State of the Art in 2006</i> (APLIC 2006). Sixty-two miles (99.8 km) of 34.5 kV collection line were buried within the Phase II site. There is no aboveground collection within the Phase I, II, and III Project areas. Collection lines crossing streams were directionally bored to minimize impact to streambeds. These best practices will also be utilized in designing and constructing the collection and transmission lines for Phases IV. The Service, however, believes it is prudent to add an adaptive management strategy for whooping cranes, which is included in the version of the BBCS in the final EIS.</p>
61	Hyman, Jeffrey B. (CLC)	<p>FWS’s authorization of the Project’s collision threats without readily available minimization measures, absent issuance of an MBTA incidental take permit or a special use permit, would itself not be in accordance with law under § 703 of the MBTA. (FWS-R3-ES-2013-0027)</p>	<p>The Service is not authorizing the "Project's collision threats", however, the Service may authorize take of Indiana bats through an ITP. There is currently no permit available under MBTA to address take of migratory birds. The applicant has a BBCS, Appendix D of the EIS, which documents FRWF’s good faith efforts to minimize impacts to migratory birds (see response to Comment 60).</p>

Comment No.	Commenter (Organization)	Comment (Document ID #)	Response
62	Hyman, Jeffrey B. (CLC)	The BBCS contains an adaptive management plan for raptors, Golden plovers, Bald eagles, and birds in general . . . however, no actions or measures would be triggered should a Whooping crane be killed by Project infrastructure. This failure to plan for Whooping crane fatalities is an irresponsible omission under the MBTA. Given this omission, any harm to Whooping cranes by the Project would be a clear and particularly egregious violation of the MBTA. (FWS-R3-ES-2013-0027)	See response to Comment 55.
63	Billeck, Margaret (Rural Investment LLC)	Rural Investment LLC supports the application for the Indiana Bat Habitat Conservation Plan. (FWS-R3-ES-2013-0028)	Thank you for your comment.
64	Groen, Ludwig	We fully support the efforts of the Fowler Ridge Wind Farm to save wildlife in the area of their windmills. . . . We believe this plan should be approved in order for the additional windmills to be built (FWS-R3-ES-2013-0029)	Thank you for your comment.
65	Budreau, Dale	I believe you should grant the incidental take permit for the Fowler Ridge Wind Farm. (FWS-R3-ES-2013-0030)	Thank you for your comment.
66	Anonymous	I think it is important to protect the Indiana bat and that the wind mills if possible should run at 6.5 meters at night when the bat is active. (FWS-R3-ES-2013-0031)	See responses to Comments 26 and 29.
67	Anonymous	I also like the idea of Fowler Ridge preserving and restoring the maternity habitat of the bat. (FWS-R3-ES-2013-0031)	Thank you for your comment.
68	Bales, Ronald	I am in favor of the plan. (FWS-R3-ES-2013-0032)	Thank you for your comment.

Comment No.	Commenter (Organization)	Comment (Document ID #)	Response
69	Shank, Keith (Illinois Department of Natural Resources [IL DNR])	<p>The Illinois Department of Natural Resources believes the Fowler Ridge ITP DEIS does not adequately describe or evaluate potential adverse impacts related to wind turbine operations. Throughout Part 5 of the DEIS, impacts to humans and natural resources associated with wind turbine operations are described as insignificant or absent, with the exception of collision or barotrauma risk to birds and bats. A bias toward this view is explicitly stated in Section 5.5.3.1: “Terrestrial wildlife mortality is not expected to occur as a result of Project operations under any of the four alternatives because the risk of turbine collision is confined to the rotor-swept zone of each turbine.”</p> <p>(FWS-R3-ES-2013-0033)</p>	<p>The Service appreciates the Illinois Department of Natural Resources comments, which bring some of the less obvious potential impacts from wind energy transmission to the attention of the public. The Service response revolves around two facts. First, the best available information is not sufficient to indicate that other effects associated with wind turbines (e.g., electromagnetic fields, shadow flicker, acoustic vibrations) function as stressors to wildlife using FRWF. Second, there is extremely limited habitat for either terrestrial or aquatic species in FRWF. Were FRWF situated within important habitat for native species, it might be appropriate to give additional consideration to adaptive management or even avoidance and minimization measures. The Service agrees that the effects discussed in the comment might be appropriate for further research, either basic or applied research at an appropriate facility.</p>
70	Shank, Keith (IL DNR)	<p>The Department believes there are many avenues for natural resources to be adversely affected by turbine operation . . . Because 93% of the land area of this facility is in row-crop agriculture, the DEIS dismisses it as of low-value to wildlife. [M]ost of Indiana . . . is devoted to row-crop production. It is the most common and abundant habitat available to wildlife in this region; any activity which renders wide areas of it less hospitable to wildlife should be viewed with concern. The DEIS should address these potential effects.</p> <p>(FWS-R3-ES-2013-0033)</p>	<p>We agree that much of [northern and central] Indiana is devoted to intensive agriculture. Intensive row-crop agriculture provides little habitat for native species, although it can be important in conjunction with natural vegetation. While permanent change to a more intensive use (e.g., agriculture to suburban) has potential long-term consequences to wildlife associated with it, wind farms are defined as temporary facilities. They also do not cause similar fundamental and essentially irreversible changes to the landscape (e.g., large areas of pavement). We do not agree that best available data indicates wind farms make existing agricultural habitats significantly less suitable for native species that use those habitats.</p>

Comment No.	Commenter (Organization)	Comment (Document ID #)	Response
71	Shank, Keith (IL DNR)	<p>[P]otential adverse effects to wildlife and other natural resources may be related to the propagation of magnetic fields (around turbine nacelles, current conversion transformers at turbine tower bases, and around buried collection power lines); shadow flicker (both solar and lunar); visibility; noise; acoustic vibrations through soils and waters; aviation safety lighting, and thermal conduction in soils. While few of these characteristics of turbine operations have the potential to result in direct mortality of fish and wildlife, which is relatively easy to detect and measure, they have the potential to displace or exclude fish and wildlife from occupied habitats and to stress populations by making feeding and reproduction more difficult. Such effects are far more subtle than mortality and it is much more difficult to assign their cause to a specific aspect or combination of aspects of turbine operation.</p> <p>(FWS-R3-ES-2013-0033)</p>	See response to Comment 69.
72	Shank, Keith (IL DNR)	<p>A large wind generation project places a profusion of magnetic fields across the landscape, associated both with turbines and the collection power lines, most of which are buried only four feet below ground rather than the standard 20-40 feet above-ground of overhead power lines. Because magnetic field strength is directly related to distance, the potential for sub-lethal magnetic field effects to a wide array of terrestrial and aquatic organisms which are normally not exposed are greatly enhanced.</p> <p>(FWS-R3-ES-2013-0033)</p>	See response to Comment 69.

Comment No.	Commenter (Organization)	Comment (Document ID #)	Response
73	Shank, Keith (IL DNR)	<p>it is a long accepted principle that moving objects affect wildlife, and there appears no persuasive reason to presume the visible movement associated with wind turbines, whether rotating or flashing, does not have similar effects. The current document contains an extensive discussion of apparent displacement effects to the American Golden Plover, though assigning no particular cause. Visibility may be a major factor in this displacement. (FWS-R3-ES-2013-0033)</p>	<p>This is possible; however, the Service believes displacement of American golden plover is unlikely because of the abundance of stopover habitat in the area. In addition, the American golden plover IBA is not directly impacted by FRWF (see sections 4.5.2.2 and 5.5.3.4 of the EIS).</p>
74	Shank, Keith (IL DNR)	<p>Species which are particularly sensitive regarding aerial predators may be stressed by flicker, and it may disrupt the thermo-regulatory activities of reptiles and amphibians for whom basking is an essential activity. For nocturnal animals with excellent low-light vision, the strobe effect of lunar flicker may be as distressing as that of daytime flicker to diurnal species. Where multiple turbines are present, flicker may be present during most of the normal activity period. Anecdotal accounts exist of effects to domestic livestock, particularly horses. Flicker has a strong potential to displace wildlife. (FWS-R3-ES-2013-0033)</p>	<p>See response to Comment 69.</p>

Comment No.	Commenter (Organization)	Comment (Document ID #)	Response
75	Shank, Keith (IL DNR)	<p>A number of European studies have shown adverse effects of highway noise on breeding birds, where birdsongs must be modified to be heard but are less effective in attracting mates. Francis, et al. (2012)ii documented the effects of pipeline compressor noise in New Mexico (equivalent to highway noise at 500 feet) that resulted in high populations of rodents near compressors because predators (hawks and owls) could not hear their prey, with secondary effects on plant reproduction due to elevated seed predation by rodents. Elevated turbine noise over broad areas might produce similar effects, displacing predators which are less successful due to noise. This may be a primary reason Northern Harriers are rarely observed after wind farm construction though present beforehand.</p> <p>(FWS-R3-ES-2013-0033)</p>	<p>It is known that background noise requires birds to sing louder during the breeding season, however, we have no data suggesting wind turbines, which anecdotally appear to have a much different noise signature than highways, affect bird communication. In addition, there are few songbird species (horned lark is an exception) that use FRWF for mating/breeding habitat. Most diurnal raptors are sight hunters, although northern harriers hunt by sight and sound. Northern harriers may be less vulnerable to wind turbine collision because they typically hunt near the ground. Although northern harriers have been documented at FRWF, habitat within the boundaries of the project was limited even before turbine construction.</p>

Comment No.	Commenter (Organization)	Comment (Document ID #)	Response
76	Shank, Keith (IL DNR)	<p>Studies in the United Kingdom have documented detectable vibration due to wind turbines through bedrock at distances up to 10 kilometers (six miles), although those studies had no biological component. Many soil animals are very sensitive to vibration, while most aquatic organisms are also attuned to vibrations in the water, to either detect prey or to avoid predators. Soil organisms, such as earthworms, play a vital role in soil tilth and aeration; their displacement or reduced activity can affect soil fertility and plant productivity. Sustained noise in aquatic environments may pose a barrier to migratory movements in streams, or prevent detection of food. The exclusion or displacement of host fish could be problematic for mussel populations, since fish are an essential part of the mussel reproductive cycle. The result could be reduced biodiversity in stream systems which are already compromised by human activities.</p> <p>(FWS-R3-ES-2013-0033)</p>	See response to Comment 69.
77	Shank, Keith (IL DNR)	<p>Any deviation from “normal” soil temperatures for the season will have effects on soil organisms, positive or negative. At a depth of four feet, variations in surface temperature [related to thermal conductivity/resistivity in buried power lines] are unlikely to be detected by humans, but this is not necessarily so for animals with thermal sensitivities, especially reptiles.</p> <p>(FWS-R3-ES-2013-0033)</p>	See response to Comment 69.

Comment No.	Commenter (Organization)	Comment (Document ID #)	Response
78	Shank, Keith (IL DNR)	If [Endangered or Threatened] species are “documented” in Benton County, then the information on their last known locations should be available from the Indiana DNR. It is relevant whether any of these locations lie within the project area or external buffer. Those within the project may indeed be affected. (FWS-R3-ES-2013-0033)	See response to Comment 69. Phase IV will not result in ground disturbance of the railroad ROWs where Franklin’s ground squirrel or plains pocket gopher are historically known to occur.
79	Shank, Keith (IL DNR)	The fact that occupied habitat may be marginal is not a reason to further degrade or destroy it; many state-listed endangered species largely persist in marginal habitat because primary habitat has been degraded or destroyed. Such marginal habitat often provides key linkages between otherwise isolated populations which are important for gene flow. Marginal habitat is not necessarily unimportant habitat. (FWS-R3-ES-2013-0033)	By marginal habitat, it is assumed that the responder means the remnant wetlands, prairies, and woodlots within the FRWF project area. These are small sites isolated by large agriculture landscapes and the Service has concluded that they have limited value even for connectivity. We agree that these sites have some value to wildlife. FRWF has avoided siting turbines in or immediately adjacent to these remnants and we do not agree that the data available suggest FRWF will further degrade their value.
80	Shank, Keith (IL DNR)	The cavalier dismissal of these state-listed species without any effort to ascertain their locations or numbers when the project in question will occupy most of the County is unconscionable. [Franklin’s ground squirrel] could well occupy portions of the project area, but it is easy to miss. (FWS-R3-ES-2013-0033)	The Service disagrees with the characterization that state-listed species have been dismissed from consideration “cavalierly”. The Heritage Database was reviewed as a part of this process, and the Service followed-up with INDR for the most recent version (Appendix C) of the Database. Most of the records for the FRWF site are decades old. The Service agrees, however, that there are likely some state-listed species still using railroad ROW and the handful of small areas of natural vegetation remaining within and adjacent to FRWF. The Service does not expect state-listed species, including Franklin’s ground squirrel to be present outside of these areas. The best available science does not support the conclusion that the operation of wind turbines (i.e., shadow flicker and acoustic vibration) adversely affects these species. Phase IV will not result in ground disturbance of the railroad ROWs where Franklin’s ground squirrel or plains pocket gopher are historically known to occur. It is unlikely that construction of Phase IV will affect any state listed species (suitable habitat will be avoided if at all possible).

Comment No.	Commenter (Organization)	Comment (Document ID #)	Response
81	Shank, Keith (IL DNR)	The Franklin's Ground Squirrel is also a good example of a species which may be adversely affected by visible motion, flicker, and acoustic vibration due to wind turbine operations. An inability to fly should not disqualify it or other terrestrial and aquatic species from due consideration in the DEIS. (FWS-R3-ES-2013-0033)	See response to Comment 80.
82	Shank, Keith (IL DNR)	An appropriate discussion of the potential effects and resource impacts might still support a conclusion there are no adverse effects to be considered, or that adverse effects will not significant, but the document would then address the affected environment and potential environmental consequences more completely without having to rely on unsupported assumptions. (FWS-R3-ES-2013-0033)	We do not know what "unsupported assumptions" the responder is referencing in the comment (also see responses to Comment 69).

Comment No.	Commenter (Organization)	Comment (Document ID #)	Response
83	Westlake, Kenneth (United States Environmental Protection Agency [USEPA])	<p>[T]he Draft EIS does not indicate: 1) the number of temporary stream crossings proposed; 2) the linear feet of both temporary and permanent stream impacts; or 3) whether a Clean Water Act Section 401 Water Quality Certification will be required and obtained from the Indiana Department of Environmental Management, a Construction Floodway Permit will be required and retained from Indiana Department of Natural Resources, and a Nationwide or Regional General Permit will be required and obtained, from the U.S. Army Corps of Engineers for project-related crossings of Waters of the United States.....The Final EIS should discuss whether any permanent stream crossings will be required, and measures taken to obtain regulatory approvals for both temporary and permanent impacts to waters of the U.S. and Waters of the State. The Final EIS should discuss permits to be obtained, restoration measures to be taken, and associated mitigation (if applicable). Additionally, the Draft EIS does not indicate if any stream crossings would occur at intermittent or ephemeral streams. EPA recommends the Final EIS clarify this point. In the event that intermittent or ephemeral streams will be crossed, EPA supports the use of directional boring of underground utilities to avoid direct stream impacts. In the event that any intermittent or ephemeral streams have active flow at the time of construction, EPA recommends that a commitment be made to directionally bore, rather than open-trench through open stream flow. This commitment should be made in the Final EIS.</p> <p>(FWS-R3-ES-2013-0034)</p>	<p>The wetlands and streams, including temporary streams in the Phase IV project area, occur within an intensively farmed matrix and are generally disturbed and of low quality. We do not expect significant impacts to water resources from construction of Phase IV. In addition, directional boring will be implemented at all collector line crossings for regulated streams and no fill would be placed below the ordinary high water mark at any stream crossing (see Section 5.4.2.1). Therefore, the Service does not anticipate construction of Phase IV triggering any permits or authorizations. Prior to construction, however, the applicant will consult with appropriate state and federal agencies regarding any permit requirements or other authorizations that may be required (see final EIS Table 1.2). There is no requirement that the applicant avoid impacts to non-regulated streams.</p>

Comment No.	Commenter (Organization)	Comment (Document ID #)	Response
84	Westlake, Kenneth (USEPA)	<p>[I]nformation regarding financial assurance for decommissioning and reclamation was not included in the Draft EIS. Additionally, information regarding financial assurance for mitigation, monitoring, and the adaptive management portions of the HCP was not discussed in the Draft EIS. EPA recommends the Final EIS include a discussion focused on USFWS' regulatory authority under the ESA to require financial assurance from an applicant to meet their responsibilities as stated in the HCP. (FWS-R3-ES-2013-0034)</p>	<p>Information regarding financial assurances has been included in the final EIS (see Section 3.1.2).</p>
85	Westlake, Kenneth (USEPA)	<p>The Geology and Soils Section of the Draft EIS . . . Revegetation will involve reseeded with native vegetation or other suitable seed mix based on land use and mulching to encourage growth. We recommend referring to the Indiana Department of Natural Resources' Native Plant List for Northern Indiana to prepare a list of plants suitable for use during re-vegetation. Please include this list as an appendix to the Final EIS. (FWS-R3-ES-2013-0034)</p>	<p>Information regarding native plants typically used in Indiana for revegetation has been included in the final EIS (see Section 5.1.2).</p>

Comment No.	Commenter (Organization)	Comment (Document ID #)	Response
86	Westlake, Kenneth (USEPA)	<p>We recommend the Final EIS contain typical BMPs that could be implemented to reduce impacts, particularly during construction and decommissioning. Expanding on the idea of BMPs to include a list of typical measures (i.e., cover construction materials and stockpiled soils, cover concrete batch materials, minimize disturbed area, and other dust abatement techniques) would provide reviewers with a better understanding of the actions that could be employed to reduce impacts. EPA recommends the Final EIS include examples of BMPs typically used for this type of project. (FWS-R3-ES-2013-0034)</p>	<p>FRWF has provided a standard list of BMPs that will be implemented to reduce construction and decommissioning impacts at the FRWF (see final EIS, Appendix E).</p>
87	Westlake, Kenneth (USEPA)	<p>EPA recommends the Final EIS be revised to indicate that any and all materials from the construction and/or the decommissioning phase will be removed from the project site, recycled, or disposed of appropriately. (FWS-R3-ES-2013-0034)</p>	<p>The Service has revised Section 1.2.2.8 of the final EIS to state: "The applicant has agreed that all materials from the construction process will be removed from the project site, recycled, or disposed of appropriately" and Section 1.2.4.1 to state "The applicant has agreed that all materials from the decommissioning process will be removed from the project site, recycled, or disposed of appropriately", also please see section 2.1.2.8 in HCP where this is discussed.</p>

Comment No.	Commenter (Organization)	Comment (Document ID #)	Response
88	Westlake, Kenneth (USEPA)	<p>According to The Ornithological Council, white strobe lighting typically results in the lowest mortality rate [on MET towers]. Seven permanent, un-guyed MET towers, fitted with red strobe lighting, are located with the FRWF project area, and a maximum of three additional permanent, unguyed MET towers will be constructed for Phase IV, and presumably fitted with red strobe lighting. We recommend the use of white strobe lighting on MET towers be discussed with the Federal Aviation Administration (FAA) to reduce avian mortality in the project area. If the use of white strobe lighting is not permissible, we recommend the Final EIS include the rationale behind the continued use of red strobe lighting at FRWF. (FWS-R3-ES-2013-0034)</p>	<p>The Service does not know what Ornithological Council reference is being cited. The only reference we located was a 1999 Issue Brief entitled <i>Deadly Spires of the Night</i>, which we could not find on-line. If this is what is being relied upon for the comment, it is outdated. The Service does not consider the met towers a significant risk to birds. The towers are comparatively short and they are un-guyed. Estimates are that 70% of bird fatalities are caused by the 1,000 tallest towers in the USA (Scientific American <http://www.scientificamerican.com/podcast/episode.cfm?id=communication-towers-pluck-birds-13-01-29>). In addition, studies have shown that eliminating the red steady-burning L-810 lights provides a 50% - 70% reduction in bird fatalities (Manville, A.M. II 2009). All of the FRWF towers are fitted with strobe lights. Gehring et al. (2009), found no statistically significant difference between red and white strobe lighting's effect on bird fatalities. The best available data suggests that taller, guyed towers with steady-burning (not strobe) lights are the greatest risk to migrating birds.</p>
89	Westlake, Kenneth (USEPA)	<p>According to the Draft EIS, . . . Bird collisions with all types of structures are episodic events involving large numbers of one or a few bird species during migration. These have been recorded at multiple locations, and are associated with lighting that attracts or disorients birds. [W]e recommend use of motion-detector lights that will shut off automatically after a pre-determined amount of time when no human movement is detected. (FWS-R3-ES-2013-0034)</p>	<p>Phases I-III use down-shields on lights and the applicant has committed to turning off lights in turbine nacelles when not needed for safety or compliance. The importance of light management for migratory birds will be incorporated into the applicant's training procedures for on-site staff. The applicant has agreed to implement the same measures at Phase IV.</p>

Comment No.	Commenter (Organization)	Comment (Document ID #)	Response
90	Westlake, Kenneth (USEPA)	We recommend the Final EIS indicate whether this [Final Eagle Conservation Plan] Guidance has been finalized and whether all relevant Guidance changes have been included in a revised bald and golden eagle management plan included in the Bird and Bat Conservation Strategy for the proposed project. (FWS-R3-ES-2013-0034)	Information regarding the final BGEPA guidance has been included in the final EIS (see Section 1.3.4).
91	Westlake, Kenneth (USEPA)	According to the Draft EIS, the potential for adverse effects to whooping cranes, particularly from turbines, cannot be reduced to discountable or insignificant levels. . . . Even though the overall risk to whooping cranes at FRWF was determined to be low, based on the small total population size of the flock (~100 cranes) and the marginal quality of the habitat with the proposed project area, the Draft EIS indicated that marking power lines reduces collision rates. . . . [W]e recommend the Final EIS indicate whether the applicant will mark power lines to reduce adverse effects to whooping cranes using the project area during stopover periods when whooping cranes fly between foraging and roosting sites at sunset and sunrise. (FWS-R3-ES-2013-0034)	As of now, there are no data to suggest whooping cranes are roosting or foraging in proximity to FRWF's tie-in lines. Although the Service does not recognize a threat to the NEP of whooping cranes at this time, the Service has worked with FRWF to develop an adaptive management amendment to the BBCS. The adaptive management plan will result in a risk assessment of the tie-in lines should specific triggers related to whooping cranes occur. See response to Comment 55. The assessment will use the best available science and will include and evaluation of birds that might be flying between foraging and roosting grounds.
92	Buffington, Matt (IDNR)	I think we would like to see as much summer habitat protection/restoration as possible as it can benefit numerous bat species. Also, we weren't sure if all the mitigation numbers for bats were taking WNS into account or not. (received via e-mail, PDF attached at end of section 2 of this appendix)	As part of the mitigation package to fully compensate for the impact of taking Indiana bats, FRWF would have to implement summer habitat mitigation in addition to the IDNR coordinated gating of Wyandotte Cave. The amount of summer mitigation that would be required is approximately 250 acres. The Service is keenly aware of the potential for WNS to affect Indiana bats over the life of an ITP. WNS is figured into the changed circumstances section of the HCP and there are strategies in place to address possible impacts over the life of the permit to both summer and winter mitigation sites.

Comment No.	Commenter (Organization)	Comment (Document ID #)	Response
93	Buffington, Matt (IDNR)	In the FEIS, you may want to correct Table 1.2. The DNR, Division of Water, is in charge of the Flood Control Act, with Fish and Wildlife doing a review of the potential impacts to fish, wildlife, and plants for those permits. (received via e-mail, PDF attached)	The EIS has been revised (see final EIS Section 1.3.14)
94	Buffington, Matt (IDNR)	According to the State Land Office website, there are state-owned properties in Benton Co. Not parks, but still public land. http://www.in.gov/idoa/StateLandOffice/ . This is correctly stated at 4.5.2.7 but the section about public use lands (4.2.2.7) suggests there is no state owned land. So technically correct but perhaps a slight misleading at first when the document states there is no state owned land in the project limits. (received via e-mail, PDF attached)	The EIS has been revised (see final EIS Section 4.2.2.7)
95	Buffington, Matt (IDNR)	Under 4.4.3.3 and 5.4.2.3 Floodplain, not all floodplains are mapped. Just because a FEMA map does not show a floodplain does not mean one does not exist, or that actions could not affect floodwater attenuation. Every stream has a floodplain and anything with a floodplain can be altered to affect flooding conditions. (received via e-mail, PDF attached)	The EIS has been revised (see final EIS Section 5.4.2.3).

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APR 25 2013

COMMENT FORM

Div. of Policy & Dir. Mgt.

Name Ray Kethi

Address: 3932 W 3005 Fowler, In 47944

Telephone Number: 265 884 1732

3

I agree with your plan, I see no reason why it will not work. The need to take care of our environment.

Comments may be submitted at this public meeting, or by one of the following methods:

- 1) Electronically – Go to the *Federal eRulemaking Portal*: <http://www.regulations.gov>. In the Search box, enter FWS-R3-ES-2013-0032, which is the docket number for this notice. Then, on the left side of the next screen, under the Document Type heading, click on the notices link to submit a comment.
- 2) Hard Copy – Submit by U.S. Mail or hand delivery to: Public Comments Processing, Attention: FWS-R3-ES-2013-0032; Division of Policy and Directives Management; U.S. Fish and Wildlife Service; 4401 North Fairfax Drive, MS 2042-PDM; Arlington, VA 22203.

Please submit comments by June 4, 2013

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MAY 28 2013
Div. of Policy & Dir. Mgt.

8840 N 125 W
Boswell, Indiana 47921

U.S. Fish & Wildlife Service
4401 N. Fairfax Drive
MS 2042-PDM
Arlington, VA 22203

May 14, 2013

Attention: Public Comments Processing
Division of Policy & Directives Management

Thank you for your concern in relationship to the wildlife and the preservation of defined species. Let us use wisdom and understanding in all of our endeavors.

21 As a local resident of the area, I am perplexed at the thought of the curtailment or restriction of such a well planned green energy operation. When I think of all the thousands and thousands of manhours invested in the Fowler Ridge Wind Energy project, the miles upon miles traveled delivering components for this magnificent installation, it is unfathomable to think a project of this magnitude delivering clean energy to over 220,000 homes could be vulnerable to any type restriction or temporary limited operation. It was constructed to produce electricity.

The thousands of acres of corn, wheat & soybeans sacrificed to build the facility for the betterment of mankind. The well planned safety rules and practices implemented and followed during construction and during maintenance of these facilities are commendable.

21 This wind farm located in the heart of American agriculture was and is constructed for the betterment of the human race and to help meet the energy needs of this and future generations. The investment in research, engineering, planning and construction is huge. Why tamper with progress? Requests were made, permits were applied for and granted, this project is capturing wind energy, clean energy for the production of electricity for people. Let us utilize the clean energy producing qualities of this project and encourage them to develop more facilities of this nature being mindful and considerate of the environment and its inhabitants as they are and were with The Fowler Ridge projects.

What is the effect of herbicides, insecticides, pesticides on avian and bat wildlife?
How many Indiana bats or birds have found their demise through the use of automobiles, trucks, airplanes and other motor equipment, and why was this never an issue?

In our society the use of electricity is essential to our way of life. It is good clean energy without the effects of pollutants of land, water or air. Wind farms are helping meet the increased demands of clean energy. Let us continue in the pursuit of meeting those demands.

Sincerely yours,



Justin J. Sondgeroth

MAY 21

To Whom it may concern -

As a land owner in the B P FOWLER Ridge Wind Farms, Indiana. I support B P's efforts and Conservation Plans - I think they are doing good - and I support their ~~effort~~ effort for a Incidental Take Permit, and think it should be granted -

Sincerely,

Norman R Smith
805 E 5th St,
Fowler, IN 47944

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MAY 28 2013
Div. of Policy & Dir. Mgt.

May 24, 2013

Go Protect the bats - Please turn the
turbines off.

Marcia Ellis

RECEIVED

MAY 31 2013

Div. of Policy & Dir. Mgt.



116 South Indiana • Bloomington, Indiana 47408

phone: 812-856-0229 • fax: 812-855-1828

admin@conservationlawcenter.org • www.conservationlawcenter.org

June 3, 2013

Public Comments Processing

Attn: FWS-R3-ES-2013-0032

Division of Policy and Directives Management

U.S. Fish and Wildlife Service

4401 N. Fairfax Drive, MS 2042-PDM

Arlington, VA 22203

Electronic Portal submission: receipt verification requested

Federal eRulemaking Portal: <http://www.regulations.gov>.

Re: Comments on Draft EIS, Draft HCP/ITP, and Draft IA for Fowler Ridge wind energy facilities: FWS-R3-ES-2013-0032 [published at 78 Fed. Reg. 20690 (April 5, 2013)]

Dear Mr. Pruitt:

We offer these timely submitted comments on the Draft National Environmental Policy Act Environmental Impact Statement (“DEIS”), including Appendix D to the DEIS (the Bird and Bat Conservation Strategy, “BBCS”), and the Draft Habitat Conservation Plan (“DHCP”) for the Fowler Ridge Wind Farm (“Fowler Ridge” or “Project”) in Benton County, Indiana. The Conservation Law Center is a nonprofit public interest law firm located in Bloomington, Indiana. Our mission is to help clients solve natural resources conservation problems, to work to improve the body of conservation law and policy, and to educate law students in our clinical program operated in agreement with Indiana University Maurer School of Law.

We have organized our comments into three parts: (1) ITP/HCP Approval and Issuance Criteria; (2) HCP Goals and Objectives; and (3) Whooping Crane and Raptor Protection and Risk Assessment. Within each part, we provide one or more comments on the DEIS, BBCS, DHCP, or any combination of these that applies.

ISSUE 1 ITP/HCP APPROVAL AND ISSUANCE CRITERIA

COMMENT 1.1. **THE DHCP'S PROPOSED ALTERNATIVE DOES NOT MINIMIZE TAKE OF INDIANA BATS BECAUSE THE DEIS DEMONSTRATES THAT ACCORDING TO THE BEST AVAILABLE SCIENCE, THE 6.5 M/S CUT-IN SPEED ALTERNATIVE CAN REDUCE TAKE OF INDIANA BATS SIGNIFICANTLY MORE THAN THE PROPOSED CUT-IN SPEED OF 5.0 M/S.**

26

To issue an ITP, the FWS must find, among other things, that the Project's applicant "will, to the maximum extent practicable, minimize and mitigate the impacts of such taking" of listed species. 16 U.S.C. § 1539(a)(2)(B)(ii).¹ This criterion contains both a minimization requirement and a mitigation requirement. For the reasons discussed below, the Applicant's proposed measures outlined in the DHCP are likely to not meet the § 1539(a)(2)(B)(ii) minimization requirement.

27

The DHCP proposes to implement operational Alternative 2 from the DEIS, which calls for a cut-in speed of 5.0 m/s, with feathering, during the fall migration of Indiana bats.²

5.2.2 Minimization through Project Operations

The Permittees will minimize potential take of Indiana bats from operations of the Project by implementing seasonal turbine operational adjustments. For the term of the ITP, the Permittees will: 1) raise the turbine cut-in speed to 5.0 m/s during fall migration at the FRWF (as discussed in Chapter 5 and documented in Appendices A and D, Indiana bat fatalities are not expected during spring migration, summer, or after October 15); and 2) adjust the turbine operational parameters so that the rotation of the turbine rotors below cut-in wind speed is minimized (the blades are "feathered"). Increasing cut-in speed and feathering of turbine blades below cut-in wind speed will be implemented on a nightly basis from sunset to sunrise, adjusted for sunset/sunrise times weekly, from August 1 to October 15 annually.

* * *The only exception to feathering turbines below a cut-in speed of 5.0 m/s would occur on nights when temperatures are below 15.5°C (60° F) from August 1 to October 15. Turbines will be allowed to operate at full capacity below these temperatures.

¹ See also 50 C.F.R. § 17.22(b)(2)(i)(B) (essentially repeating the statutory language: "The Director . . . shall issue the permit if he or she finds that: . . . (B) The applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such takings"); FWS, *Habitat Conservation Planning and Incidental Take Permit Processing Handbook* (Nov. 4, 1996), pp. 7-3 to 7-4 ("HCP/ITP Handbook"); FWS, *Indiana Bat Section 7 and Section 10 Guidance for Wind Energy Projects, Revised* (Oct. 26, 2011) ("Wind Energy Project Guidance"), p. 47.

² Fowler Ridge Wind Farm, Draft Indiana Bat Habitat Conservation Plan (March 2013) ("DHCP"), pp. 52–53.

The DEIS analyzes three action alternatives, all of which involve operational curtailment at some specified cut-in speed, with feathering below that speed to stop blade rotation: Alternative 1 – 3.5 m/s Cut-in Speed; Alternative 2 – 5.0 m/s Cut-in Speed (Applicant’s Proposed Action); and Alternative 3 – 6.5 m/s Cut-In Speed.³

Under Alternative 1, the turbine blades are “feathered” when the wind speed is below 3.5 m/s (3.5 Meters per Second = 7.83 Miles per Hour) so that there is no or little movement of the blades at those wind speeds. When the 5 to 10 minute rolling average of wind speed at a turbine is above 3.5 m/s, the blades of that turbine are allowed to rotate. This protocol would be implemented nightly from sunset to sunrise (adjusted weekly to track the change in those times) from August 1 to October 15 annually.⁴

Under Alternative 2, the turbine blades are “feathered” when the wind speed is below 5.0 m/s (5 Meters per Second = 11.18 Miles per Hour). When the wind speed increases to above 5.0 m/s the blades are allowed to rotate. This protocol would be implemented nightly from sunset to sunrise (adjusted weekly to track the change in those times) from August 1 to October 15 annually. In addition, on nights when the 5 to 10 minute rolling average temperature drops below 60° F at a turbine, that turbine would be allowed to operate at full capacity.⁵ Alternative 2 is the Applicant’s proposed action in the DHCP.

Under Alternative 3, the turbine blades are “feathered” when the wind speed is below 6.5 m/s (6.5 Meters per Second = 14.54 Miles per Hour). Otherwise, Alternative 3 appears to be identical to Alt. 2 with respect to the operational protocol.⁶

The DEIS compares the environmental consequences of these three action alternatives for the Indiana bat. The DEIS’s Tables 5.4 and 5.5, which summarize the predicted Project-related fatalities of Indiana bats, are reproduced below.⁷ The DEIS, which presumably reflects the best available science, predicts that a cut-in speed of 6.5 m/s (Alternative 3) will reduce Indiana bat fatalities to less than half of what the fatalities would be with a cut-in speed of 5.0 m/s

28

³ USFWS, *Draft Environmental Impact Statement for Proposed Habitat Conservation Plan and Incidental Take Permit, Fowler Ridge Wind Farm* (March 2013) (“DEIS”), Table 5.1, p. 90.

⁴ DEIS, p. 23.

⁵ DEIS, pp. 24–25.

⁶ DEIS, pp. 26–27.

⁷ DEIS, pp. 127–128.

(Alternative 2, Applicant’s proposal). The lack of overlap between the confidence intervals in Table 5.4 shows that this difference in predicted fatalities is highly statistically significant. Table 5.5 shows that over the proposed 22-year life of the Project, implementing a 5.0 m/s cut-in speed, as proposed by the Applicant, would cause 196 deaths of endangered Indiana bats, whereas a 6.5 m/s cut-in speed is predicted to reduce that take to 86 Indiana bats.

Table 5.4 Predicted Indiana Bat Fatalities per Year by EIS Alternative

Alternative	Indiana Bat Take			
	Bats/Turbine/Year (fall only)	355 Turbines ³ (bats/yr) (90% CI)	449 Turbines ⁴ (bats/yr) (90% CI)	94 Turbines ⁵ (bats/yr) (90% CI)
No Operational Adjustment Scenario ¹	0.048 ⁵⁶	17.0 (14.0-21.1)	21.6 (18.0-26.9)	4.5 (3.8-5.6)
No Action Alternative ²	0	0	0	0
3.5m/s Cut-In Speed (Feathered) Alternative	0.031	10.9 (9.0-13.5)	13.9 (11.5-17.2)	2.9 (2.4-3.6)
5.0m/s Cut-In Speed Alternative (Applicant Proposed Action)	0.024	8.6 (7.0-10.6)	10.9 (8.8-13.4)	2.3 (1.9-2.8)
6.5m/s Cut-In Speed Alternative	0.011	3.9 (3.1-4.6)	4.9 (4.0-5.9)	1.0 (0.8-1.2)

¹No curtailment, no feathering below 3.5 m/s wind speed. Not an alternative under consideration. Included only for comparison purposes.
²No nightly operation during the fall migration period (August 1-October 15).
³Phases I - III in operation; 2 year of the 22-year life of the Project
⁴Phases I - IV in operation; 15 years of the 22-year life of the Project
⁵Phase IV only in operation; 5 years of the 22-year life of the Project

Table 5.5 Predicted Indiana Bat Fatalities over the 22-Year Life of Fowler Ridge Wind Farm by EIS Alternative

Alternative	Indiana Bat Take ³
No Operational Adjustment Scenario ¹	381
No Action Alternative ²	0
3.5m/s Cut-In Speed (Feathered) Alternative	245
5.0m/s Cut-In Speed Alternative (Applicant Proposed Action)	193
6.5m/s Cut-In Speed Alternative	86

¹No curtailment, no feathering below 3.5 m/s wind speed. Not an alternative under consideration. Included only for comparison purposes.
²No nightly operation during the fall migration period (August 1-October 15).
³Take = (total bats killed per year Phases I - III (355 turbines) x 2 years) + (total bats killed per year Phases I - IV (449 turbines) x 15 years) + (total bats killed per year Phase IV x 5 years)

The DEIS's estimates of the differential effectiveness of the 5.0 m/s and 6.5 m/s cut-in speeds is supported by studies of cut-in speed discussed in the DHCP, in particular the 2010 and 2011 Fowler Ridge studies.⁸ In the 2010 study of cut-in speeds at Fowler Ridge,⁹ from 1 August 2010 to 15 October 2010, 27 turbines were randomly assigned on a weekly basis to 1 of 3 experimental groups: fully operational, cut-in speed of 5.0 m/s, or cut-in speed of 6.5 m/s. An additional 9 turbines were fully operational for the entire survey period. Curtailment at 5.0 m/s was found to reduce mortality by about 50% (90% CI = 37% to 61%), and curtailment at 6.5 m/s was found to reduce mortality by about 79%¹⁰ (90% CI = 71% to 85%). This difference is statistically significant.¹¹ The 2010 study did not use feathering, however, and the turbines with raised cut-in speeds had blade tips rotating at 50 mph or faster prior to reaching cut-in speeds, albeit at a reduced rate compared to control turbines.

Good et al. conducted a follow-up study of cut-in speed at Fowler Ridge in 2011.¹² The primary objective of the 2011 research was to measure the effectiveness of feathering turbine blades prior to reaching cut-in speeds for reducing bat fatality rates. In this 2011 follow-up study, nine turbines were randomly selected from a sample of 36 cleared plots as a "control" sample and were assigned no treatments for the duration of the study. Treatments for blade feathering and a second set of "control" turbines were rotated on a nightly basis between 168 turbines, with 42 turbines assigned to each group. Unfortunately, this study did not use the same treatments as the 2010 study. The treatments in 2011 included turbines with blades feathered below 5.5 m/s, below 4.5 m/s, and below 3.5 m/s, and a control group with no feathering. The results of this 2011 feathering experiment show that further reductions in bat fatality rates were uniformly realized by feathering the blades below cut-in speeds, compared to simply raising cut-in speeds and allowing the blades to seek the wind. Bat casualty rates were decreased by about 36%, 57%, and 73% in 2011 when blades were feathered at 3.5 m/s, 4.5 m/s, and 5.5 m/s,

⁸ See Arnett et al., *Effectiveness of Changing Wind Turbine Cut-In Speed to Reduce Bat Fatalities at Wind Facilities: A Final Report Submitted to the Bats and Wind Energy Cooperative* (May 2010); Good et al., *Bat Monitoring Studies at the Fowler Ridge Wind Energy Facility, Benton County, Indiana, April 13 – October 15, 2010: A report prepared for Fowler Ridge Wind Farm* (Jan. 28, 2011); see also Good et al., *Bat Monitoring Studies at the Fowler Ridge Wind Farm, Benton County, Indiana, April 1 – October 31, 2011: A Report Prepared for Fowler Ridge Wind Farm* (Jan. 31, 2012).

⁹ Good et al. (2011).

¹⁰ The actual result is 78.6%, but Good et al. do not round up when explaining the results. See Good et al. (2011), p. 39.

¹¹ See Good et al. (2011), p. 39.

¹² Good et al. (2012).

respectively, compared to control turbines. The following Table 1 summarizes the results of the 2010 and 2011 Fowler Ridge studies.

Table 1. Results of Fowler Ridge studies of cut-in speed: mean reduction in bat fatalities with change in cut-in speed only (2010) and with change in cut-in speed plus feathering of blades (2011), relative to “normal” operation (3.5 m/s cut-in speed with no feathering).

Cut-In Speed	2010 Fowler Ridge Study (without feathering)	2011 Fowler Ridge Study (with feathering)
3.5 m/s	Normal Operation	36%
4.5 m/s	No treatment	57%
5.0 m/s	50%	No treatment
5.5 m/s	No treatment	73%
6.5 m/s	79%	No treatment

These results of the Fowler Ridge studies reasonably lead to two conclusions. First, the best available science for this Project indicates that a cut-in speed of 6.5 m/s can significantly reduce turbine-related mortality of bats, and by implication, Indiana bats, compared to a cut-in speed of 5.0 m/s. Second, although the 2011 study failed to include 6.5 m/s with feathering as a treatment (which would have allowed direct comparison with the results of that cut-in speed in the 2010 study), a reasonable conclusion is that feathering below 6.5 m/s cut-in speed may reduce mortality even further than the 79% found in 2010. In fact, these results suggest a hypothesis that if turbines at Fowler Ridge are feathered below a wind speed of 6.5 m/s or above, Indiana bat fatalities might be nearly eliminated. There is simply no reason to believe that, had feathering been used in the 2010 Fowler Ridge study, the statistically significant difference between the 5.0 m/s and 6.5 m/s treatments would have disappeared or that feathering below 6.5 m/s would not have produced a bump in effectiveness similar to the increases observed at other cut-in speeds.

Finally, the parameters used in the DHCP’s adaptive management simulation also supports the conclusion that cut-in speeds higher than the proposed 5.0 m/s are more effective at reducing take of Indiana bats. The simulation assumes an additional 10% mean reduction in fatality for every 0.5 m/s increase in cut-in speed that occurs during the adaptive management

process.¹³ Although this positive relationship between mortality reduction and cut-in speed is based on the 2011 Fowler Ridge study, which tested 3.5, 4.5, and 5.5 m/s cut-in speeds, the existing data provide no reason to expect that this positive relationship would suddenly disappear at a cut-in speed of 6.5 m/s.

28

Accordingly, the best available science as reflected in the DEIS and the studies of cut-in speed at Fowler Ridge shows that the DHCP's proposed operational alternative does not minimize the take of Indiana bats when compared to the DEIS's Alternative 3.

COMMENT 1.2. ACCORDING TO GERBER V. NORTON, TO APPROVE THE APPLICANT'S PROPOSED 5.0 M/S CUT-IN SPEED AND STILL SATISFY THE ITP MINIMIZATION REQUIREMENT, THE FWS MUST FIND, BASED ON SUBSTANTIAL EVIDENCE IN THE RECORD, THAT HIGHER CUT-IN SPEEDS CAUSING SIGNIFICANT FURTHER REDUCTION IN TAKE ARE "IMPRACTICABLE."

29

The Applicant must minimize the impact of take to the maximum extent practicable in order to obtain an ITP. Choosing a minimization plan that is reasonably likely to be *less* effective at reducing take than a known and available alternative plan will fail to satisfy the minimization requirement at 16 U.S.C. § 1539(a)(2)(B)(ii), *unless* the Applicant can show that a more effective alternative is "impracticable."¹⁴

We have explained in Comment 1.1 that the data presented in the DEIS and the supporting studies of the effectiveness of raising cut-in speed for avoiding bat mortality reasonably indicate that the DEIS's Alternative 3 – *i.e.*, feathering below a cut-in speed of 6.5 m/s – is more likely to minimize the take of Indiana bats than the proposed Alternative 2 (feathering below a cut-in speed of 5.0 m/s) or Alternative 1 (feathering below a cut-in speed of 3.5 m/s). Thus, the Applicant's proposed curtailment plan – DEIS's Alternative 2 – is *not* the alternative that minimizes take of Indiana bats. This is not a situation where it is unclear how to

¹³ DHCP, p. 81 ("This percent increase was selected based on the 2011 FRWF study of feathered turbines in which three cut-in speeds with turbine blades feathered below cut-in were tested. Percent decreases of 35.6, 58.5 and 75.2 were observed for 3.5, 4.5, and 5.5 m/s cut-in speeds, respectively. Thus, a 22.9% and 16.6% increase in fatality reduction from normal operation was observed with increases of 1.0 m/s in cut-in speed. This approximates to an average increase in fatality reduction of 10% per every 0.5 m/s increase in cut-in speed.").

¹⁴ See USFWS, *HCP/ITP Handbook*, pp. 7-3 to 7-4.

30 minimize take. The data show that the more effective Alternative 3 is known and available, and its superior effectiveness for protecting Indiana bats is supported by the best available science. Thus, pursuant to § 1539(a)(2)(B)(ii), the Applicant must show, and the agency must find, that reducing take further than proposed in Alternative 2 is not “practicable.”

The controlling judicial opinion on this matter is *Gerber v. Norton*, 294 F.3d 173 (D.C. Cir. 2002). In *Gerber v. Norton*, FWS issued an ITP to a residential developer to take an endangered fox squirrel. The Environmental Assessment had presented a “Reduced Impact Alternative” to the applicant’s proposed plan that “would reduce the likelihood of take” of fox squirrels by relocating the development’s access road “away from the [squirrels’] forested edge habitat,” but the applicant rejected the more effective alternative.¹⁵ The *Gerber* Court found that the agency’s permit issuance violated the ESA. The Court stated that “before issuing the permit, the Service was obliged to find independently that no practicable alternative to [the applicant’s] development plan would minimize the taking of fox squirrels.” The Court then concluded, “Given the Service’s finding that moving the road would reduce the taking of squirrels, the agency could not have issued the permit consistent with [the ESA] without making a finding that the Reduced Impact Alternative was impracticable.”¹⁶ *Gerber v. Norton* teaches that the agency cannot approve an ITP/HCP for a purported minimization strategy that the best available science reasonably indicates is significantly less effective at reducing take than an alternative, *unless* the more effective alternative is found to be impracticable to achieve.

31 The Fowler Ridge DHCP appears poised to commit the same error considered in *Gerber v. Norton*. Neither the DHCP nor the DEIS presents or references any substantial evidence in the record that Alternative 3 is impracticable.¹⁷ The Applicant thus proposes a less effective alternative without presenting the necessary evidence that this alternative represents the highest reduction in take that can be practically achieved when compared to other alternatives. FWS’s approval of the DHCP’s proposed minimization plan would require a supported finding by the agency that the DEIS’s Alternative 3 curtailment plan, and other alternatives with similar cut-in speeds, are impracticable.

¹⁵ Id. at 177–78.

¹⁶ Id. at 185.

¹⁷ See also Comment 1.3 below.

COMMENT 1.3. THE APPLICANT’S CLAIM THAT 5.0 M/S CUT-IN SPEED IS THE HIGHEST CUT-IN SPEED THAT ALLOWS FOR PROJECT VIABILITY IS SUSPECT AND IS CURRENTLY UNSUPPORTED BY SUBSTANTIAL EVIDENCE.

32

A. The Applicant’s Claim of Impracticability Is Suspect.

The Applicant claims that its proposed alternative of 5.0 m/s cut-in speed “represents the maximum extent to which [the Applicant] can reduce turbine operations and maintain Project viability[.]”¹⁸ This claim is highly suspect for several reasons.

33

First, the Applicant agrees to implement an adaptive management plan that includes raising cut-in speeds in 0.5 m/s increments, if needed, to assure that bat mortality does not exceed what is deemed to be acceptable limits.¹⁹ How is it possible for the Applicant to promise to implement higher cut-in speeds than the proposed 5.0 m/s as part of an adaptive management plan if the Applicant is correct that such higher cut-in speeds would cause the Project to be economically nonviable? This apparent inconsistency begs the question of what the Applicant means by “Project viability.” The DHCP fails to explain this apparent inconsistency.

34

Second, published evidence indicates that operational alternatives with 6.5 m/s cut-in speed are indeed practicable. Arnett et al. studied the power loss and financial costs associated with raising cut-in speeds and found that although power loss was three times higher for the 6.5 m/s cut-in speed as compared with the 5.0 m/s cut-in speed, “[l]ost power production resulting from [their] experimental treatments was markedly low when considering total annual productivity[.]”²⁰ The authors had earlier concluded in their report on the Casselman study that if the 6.5 m/s cut-in speed had been applied to all 23 turbines during the study period, the lost output would have amounted to only 1% of total annual output.²¹ Similar percentage results can be expected in both larger and smaller arrays of turbines. These published results indicate that, by applying a cut-in speed of 6.5 m/s to an array of turbines, lost power revenues would be relatively small while bat mortality would be significantly reduced when compared to a 5.0 m/s cut-in speed.

34

¹⁸ DEIS, Appendix D, p. 36.

¹⁹ DHCP, pp. 73–77; DEIS, Appendix D, pp. 37, 43–48.

²⁰ Arnett et al., *Altering Turbine Speed Reduces Bat Mortality at Wind Energy Facilities*, *Frontiers in Ecology and the Environment* 9 (2011), pp. 213–214.

²¹ Arnett et al., *Effectiveness of Changing Wind Turbine Cut-in Speed to Reduce Bat Fatalities at Wind Facilities – 2008 Annual Report* (2009), p. 3, available at http://www.batsandwind.org/pdf/Curtailment_2008_Final_Report.pdf.

35 Third, the DHCP does not present or reference any evidence that the DEIS’s Alternative 3, or any other alternative that uses a cut-in speed of 6.5 m/s, is economically nonviable or impracticable. It is of course likely that the cost of implementing a 6.5 m/s cut-in speed will be higher than the cost of implementing a 5.0 m/s cut-in speed. But the fact of the increased cost associated with raising the cut-in speed is not alone sufficient to find that the increase in cost is not practicable. Costs must be viewed in relation to the resources and financial ability of the applicant.

36 **B. The Applicant’s Claim of Impracticability Is Not Supported By Substantial Evidence Currently in the Record.**
in part

As mentioned above, the Applicant claims in Appendix D of the DEIS that the proposed Alternative 2, with a 5.0 m/s cut-in speed, “represents the maximum extent to which [the Applicant] can reduce turbine operations and maintain Project viability, *as demonstrated in the confidential financial document associated with the HCP.*”²² This bare claim of economic nonviability by the Applicant relates directly to the “practicability” standard in the § 1539(a)(2)(B)(ii) criterion for agency approval of the ITP/HCP.

On April 23, 2013, we requested from FWS the referenced “financial document,” as well as any other information regarding the practicability of the DEIS’s Alternative 3, pursuant to FOIA. As of the date of submission of these comments, the non-redacted portion of the single document released by FWS presents four arguments, none of which constitutes substantial evidence to support the claim that 5.0 m/s is the highest cut-in speed that can be practicably achieved by the Applicant.

37 The first argument in the released document is that the Fowler Ridge Wind Farm contracts were negotiated when neither the Applicant nor the agency expected to discover the presence of an Indiana bat at the Project site, and so the contracts did not consider the costs of minimization and mitigation under the ESA.²³ If this argument is made in good faith, the failure to foresee the possibility that Indiana bats might migrate through the Project area and the failure to incorporate ESA considerations into the Fowler Ridge contracts is simply unreasonable and

²² DEIS, Appendix D, p. 36 (emphasis added).

²³ See, e.g., Fowler Ridge Wind Farm, *Fowler Ridge Wind Farm Financial Impact of Minimization Options Prepared as Supplemental Information in Support of Maximum Extent Practicable in the Proposed HCP Application* (February 8, 2012), pp. 1–2.

37 possibly legally negligent. Sources of information available before the Fowler Ridge Project initiated operation indicated that the presence of the Indiana bat in northern Indiana around and in Benton County, at least during the fall migration period, was possible if not likely.²⁴ The Applicant took a business risk that no ESA listed species would be affected by the Project and the Applicant was wrong.

38 The second argument in the released document is that reducing the opportunity for turbines to generate power by raising the cut-in speed “directly reduces income and hence profitability.”²⁵ Granted, implementing a cut-in speed of 6.5 m/s *may* reduce the income of the Applicant relative to a 5.0 m/s cut-in speed because the turbine blades are expected to be generating electricity for fewer hours with the higher cut-in speed. In fact, the actual reduction in yearly income associated with using the higher cut-in speed will depend on the observed wind speeds throughout the fall season – specifically, on the number of hours in which wind speeds are between 5.0 m/s and 6.5 m/s. Without considering this and other factors, the expected reduction in income due to implementing Alternative 3 rather than Alternative 2 is speculative. In any event, increased cost does not necessarily imply that a measure is impracticable pursuant to § 1539(a)(2)(B)(ii).

39 The third argument is really not an argument – it is simply a bare conclusion that a cut-in speed of 5.0 m/s is considered by the Applicant to be “the absolute maximum extent practicable operational change that can be made and still maintain a healthy cash flow, as expected by our investors.”²⁶ This bare conclusion is stated without any supporting evidence or discussion of what constitutes “healthy” cash flow and why.

40 Finally, the Applicant appears to argue that investor expectation of profit is, or should be, a determining factor in the practicability determination under § 1539(a)(2)(B)(ii). This begs the question of what rate of return is reasonable to expect and whether practicability depends on investor expectation. This argument also circles back to the first of Applicant’s arguments, in

²⁴ See, e.g., USFWS, *Indiana Bat (Myotis sodalis) Draft Recovery Plan: First Revision* (April 2007),

²⁵ See, e.g., Fowler Ridge Wind Farm, *Fowler Ridge Wind Farm Financial Impact of Minimization Options Prepared as Supplemental Information in Support of Maximum Extent Practicable in the Proposed HCP Application* (February 8, 2012), p. 2.

²⁶ See, e.g., Fowler Ridge Wind Farm, *Fowler Ridge Wind Farm Financial Impact of Minimization Options Prepared as Supplemental Information in Support of Maximum Extent Practicable in the Proposed HCP Application* (February 8, 2012), p. 3.

40 which the Applicant unreasonably led investors to believe that the Project, built in the state with by far the largest number of recorded maternity colonies and the largest hibernating population of the highly mobile endangered Indiana bat,²⁷ would incur no costs associated with ESA compliance.

36 cont. The non-redacted portion of the document released to date pursuant to our FOIA request thus does not present substantial evidence to support the Applicant's claim that 5.0 m/s is the highest cut-in speed that can be practicably achieved.

41 Yet for the agency to make a final finding regarding the practicability of the DEIS's Alternative 3 under § 1539(a)(2)(B)(ii), the agency must support its finding with substantial evidence in the record. Moreover, the public is entitled to fully evaluate any evidence on which the agency relies to make a finding regarding practicability. The agency cannot rely upon evidence that is withheld from the public. In other words, the agency cannot make a finding regarding practicability and then contend that the evidence underlying its finding, and on which it relies, is secret and cannot be disclosed to the public. Therefore, FWS cannot rely on information in the redacted portions of any document released under FOIA to support the agency's ultimate finding on the practicability of Alternative 3.

The *Gerber v. Norton* Court decided the issue of whether information relevant to ITP issuance could be withheld from the public. Under 16 U.S.C. § 1539(c), "Information received by the [Service] as part of any [incidental take permit] application shall be available to the public as a matter of public record at every stage of the proceeding." In *Gerber*, the FWS tried to keep secret, under a claim of confidentiality, a map of an off-site mitigation area that the applicant had submitted to the agency and was relying on for its HCP. The Court said that this was a clear violation of ESA, which requires that all of the information on which the ITP/HCP is based must be made available for public comment. Thus, under § 1539(c), "the map of the off-site mitigation parcel had to be made available to the public, because it was intended to be part of [the applicant's ITP/HCP] application."²⁸ The Court further concluded that "[t]he Service was also required to make the map available pursuant to section 10(a) of the ESA, which instructs the agency to provide an 'opportunity for public comment, with respect to a permit application and

²⁷ USFWS, *Indiana Bat (Myotis sodalis) Draft Recovery Plan: First Revision* (April 2007), pp. 26, 29, 41–51.

²⁸ *Gerber v. Norton*, 294 F.3d at 179.

the related conservation plan.’ 16 U.S.C. § 1539(a)(2)(B). That opportunity for comment must be a meaningful opportunity. . . . But as Defenders quite reasonably complained, they could not meaningfully comment on the mitigation value of the off-site parcel without knowing its location. . . . [T]here could not have been a meaningful opportunity to comment on the application without a meaningful opportunity to comment on the site.’²⁹

COMMENT 1.4. **THE APPLICANT’S “COMMENSURATE” OR “GOOD ENOUGH” APPROACH TO MINIMIZATION UNDER 16 U.S.C. § 1539(A)(2)(B)(II) CONTRAVENES THE PLAIN MEANING OF THE ESA AND IS INVALID.**

42

The Applicant claims that its proposed operational strategy (*i.e.*, DEIS’s Alternative 2) to feather turbine blades below a wind speed of 5.0 m/s will “minimize” potential take of Indiana bats from operations by the Project.³⁰ As discussed above in Comments 1.1 and 1.2, the Applicant’s claim of minimization does not reflect the best available science. Rather, the best available science, as presented in the DEIS, points to DEIS’s Alternative 3 – feathering below a wind speed of 6.5 m/s – as the measure that will actually minimize take of Indiana bats. The Applicant’s DHCP does not dispute that Alternative 3 can reduce take of Indiana bats significantly more than the Applicant’s proposed Alternative 2.

Yet the Applicant seems to take the position in the DHCP that the proposed 5.0 m/s cut-in speed is somehow good enough, even though the significantly more effective Alternative 3 is known and available.

For example, the DHCP’s objective for Goal 1 appears to be contrived to reach the conclusion that a cut-in speed of 5.0 m/s, which reduces take of Indiana bats by 50% relative to the take with no operational adjustment, is good enough.³¹ Goal 1 is to “[m]aintain the integrity of Indiana bat migration through the Project area.” The associated objective is stated as follows:

²⁹ Gerber v. Norton, 294 F.3d at 179. In addition, the Gerber Court held that FWS could not simply defer to the applicant’s assertion as to what minimization measure was practicable; rather, the record would have to reflect that the agency itself made the requisite determination, and the agency’s own analysis would have to be set forth in the record. *Id.* at 185.

³⁰ See, e.g., DHCP, p. 52.

³¹ See DEIS, Table 5.5.

Objective to achieve Goal 1: Implement an operational strategy that will decrease fall bat mortality by at least 50% compared to levels documented at control turbines during 2010 and 2011 mortality monitoring, and thereby decrease mortality of all bats and Indiana bats to no more than 193 Indiana bats over the 22-year operational life of the Project.³²

The choice of an objective that starts with, and *a priori* finds acceptable, a 50% reduction in mortality is arbitrary and reflects an invalid “good enough” approach to meeting the § 1539(a)(2)(B)(ii) minimization requirement.³³

Moreover, the Applicant seems to compare the effectiveness of its proposed strategy to past observed mortality, mortality which does not reflect § 1539(a)(2)(B)(ii) minimization efforts. Granted, the DHCP’s proposed operational strategy is more effective at reducing take than the manufacturer programmed settings or “normal” operation at 3.5 m/s cut-in speed. But doing some good is not sufficient. The proper comparison for the proposed strategy is instead with a measure that the best available science reasonably indicates is significantly more effective – e.g., Alternative 3.

To the extent that the DHCP is making a “good enough” or “commensurate” argument to support the choice of Alternative 2, this approach is not sufficient and is not the standard for issuance of an ITP. Drawing a balance between reducing impacts to bats and maintaining “optimal” Project operation and electricity generation³⁴ will not satisfy the § 1539(a)(2)(B)(ii) minimization requirement for ESA listed species. Under § 1539(a)(2)(B)(ii), impacts to the Indiana bat must be minimized to the maximum extent practicable, *not* reduced to the extent that balances species protection with optimal Project operation and generation of electricity. A “good enough” or “commensurate” approach to the minimization requirement in § 1539(a)(2)(B)(ii) conflicts with the ruling in *Gerber v. Norton*, 294 F.3d 173 (D.C. Cir. 2002), and violates the ESA. (We incorporate by reference CLC’s submitted “Comments on Final EIS and Final HCP

³² DHCP, p. 50.

³³ Elsewhere FWS has referred to this ad hoc “good enough” approach to meeting the in § 1539(a)(2)(B)(ii) minimization requirement as a “commensurate” approach in which the level of take allowed is geared to be proportional to the perceived level of risk of take. See our comments on the final HCP and EIS for the Buckeye Wind Energy Project at CLC’s submitted “Comments on Final EIS and Final HCP for Buckeye wind power project, Champaign County, Ohio, FWS-R3-ES-2012-0036,” Document ID: FWS-R3-ES-2012-0036-0099, incorporated here by reference.

³⁴ See DEIS, Appendix D, p. 43.

43

for Buckeye wind power project, Champaign County, Ohio, FWS-R3-ES-2012-0036,” Document ID: FWS-R3-ES-2012-0036-0099, which discusses this issue in further detail.)

COMMENT 1.5. THE APPLICANT CANNOT GET AROUND THE MINIMIZATION REQUIREMENT BY PROMISING MITIGATION.

44

To the extent that the DHCP also appears to suggest that Alternative 2 is good enough because the take of Indiana bats will be mitigated, such an approach is invalid. Mitigation is selected only *after* the impact of take is minimized to the maximum extent practicable. FWS guidance states in relevant part:³⁵

68. Is it allowable for an applicant to mitigate in lieu of minimization measures, or must the applicant first minimize if possible?

Response: An applicant must first minimize to the maximum extent practicable.

69. How do developers demonstrate “to the maximum extent practicable” when it comes to siting wind projects? How do we evaluate whether their “demonstration” is sufficient?

Response: In reviewing an applicant’s HCP, the Service must analyze the biological impacts of the project on the covered species. If the proposed siting of some or all of the turbines will cause impacts to the species the applicant should minimize those impacts by moving the turbines to more suitable locations. If an applicant is unwilling to move the turbines to further minimize the impacts due to economic reasons, the Service should require them to provide justification why they are unable to do so. An independent analysis or third party should review the information provided by the applicant to verify they have sited the turbines to the maximum extent practicable.

In various contexts the agency has repeatedly recognized that the applicant for an ITP/HCP is required to mitigate the level of take that is “unavoidable” after (*i.e.*, in spite of) minimization efforts. Take is “unavoidable” only if take that can practicably be avoided is in fact avoided.

³⁵ FWS, *Indiana Bat Section 7 and Section 10 Guidance for Wind Energy Projects, Revised* (Oct. 26, 2011) (“*Wind Energy Project Guidance*”), pp. 47–48.

45 The DHCP states it will mitigate the level of take that is “unavoidable.”³⁶ Table 5.5 in the DEIS shows, however, that by implementing Alternative 3 (i.e., 6.5 m/s cut-in speed) rather than the proposed Alternative 2 (i.e., 5.0 m/s cut-in speed), the Project can avoid the take of 107 Indiana bats (Alternative 2’s 193 bats minus Alternative 3’s 86 bats). The proposed level of take is thus avoidable.

COMMENT 1.6. THE APPLICANT CANNOT GET AROUND THE MINIMIZATION REQUIREMENT BY PROMISING ADAPTIVE MANAGEMENT.

46 The DHCP seems to suggest that the proposed Alternative 2 is sufficient in part because cut-in speed will be increased in 0.5 m/s increments if the proposed take limit is exceeded.³⁷ To the extent that the DHCP suggests that the Applicant can rely on adaptive management to satisfy the minimization requirement in § 1539(a)(2)(B)(ii), such an approach is invalid. Such a wait-and-see approach does not satisfy § 1539(a)(2)(B)(ii) and cannot make up for selecting a strategy that is, at best, the second most effective minimization measure, for two reasons.

47 First, the take limit that serves as the threshold or trigger for implementing an adaptive increase in cut-in speed will itself be the result of selecting an inferior non-minimizing option. By the time the selected threshold is exceeded, more Indiana bats will already have been killed than would have been killed under the true minimizing alternative. The DHCP’s proposed adaptive management plan thus risks locking in the results of a non-minimizing curtailment regime as a threshold for adaptive management for the entire term of the permit.

48 Second, a foundational feature of an adaptive management plan is that adaptive management cannot substitute for a showing of reasonable certainty that substantive criteria will be met.³⁸ Specifically, an adaptive management plan cannot be used to justify holding back measures that the best available science reasonably indicates can minimize take. A proposal to hold back a significantly more effective alternative unless or until a less-effective strategy does not work as expected is inconsistent with § 1539(a)(2)(B)(ii). Yet this is what the DHCP is proposing. The HCP must instead implement what the current best available science reasonably

³⁶ See, e.g., DHCP, p. 55.

³⁷ See DHCP, p. 73–77.

³⁸ J. B. Ruhl & R. Fischman, *Adaptive Management in the Courts*, 95 Minn. L.Rev. 424, 472 (2010).

48 indicates is the most effective yet practicable alternative – which is likely to be Alternative 3 or another similar alternative – and work from there. If monitoring or experimentation then shows that cut-in speeds lower than 6.5 m/s can produce a statistically equivalent reduction in take, this new information might then be used to amend the minimizing strategy in the future. This is the proper use of adaptive management in the ITP/HCP context.

COMMENT 1.7. THE DEIS’S ACTION ALTERNATIVE 3 SHOULD BE THE PREFERRED ALTERNATIVE.

49 Of the three action alternatives presented in the DEIS, FWS’s Preferred Alternative should be Alternative 3, the “6.5 m/s Cut-In Speed Alternative.”³⁹ As the DEIS’s Tables 5.4 and 5.5 show, predicted fatalities of Indiana bats, both yearly and life-of-Project, are statistically significantly lower under Alternative 3 than under Alternative 2 (5.0 m/s Cut-In Speed) or Alternative 1(3.5 m/s Cut-In Speed).⁴⁰ In fact, predicted Indiana bat fatalities under Alternative 3 are less than half of the predicted Indiana bat fatalities under Alternative 2, the Applicant’s proposed alternative.⁴¹ Not only does Alternative 3 provide the significantly lowest take for the Indiana bat, Alternative 3 also provides the lowest fatality rate for all non-listed bat species combined, calculated both per year and per Project life: predicted non-listed bat fatalities under Alternative 3 are about half of the predicted fatalities under Alternative 2 (80,649 versus 147,458, respectively, over the 22-year life of the Project).⁴² Given the EIS’s purposes, Alternative 3 best meets the agency’s needs.

³⁹ DEIS, Table 5.1, p. 90.

⁴⁰ DEIS, Tables 5.4 and 5.5, pp. 127–28.

⁴¹ Id.

⁴² DEIS, Table 5.2 and 5.3, p. 110.

ISSUE 2 HCP GOALS AND OBJECTIVES

COMMENT 2.1. THE DHCP'S OBJECTIVE FOR GOAL 5 REFLECTS CONFLICTING TARGETS THAT CANNOT SATISFY § 1539(A)(2)(B)(II).

The DHCP's fifth biological goal for the Fowler Ridge Project states as follows:

Optimize electrical output of the Project to realize the environmental benefit of wind energy. Specifically, increased generation from wind energy facilities has the potential to offset demand for other energy generation technologies that produce carbon emissions that have been shown to contribute to global climate change, identified as a potential risk to Indiana bats (USFWS 2007).⁴³

The DHCP then states an objective that is claimed to be a measurable target needed to achieve Goal 5:⁴⁴

Objective to achieve Goal 5: Implement an operational strategy at the FRWF that *maximizes* output of non-carbon-emitting, renewable energy *that also minimizes* incidental take of Indiana bats to the [maximum extent practicable].⁴⁵

Goal 5 and its objective are based on illogic and faulty assumptions. These shortcomings are important because the agency will likely not consider alternatives that it deems do not meet the stated goals and objectives of the HCP. The goals of the HCP are the rationale behind minimization and mitigation strategies, and the objectives are measurable targets to achieve the goals.⁴⁶

A. The Objective for Goal 5 Appears to Be Impossible to Achieve and the DHCP Makes No Attempt to Explain How It Can Be Achieved.

50

First, the DHCP fails to explain how it will be possible to simultaneously minimize incidental take of Indiana bats to the maximum extent practicable and maximize power output from the facility. Such a claim is untenable. FWS must ensure that the biological goals and objectives are consistent with conservation actions needed to adequately minimize and mitigate impacts to the covered species to the maximum extent practicable. It may be logical and

⁴³ DHCP, p. 51.

⁴⁴ DHCP, p. 52 (emphasis added).

⁴⁵ DHCP, p. 52 (emphasis added).

⁴⁶ See USFWS, *HCP 5-Point Policy*, 65 Fed. Reg. 35242 (June 1, 2000).

consistent with the ESA to say, in contrast, that one is attempting to maximize power output *subject to* the constraint of minimizing take, but that is not what the DHCP is claiming to do.

Specifically, it is reasonable to suppose that operational output of the Project generally increases with the number of turbines spinning, the length of time the blades are spinning (both seasonally and daily), and the speed at which those blades spin. For example, maintaining cut-in speed at 3.5 m/s would generally increase operational output relative to higher cut-in speeds. It is also reasonable to suppose that the risk of bat mortality generally increases with more turbines spinning, for longer periods and at faster speeds. Thus, maximizing output of the Project seems to preclude, or at least conflict with, minimizing take of Indiana bats to the maximum extent practicable. It appears that the DHCP may be attempting to *balance* a desirable level of power output from the facility with a “good enough” reduction in turbine-related fatalities of Indiana bats. As discussed above in Comment 1.4, this “good enough” approach will not satisfy the § 1539(a)(2)(B)(ii) minimization requirement.

B. The Causal Chain Proposed in Goal 5 Is Not Credible.

The DHCP’s Goal 5 appears to claim that optimizing electrical output of the Project will have a positive effect on climate change and reduce risk to Indiana bats.⁴⁷ Such a claim is not credible. Nothing in the DHCP or the DEIS shows or even suggests that increased power output from the Fowler Ridge facility would reduce GHG emissions from other energy sources. Such a claim would require that one megawatt of coal-produced power will be taken permanently offline in exchange for each megawatt of power produced by the Project. Absolutely no evidence is presented that this will occur. Thus, this causal link is just speculation.

Even if the aforementioned offset of coal-fired power generation did occur for the Project, nothing referenced in the DHCP or DEIS shows that such an offset would slow or ameliorate environmental changes that may occur in Indiana or the Midwest region due to GHG emissions. No evidence is presented of a relationship between reducing GHG emissions in Indiana specifically and any climate-related habitat changes in recovery units of the Indiana bat.

⁴⁷ If this is not the claim being made, then Goal 5 appears to be irrelevant to this DHCP.

52

In fact, according to FWS’s own research and publications, current climate and species modeling cannot support a species-specific analysis to assess the impacts of greenhouse gas emitters on species take, and by the same reasoning, the models cannot support a species-specific analysis to assess the benefits of decreased GHG emissions attributable to actions such as wind power facilities. The court in *In re Polar Bear Endangered Species Act Listing and § 4(d) Rule Litigation*, 818 F.Supp.2d 214 (D.D.C. 2011), agreed with FWS’s position that the best available science does not allow the agency to draw a causal link between greenhouse gas emissions from a particular facility and take of a species. The court stated,

The Service further explained in response to comments that “[t]here is currently no way to determine how the emissions from a specific action both influence climate change and then subsequently affect specific listed species, including polar bears.” AR4D 12942. In other words, because climate modeling does not currently allow the agency to draw a causal connection between the greenhouse gas emissions from a specific source and the impact on a particular polar bear, the Service determined that it cannot identify when a “take” has occurred for the purposes of enforcing the incidental take provisions of the ESA against an individual greenhouse gas emitter. AR4D 12942 (explaining that “the future indirect impacts of individual [greenhouse gas] emitters cannot be shown to result in ‘take’ based on the best available science at this time.”).

* * *

The administrative record amply supports the Service's conclusion. In a memorandum summarizing the most recent findings on this issue by the leading international climate science research organizations, the United States Geological Survey determined that “[i]t is currently beyond the scope of existing science to identify a specific source of CO₂ emissions and designate it as the cause of specific climate impacts at an exact location.” AR4D 14144A.02. Similarly, in a memorandum to the Service, the Environmental Protection Agency Office of Air and Radiation observed that “[t]he climate change research community has not yet developed tools specifically intended for evaluating or quantifying end-point impacts attributable to the emissions of [greenhouse gases] from a single source, and we are not aware of any scientific literature to draw from regarding the climate effects of individual, facility-level [greenhouse gas] emissions.” AR4D 14336. Based on these findings, the Service Director issued a subsequent policy memorandum in which he concluded that “[t]he best scientific data available today do not allow us to draw a causal connection between [greenhouse gas] emissions from a given facility and effects posed to listed species or their habitats.” AR4D 14145. The Department of the Interior has echoed these conclusions in a similar policy memorandum:

Given the nature of the complex and independent processes active in the atmosphere and the ocean acting on [greenhouse gases], *the causal link simply cannot currently be made between emissions from a proposed*

action and specific effects on a listed species or its critical habitat. Specifically, science cannot say that a tiny incremental global temperature rise that might be produced by an action under consideration would manifest itself in the location of a listed species or its habitat. Similarly, any observed climate change effect on a member of a particular listed species or its critical habitat cannot be attributed to the emissions from any particular source. Rather it would be the consequence of the collective greenhouse gas accumulation from natural sources and the world-wide anthropogenically produced [greenhouse gas] emissions since at least the beginning of the industrial revolution.

Id. at 231–32 (emphasis added). The logical corollary of the agency’s position endorsed by the *In re Polar Bear* court is that a causal link cannot currently be made between an offset or reduction of GHG emissions due to a proposed action and specific effects on a listed species.

This same point is made by J. B. Ruhl in a recent article on wind power and the ESA.⁴⁸

[T]he ESA requires that the FWS adhere to the best available science when making decisions under section 7. Applying this standard, the Agency has already concluded that the current capacity of climate and species modeling cannot support engaging in species-specific section 7 analyses to assess the harms of increased emissions attributable to actions such as new power plants. By the same reasoning, the current capacity of climate and species modeling cannot support engaging in species-specific section 7 analyses to assess the benefits of decreased emissions attributable to actions such as new wind power facilities.

Ruhl cites the following sources to support his conclusions: “U.S. Dept. of the Interior, Solicitor’s Opinion M-37017, Guidance on the Applicability of the Endangered Species Act’s Consultation Requirements To Proposed Actions Involving the Emissions of Greenhouse Gases 1 (2008), available at www.doi.gov/solicitor/opinions/M-37017.pdf (stating that the best available science does not support inferring the impact of climate change on any specific location); Memorandum from H. Dale Hall, FWS Dir., to FWS Reg’l Dirs., Expectations for Consultations on Actions that Would Emit Greenhouse Gases 1 (May 14, 2008), available at www.fws.gov/policy/m0331.pdf (stating the belief of the FWS that greenhouse gas emissions alone will not trigger section 7 review of an agency’s action because ‘the best available science does not allow us to draw a causal connection between GHG emissions from a given facility and effects posed to listed species or their habitats’); Memorandum from Mark Myers, *supra* note

⁴⁸ J. B. Ruhl, *Harmonizing Commercial Wind Power and the Endangered Species Act through Administrative Reform*, 65 *Vanderbilt Law Rev.* 1769, 1790–91 (2012).

104 (highlighting the difficulty in scaling down global climate change models to the local level).” According to Ruhl, the FWS under the Obama Administration has not wavered from this position staked out during the Bush administration.

53 Moreover, the long time scale of the relationship between GHG emissions and climate change effects casts serious doubt on the ability to rely on the “wind power effect” at a particular wind facility to minimize or mitigate take or to benefit Indiana bats. As Ruhl points out,⁴⁹

The climate change benefits of the wind power effect will inure to species in the future, perhaps the very distant future, as today’s decreased emissions slowly work their way through the climate system, whereas the harms of wind power infrastructure are more immediate. Wisely, the FWS does not seem eager to make the case that it can reliably quantify and weigh that temporal tradeoff[.]

54 What the Applicant has done in Goal 5 is to use the tenable relationship between an aspirational *renewable energy policy* and potential future climate change benefits to justify allowing increased take of Indiana bats from a specific facility simply because that facility is *consistent with* that energy policy. There is absolutely no evidence that the Project itself will benefit Indiana bats. It is arbitrary and capricious to allow an actual cause of take of a listed species to increase based on such unsupported claims. FWS knows that Indiana Bats are at risk of harm from the Fowler Ridge turbines. FWS does not know, however, that the bats would benefit from maximizing the output of the facility, and the agency’s own research shows this.

Accordingly, we maintain that Goal 5 in the DHCP and its associated objective are invalid and are likely to conflict with the requirement to minimize take of Indiana bats to the maximum extent practicable.

⁴⁹ J. B. Ruhl, 65 Vanderbilt Law Rev. at 1791.

ISSUE 3

WHOOPING CRANE AND RAPTOR PROTECTION AND RISK ASSESSMENT

COMMENT 3.1. THE DEIS'S ASSESSMENT OF RISK FOR WHOOPING CRANES IS DEFICIENT.

The Project area is located within the migration range of a non-essential experimental population of about 100 Whooping cranes (*Rhus americana*).⁵⁰ Whooping cranes that were trained to fly through Indiana may maintain their route and thus may migrate through or stop over in Benton County.⁵¹ Whooping cranes migrating on their own have the potential to occur anywhere in Indiana and eastern Illinois.⁵² A total of 53 wetlands covering approximately 94.6 acres (38.2 ha) were identified and delineated in the vicinity of the Project area.⁵³ Additionally, small ephemeral pools of water may form in tilled fields following periods of rain.⁵⁴

The DEIS in Chapter 4.0 "Affected Environment" notes the presence of Whooping cranes in the Project area.⁵⁵ In Chapter 5 "Environmental Consequences," the DEIS briefly discusses possible impacts of the Project on Whooping cranes:

Turbine Related Mortality

Concerns expressed by the Service and IDNR regarding avian resources within the Project area focused primarily on collision risks during the migration season to listed species and a few other birds. The Service and IDNR both expressed concern for migrating American golden-plover, a species protected by the MBTA and listed as a species of special interest by the IDNR, *and whooping cranes, a federally endangered species with a population (listed under the ESA only as experimental, non-essential) that migrates across Indiana.*⁵⁶

The next consideration of Whooping cranes in the DEIS is in Appendix D to the DEIS, the Bird and Bat Conservation Strategy ("BBCS"). The BBCS describes a risk assessment for Whooping cranes in part as follows:

⁵⁰ DEIS, p. 54.

⁵¹ DEIS, p. 54.

⁵² DEIS, p. 54.

⁵³ DEIS, Appendix D. p. 9.

⁵⁴ DEIS, Appendix D. p. 9.

⁵⁵ DEIS, p. 54.

⁵⁶ DEIS, p. 115 (emphasis added).

Whooping Crane Risk Assessment

During consultation with the Service, whooping crane (*Grus americana*) was identified as a potential concern for the Project. A risk assessment of potential impacts of the Fowler Wind Farm on the eastern experimental population of whooping cranes was undertaken in June 2007 (Johnson and Tidhar 2007). . . .

* * *

Within the 72,947 acres (29,521 ha) that comprise the FRWF, very few wetlands are present. However, approximately 94.6 acres (38.2 ha) of wetlands were identified in the vicinity of the Project area. Habitat quality within these wetlands was found to be marginal for whooping cranes. There are also 38 acres (15 ha) of open water, primarily small ponds, within the Project area. It is possible that migrating whooping cranes may occasionally stopover in Benton County. The risk assessment determined that direct mortality during Project construction is very unlikely, especially when construction occurs outside of the spring and fall migration periods. Direct mortality was also determined to be unlikely during the steady migratory flight, since whooping cranes migrate at an altitude much higher (1,000 to 6,000 ft [305 to 1,829 m]) than the rotor-swept area of the Project turbines (approximately 82 to 427 ft [25 to 130 m]). *The risk assessment identified greater potential for collision with turbines and/or the Project's transmission line during stopover periods when whooping cranes fly between foraging and roosting sites at sunset and sunrise under low-light conditions. Inclement weather was also determined to increase the chance of collision. Marking powerlines reduces collision rates;* however, it was determined that the potential for adverse effects to whooping cranes, particularly from turbines, cannot be reduced to discountable or insignificant levels at the Project. The risk assessment concluded that for this reason, if the flock was protected under the ESA, the appropriate determination would be that operation of the Project is likely to adversely affect whooping cranes. Due to the presence of marginal stopover habitat in the Project area, the risk assessment considered the potential for disturbance and displacement of whooping cranes to be possible. *However, based on the small total population size of the flock (~100 cranes) and the marginal quality of the habitat within the Project area, the overall risk to whooping cranes at the Project was determined to be low (Johnson and Tidhar 2007).*⁵⁷

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The last sentence of the above risk assessment adopts a conclusion that the Project's overall risk to Whooping cranes is low for two reasons: first, because the population size is small, and second, because the quality of habitat within the Project area is marginal. The adoption of this conclusion for these reasons is unwarranted.

⁵⁷ DEIS, Appendix D. pp. 27–28 (emphasis added).

A. Overall Risk to ESA-Listed Species Does Not Uniformly Decrease as Population Size Decreases.

The BBCS's conclusion about risk to Whooping cranes reflects an erroneous argument about the relationship between risk of take and the population's abundance. This argument is generally stated as follows: as the population size decreases, the risk of take also decreases because there are fewer individuals to come into harm's way. The logical extension of this argument is that risk goes to zero as the population drops toward extinction; that is, for example, when only two individuals of a species remain, the risk posed by a particular Project is insignificant because the species is so rare and so more such projects can be approved. The FWS has used this reasoning in other contexts involving ESA listed species. This argument is unhelpful and misleading.

The error in concluding that the risk to Whooping cranes is low because the population size is small is that such use of the term "risk" considers only one half of the risk equation. To compare risk across different species and to manage that risk, the agency must consider not only the probability of exposure but also the consequences of exposure.⁵⁸ To narrow a comparative risk assessment to the probability of exposure alone leaves out much valuable information. Because the consequences of losing members of a rare species are relatively severe, the overall risk due to even a low-probability event is properly perceived as relatively high. Low-probability but high-consequence events require a different response than low-probability but relatively inconsequential events in terms of prevention and mitigation. Thus, a valid assessment of the overall risk that the Project poses to Whooping cranes must consider both probability of collision and the consequences of such take.

This overly-limited conceptualization of risk is illustrated also in DEIS Chapter 5 "Environmental Consequences," section 5.5.3.4 "Operation Effects on Birds," in which the DEIS discusses the risk of turbine-related mortality for various species of birds:

With the exception of American golden-plover and northern harrier, all sensitive species observed were low in number. Given the small number of individuals

⁵⁸ See, e.g., Stanley Kaplan and B. John Garrick, *On the Quantitative Definition of Risk*, Risk Analysis, Vol. 1, No. 1 (1981).

observed and limited available habitat, many of these species are therefore considered to be at low collision risk.⁵⁹

According to this reasoning, the only component of comparative risk worth considering is the probability of collision, which presumably decreases to zero as the species become very rare (assuming that the population is evenly dispersed in space regardless of population abundance); thus, a population of 100 starlings and a population of 100 Whooping cranes would have the same assessed risk. Such a limited view of risk does not help FWS to decide what to do for each species.

In contrast, when both components of the risk equation are considered – exposure and consequence – the risk associated with Whooping cranes colliding with unmarked above-ground power lines and wind turbines, particularly during inclement weather, is significant. The killing of a single Whooping crane would constitute a violation of the MBTA, and because the population size of the experimental population is so low, the loss of each bird is highly consequential.

B. According to Information in FWS Guidance and the BBCS, Whooping Cranes Face a Significant Threat of Collision With Project Power Lines and Turbines.

The BBCS’s conclusion that the overall risk of the Project to Whooping cranes is low because, in part, the quality of habitat in the Project area is low is inconsistent with other sources of information on Whooping cranes published by FWS. The DEIS and BBCS indicate that the main threat of the Project to Whooping cranes is collision with power lines and turbines, particularly during periods of inclement weather. According to a 2009 FWS report on Whooping cranes and wind development, the main threat of collision occurs when Whooping cranes initiate or conclude a migration flight or a roost-to-forage flight, a period when the cranes may fly for several miles at very low altitude, particularly when visibility is low during inclement weather.⁶⁰ Thus, if stopover habitat occurs even miles away from a power line or wind turbine, cranes may collide with those power lines or turbines as the birds fly toward or away from the stopover habitat at low altitude. The FWS states that “unless the Whooping cranes recognize and steer clear of turbines, *any crane use occurring within an estimated 2–5 miles of a wind turbine might*

⁵⁹ DEIS, pp. 115–116.

⁶⁰ USFWS, *Whooping Cranes and Wind Development – An Issue Paper* (April 2009), p. 17.

result in mortality as they make local flights or start or end migration flights.”⁶¹ The same considerations would logically apply to power lines, which are the greatest known cause of mortality of fledged Whooping cranes.⁶²

Therefore, according to FWS’s assessment, one must consider the habitat within 2–5 miles of the Project’s above-ground power lines and wind turbines to get an accurate indication of the threat of collision with Project infrastructure. According to the BBCS, the Pine Creek GHA, a possible Whooping crane roosting area, is located approximately 3.2 miles east of the Project area.⁶³ This distance is well within the 2–5 mile distance that FWS has stated is the band of vulnerability for Whooping cranes around a turbine or power line. The Project contains hundreds of wind turbines. Six miles of overhead transmission line connect Phase II turbines to the Phase 1 substation.⁶⁴ So the potential for a Whooping crane to fly at low altitude through the Project area is significant, and if visibility were poor, the bird might strike a turbine or overhead power line.

The BBCS recognizes the potential for collision of Whooping cranes with turbines and power lines. The BBCS also recognizes that “marking power lines reduces collision rates.”⁶⁵ Yet despite such information on existing threats of collision and potential remedies, the DEIS and BBCS have decided, arbitrarily, that the risk of collision of Whooping cranes with Project infrastructure is so insignificant that no minimization, mitigation, or adaptive management measures need be considered or evaluated. The BBCS does not attempt to reduce or mitigate the threat of Whooping crane collision with power lines or turbines, either by marking overhead transmission line or, as suggested by Indiana DNR, by possibly shutting down during migratory peaks.⁶⁶ The MBTA requires that this omission be remedied. NEPA requires that such measures at least be given serious consideration.

⁶¹ USFWS, *Whooping Cranes and Wind Development – An Issue Paper* (April 2009), p. 17 (emphasis added)

⁶² USFWS, *Whooping Cranes and Wind Development – An Issue Paper* (April 2009), pp. 17–18.

⁶³ DEIS, Appendix D, p. 10.

⁶⁴ DEIS, Appendix D, p. 34.

⁶⁵ DEIS, Appendix D, p. 28.

⁶⁶ DEIS, Appendix C, *Agency Coordination – Threatened and Endangered Species*. The IDNR, in a Dec. 18, 2006 stamped document in the record, comments, “Fish, wildlife, and botanical resource losses as a result of this project can be minimized through implementation of the following measures * * * Mitigation for mortality may include adjusting locations of specific turbines, altering hours of operation to avoid diurnal bird and/or bat activity, and possibly shutting down during migratory peaks for specific species such as Whooping Crane or American Golden-Plovers.”

COMMENT 3.2. **THE MBTA REQUIRES AT LEAST THAT ABOVE GROUND POWER LINES ASSOCIATED WITH THE PROJECT BE MARKED TO REDUCE COLLISIONS BY RAPTORS AND WHOOPING CRANES.**

58

Six miles of overhead transmission line connect Phase II turbines to the Phase 1 substation.⁶⁷ The DEIS and BBCS fail to seriously consider marking of Project power lines and the reduction in mortality that marking may produce, even though the Project is known to kill raptors and may pose a significant threat to migrating Whooping cranes.⁶⁸ This failure is likely to lead to continued violations of the MBTA.

59

According to the DEIS, the Applicant has incorporated several measures to avoid and minimize impacts to birds, including the following:⁶⁹

- siting the Project in an area of moderate avian use;
- developing the Project in phases;
- micro-siting all Phase IV turbines in cultivated croplands and locating all Phase I - III turbines and facilities to avoid native bird habitat and IDNR Gamebird Habitat Areas;
- re-routing the Project's transmission line to avoid a Gamebird Habitat Area;
- building the transmission line to APLIC's avian-safe standards for *spacing* of wires;
- burying collection lines underground;
- equipping the Project substation with downward facing shields on all lights;
- providing sensitive species awareness training for all on-site workers;
- constructing unguyed MET towers;
- equipping MET towers with red strobe lighting (although the DEIS recognizes that *white* strobe lighting is the measure that reduces fatalities).

However, we find no plans or consideration in the DEIS, DHCP, or BBCS for marking overhead transmission lines in order to minimize or mitigate the threat of bird collision, other than as a potential adaptive management measure related to take of Bald eagles.

⁶⁷ DEIS, Appendix D, p. 34.

⁶⁸ See DEIS, Appendix D, p. 28 (stating that of the Whooping crane experimental population were essential, the operation of the Project would be "likely to adversely affect" the population).

⁶⁹ DEIS, p. 118.

As discussed above and in the BBCS, Whooping cranes potentially migrate through the Project area. In addition, several species of raptors have been found in the Project area: Bald eagle (*Haliaeetus leucocephalus*), Northern harrier (*Circus cyaneus*), Cooper's hawk (*Accipiter cooperii*), Sharp-shinned hawk (*Accipiter striatus*), Red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), and Osprey (*Pandion haliaetus*).⁷⁰

Collision with unmarked power lines is a major threat to Whooping cranes, raptors, and other birds. Marking of power lines is a common minimization and mitigation measure called for by FWS guidance documents.⁷¹ And as the BBCS recognizes, marking can substantially (although not completely) reduce collision mortality in birds.⁷²

Moreover, Table 4.5 in the DEIS shows that several Red-tailed hawks and some Rough-legged hawks have already been killed at the Project over the last few years.⁷³ Specifically, over a two year period, nine Red-tailed hawk carcasses and two Rough-legged hawk carcasses have been found during mortality surveys. Because of search inefficiencies and other limitations, the number of actual raptor fatalities is likely to be higher than the number of found carcasses. Even if the cause of these fatalities is collision with turbines rather than with overhead power lines, these fatalities confirm and highlight the risk posed to raptors by the Project's infrastructure.

Thus, despite the fact that raptors are present and have already been killed at the Project, and will most likely continue to be killed there, and even though it is widely recognized that marking of overhead transmission lines can reduce bird (including raptor) fatalities, no line marking is called for in the draft documents under review. Furthermore, the BBCS's adaptive management plan allows for six raptors, 20 American golden-plovers, and apparently an unlimited number of Whooping cranes to be killed each year by the Project, each an MBTA violation, without any consideration of line marking or modified turbine operations.⁷⁴ These are significant errors.

⁷⁰ DEIS, p. 52.

⁷¹ See USFWS, *Land-Based Wind Energy Guidelines* (March 23, 2012), p. 49.

⁷² See DEIS, Appendix D, p. 28 (stating that marking power lines reduces collision risk).

⁷³ DEIS, p. 55.

⁷⁴ DEIS, Appendix D, pp. 49–50.

60

The draft documents under review will facilitate continued violations of MBTA § 703 by the Project. The FWS Office of Law Enforcement focuses its resources on investigating and prosecuting those who take migratory birds without identifying and implementing reasonable and effective measures to avoid the take of species protected under the MBTA and BGEPA.⁷⁵ Courts have found MBTA violations in such circumstances.⁷⁶ Marking of overhead transmission lines associated with the Project is a reasonable and effective measure to minimize and mitigate the take of Whooping cranes, raptors, and other bird species, yet this measure has not been incorporated at Fowler Ridge or seriously considered in the DEIS. The MBTA and NEPA require at least that such violations of MBTA § 703 and such measures be given serious consideration.

61

In addition, FWS's authorization of the Project's collision threats without readily available minimization measures, absent issuance of an MBTA incidental take permit or a special use permit, would itself not be in accordance with law under § 703 of the MBTA.

COMMENT 3.3. THE BBCS'S ADAPTIVE MANAGEMENT PLAN SHOULD INCLUDE WHOOPING CRANES.

62

The BBCS contains an adaptive management plan for raptors, Golden plovers, Bald eagles, and birds in general.⁷⁷

5.3.2 Birds

* * *

Triggers for adaptive management will include:

- I. A mass avian mortality event (>100 birds killed in one night) is documented.
- II. Observed raptor fatality exceeds six (6) individuals in one monitoring year.
- III. Observed American golden-plover fatality exceeds 20 individuals in one monitoring year.

⁷⁵ See e.g., Final Environmental Impact Statement, Buckeye Wind Power Project, Ohio (April 2013), pp. 1-11.

⁷⁶ See, e.g., U.S. v. Moon Lake Electric Ass'n, Inc., 45 F.Supp.2d 1070 (D. Colo. 1999); Kalyani Robbins, *Paved With Good Intentions: The Fate of Strict Liability Under the Migratory Bird Treaty Act*, 42 ENTL 579 (2012).

⁷⁷ DEIS, Appendix D, pp. 49-50.

5.3.3 Eagles

* * *

If an eagle fatality is discovered at the Project, FRWF will notify the Service of the discovery within 24 hours. FRWF will coordinate with the Service to identify potential mitigation measures based on the best available science; these measures could include marking above-ground powerlines with bird flight diverters or retro-fitting powerline poles to avian-safe standards (APLIC 2006). Additionally, FRWF will meet with the Service to apply for an eagle programmatic take permit.

As discussed above in Comments 3.1 and 3.2, Whooping crane migrants may make temporary stopovers within 5 miles of the Project, and both the Project's wind turbines and the unmarked overhead power lines pose a threat to those migrants, particularly during periods of inclement weather and low visibility. According to the BBCS's adaptive management plan, however, no actions or measures would be triggered should a Whooping crane be killed by Project infrastructure. This failure to plan for Whooping crane fatalities is an irresponsible omission under the MBTA. Given this omission, any harm to Whooping cranes by the Project would be a clear and particularly egregious violation of the MBTA.

62

Thank you for considering our comments.

Sincerely,

/s/ Jeffrey B. Hyman, Ph.D., J.D.,
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Public Comments Processing
Attn: FWS-R3-ES-2013-0032
Division of Policy and Directives Management

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JUN 03 2013

Div. of Policy & Dir. Mgt.

Dear Sirs

63

We are landowners and residents in the area of the Fowler Ridge Wind Farm. We fully support the efforts of the Fowler Ridge Farm to save wildlife in the area of their windmills.

We think this is a very good overall plan to save wildlife and still have windmills that would benefit all mankind nation wide. We believe this plan should be approved in order for the additional windmills to be built by the Fowler Ridge Farm

Thankyou very much

Ludwig Groen
Jan Groen

4851 E 400 N

Fowler In 47944

Illinois Department of Natural Resources**Office of Realty and Environmental Planning****Division of Ecosystems & Environment****Impact Assessment Section****Keith M. Shank, Natural Resources Manager****Comments on the Fowler Ridge ITP DEIS**

69

The Illinois Department of Natural Resources believes the Fowler Ridge ITP DEIS does not adequately describe or evaluate potential adverse impacts related to wind turbine operations. Throughout Part 5 of the DEIS, impacts to humans and natural resources associated with wind turbine operations are described as insignificant or absent, with the exception of collision or barotrauma risk to birds and bats. A bias toward this view is explicitly stated in Section 5.5.3.1: “Terrestrial wildlife mortality is not expected to occur as a result of Project operations under any of the four alternatives because the risk of turbine collision is confined to the rotor-swept zone of each turbine.”

70

The Department believes there are many avenues for natural resources to be adversely affected by turbine operation, though few have been studied to any degree with explicit regard to wind turbine operations. Because 93% of the land area of this facility is in row-crop agriculture, the DEIS dismisses it as of low-value to wildlife. Unfortunately, most of Indiana, like Illinois, is devoted to row-crop production. It is the most common and abundant habitat available to wildlife in this region; any activity which renders wide areas of it less hospitable to wildlife should be viewed with concern. The DEIS should address these potential effects.

71

In addition to rotor blade collision and baro-trauma, potential adverse effects to wildlife and other natural resources may be related to the propagation of magnetic fields (around turbine nacelles, current conversion transformers at turbine tower bases, and around buried collection power lines); shadow flicker (both solar and lunar); visibility; noise; acoustic vibrations through soils and waters; aviation safety lighting, and thermal conduction in soils. While few of these characteristics of turbine operations have the potential to result in direct mortality of fish and wildlife, which is relatively easy to detect and measure, they have the potential to displace or exclude fish and wildlife from occupied habitats and to stress populations by making feeding and reproduction more difficult. Such effects are far more subtle than mortality and it is much more difficult to assign their cause to a specific aspect or combination of aspects of turbine operation. Well-known studies of grassland birds breeding near wind farms, such as that at Buffalo Ridge in Minnesota (Leddy *et al.*, 1999)¹, although finding significant displacement, make no effort to determine what aspect of turbine operation is responsible for the results.

In this example, the displacement of breeding birds could be due to any of the effects of visible motion, shadow flicker, noise, magnetic fields, or acoustic vibrations through the soil, or a

combination of them. Each of these effects is attenuated with distance, often through an inverse square ratio, and a gradient of occupation (tolerance) is evident in many of the few studies performed.

72 Magnetic Fields. Conventional forms of power generation occur in large buildings from which wildlife is excluded, so that potential wildlife contact with magnetic fields is limited. Wind generation is significantly different in this regard, with large generators set high in the sky, where the associated magnetic fields extend well beyond the physical dimensions of the wind turbine. Many forms of wildlife are known or surmised to be sensitive to magnetic fields, whether the geo-magnetic field (which may aid in long-distance migration) or the bio-magnetic fields associated with living organisms. A large wind generation project places a profusion of magnetic fields across the landscape, associated both with turbines and the collection power lines, most of which are buried only four feet below ground rather than the standard 20-40 feet above-ground of overhead power lines. Because magnetic field strength is directly related to distance, the potential for sub-lethal magnetic field effects to a wide array of terrestrial and aquatic organisms which are normally not exposed are greatly enhanced. Humans cannot sense magnetic fields, and become aware of them only when other technologies are affected. This is a major environmental alteration which is “out-of sight, out of mind” for most people, but likely is not for some forms of avian, terrestrial, and aquatic life.

73 Visibility. Turbines more than 400 feet high are visible for more than ten miles on many days in the relatively flat lands of western Indiana and eastern Illinois. On clear nights aviation safety lights are visible considerably farther. While visibility is often raised as an issue of concern for humans, this agency is unaware of any study which has attempted to ascertain the possible effects of visibility on wildlife. Stillness is a well-practiced virtue among hunters and fisherman, if targeted fish and wildlife are not to be alarmed. The scarecrow is an ancient use of visible objects to deliberately displace or repel wildlife, and flags and streamers remain a common means of attempting to control undesired wildlife behavior. In other words, it is a long accepted principle that moving objects affect wildlife, and there appears no persuasive reason to presume the visible movement associated with wind turbines, whether rotating or flashing, does not have similar effects. The current document contains an extensive discussion of apparent displacement effects to the American Golden Plover, though assigning no particular cause. Visibility may be a major factor in this displacement.

74 Flicker. To the extent it is discussed with regard to wind turbines, the discussion is nearly always limited to flicker’s alleged or actual effects on humans residing within reach of the moving shadows. This means the discussion is usually limited to daytime effects, since moonlight is much less intense than daylight and humans are less likely to remain active through the hours of darkness. (This is illustrated by the fact that all flicker models now available address only daytime flicker, and usually on a specific target, such as a residential window.) But, compared to wildlife, humans are relatively insensitive to their surroundings, and many forms of wildlife are most active during crepuscular periods, when shadows reach farthest, and at night. Species which are particularly sensitive regarding aerial predators may be stressed by flicker, and it may disrupt the thermo-regulatory activities of reptiles and amphibians for whom basking is an essential activity. For nocturnal animals with excellent low-light vision, the strobe effect of lunar flicker may be as distressing as that of daytime flicker to diurnal species. Where

74 multiple turbines are present, flicker may be present during most of the normal activity period. Anecdotal accounts exist of effects to domestic livestock, particularly horses. Flicker has a strong potential to displace wildlife. However, this Department is unaware of any research efforts to document such effects.

75 Noise. Noise (propagated through the air) is another characteristic usually discussed solely in terms of human impacts. Many states have promulgated “noise pollution” regulations, which focus on either injury to human aural organs (workplace noise) or nuisance value. In no case are such regulations related to wildlife effects. The current document extensively discusses noise impacts to humans. A number of European studies have shown adverse effects of highway noise on breeding birds, where birdsongs must be modified to be heard but are less effective in attracting mates. Francis, et al. (2012)ⁱⁱ documented the effects of pipeline compressor noise in New Mexico (equivalent to highway noise at 500 feet) that resulted in high populations of rodents near compressors because predators (hawks and owls) could not hear their prey, with secondary effects on plant reproduction due to elevated seed predation by rodents. Elevated turbine noise over broad areas might produce similar effects, displacing predators which are less successful due to noise. This may be a primary reason Northern Harriers are rarely observed after wind farm construction though present beforehand.

76 Acoustic Vibration in Soils and Water. Studies in the United Kingdom have documented detectable vibration due to wind turbines through bedrock at distances up to 10 kilometers (six miles), although those studies had no biological component. Many soil animals are very sensitive to vibration, while most aquatic organisms are also attuned to vibrations in the water, to either detect prey or to avoid predators. Soil organisms, such as earthworms, play a vital role in soil tilth and aeration; their displacement or reduced activity can affect soil fertility and plant productivity. Sustained noise in aquatic environments may pose a barrier to migratory movements in streams, or prevent detection of food. The exclusion or displacement of host fish could be problematic for mussel populations, since fish are an essential part of the mussel reproductive cycle. The result could be reduced biodiversity in stream systems which are already compromised by human activities.

77 Thermal Conduction/Resistivity. Collection power lines will be buried. All conductors provide resistance to current, which produces heating of the conductor. In the air, this heat is dissipated into freely moving air. Underground, this heat can only dissipate into stationary soil around the conductor. Most 0000 power lines are designed to operate at temperatures up to 195 degrees Fahrenheit. The actual temperature of the conductor is dependent on its diameter, the number of turbines on the circuit, and their level of electrical generation. The ability of the surrounding soils to absorb or dissipate this heat is referred to as soil thermal conductivity or thermal resistance. This characteristic is governed by the nature of the soil materials, pore spaces, and moisture level. (Example: Sandy soil with 10% moisture is more than twice as conductive of heat as dry sandy soil.) If the native soils are not capable of maintaining conductor temperatures within operating ranges, special backfill is required in the trenches to prevent line failure. This is a standard feature of the electrical engineering for any wind energy facility. Any deviation from “normal” soil temperatures for the season will have effects on soil organisms, positive or negative. At a depth of four feet, variations in surface temperature are unlikely to be detected by humans, but this is not necessarily so for animals with thermal sensitivities, especially reptiles.

Endangered or Threatened Species. Section 4.6.2.2 lists 33 species of plants and animals protected by the State of Indiana and documented as occurring in Benton County. It then provides a four-fold rationale to dismiss the significance of any adverse effects to them related to the project. First, many of them have specific habitat requirements, which is true enough. It then states that little or no habitat for these species is present within the project area, but claims that any habitat that might be present is “generally marginal.” Finally, it states that no mortality of endangered or threatened species is known from the project area, with the exception of the two state-listed bats.

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If these species are “documented” in Benton County, then the information on their last known locations should be available from the Indiana DNR. It is relevant whether any of these locations lie within the project area or external buffer. Those within the project may indeed be affected.

79

Regarding specific habitat requirements, such combinations of requirements are not necessarily rare, but may be isolated, and often can be met within lands devoted mainly to agricultural pursuits. Further, the scientific literature often describes perfect or ideal habitat, not minimum requirements. The fact that occupied habitat may be marginal is not a reason to further degrade or destroy it; many state-listed endangered species largely persist in marginal habitat because primary habitat has been degraded or destroyed. Such marginal habitat often provides key linkages between otherwise isolated populations which are important for gene flow. Marginal habitat is not necessarily unimportant habitat.

80

While extensive studies have been conducted for birds and bats, no surveys or studies for other animals or plants are described in the DEIS or the HCP. If nobody has looked, how does anyone know whether habitat or the listed species are present? If nobody has searched, it is easy to say that no mortality is known. The cavalier dismissal of these state-listed species without any effort to ascertain their locations or numbers when the project in question will occupy most of the County is unconscionable.

The primary example is the Indiana Bat, itself. Without the mortality studies carried out by the applicant, there would be no record of the presence of the Indiana Bat in Benton County, and thus no concern about taking individual bats or adversely affecting its population.

80

Another good example is the Franklin’s Ground Squirrel, listed as endangered in Indiana, and listed as threatened in neighboring Illinois. Much of the scientific literature claims this animal requires tallgrass prairie, but experience in Illinois shows its preference is for edge habitat—the species abandons mature prairies in favor of roadside edges, drainage ditches, railroad corridors, and even urban areas. The species is present in both Vermilion County and Champaign County, Illinois, areas every bit as devoted to rowcrop agriculture as Benton County, Indiana, if not more so. It has been found in grassed waterways of agricultural fields in the midst of proposed wind energy facilities. In Springfield, Illinois, it has been found to thrive on disturbance associated with construction, promptly colonizing soil stockpiles. Juveniles have been shown to disperse up to two miles from parental colonies in just a few weeks. This species could well occupy portions of the project area, but it is easy to miss. It spends 90% of its time underground, and is active

above ground only from May through September. Unfortunately, many Illinois records are derived from road-kills, and this may be true in Indiana, as well.

81

The Franklin's Ground Squirrel is also a good example of a species which may be adversely affected by visible motion, flicker, and acoustic vibration due to wind turbine operations. An inability to fly should not disqualify it or other terrestrial and aquatic species from due consideration in the DEIS.

82

An appropriate discussion of the potential effects and resource impacts might still support a conclusion there are no adverse effects to be considered, or that adverse effects will not be significant, but the document would then address the affected environment and potential environmental consequences more completely without having to rely on unsupported assumptions.

Thank you for the opportunity to comment.

ⁱ Leddy, Higgins, & Naugle; Effects of Wind Turbines on Upland Nesting Birds In Conservation Reserve Program Grasslands; *Wilson Bulletin*; 111(1); 1999; pp. 100-104.

ⁱⁱ Francis, Kleist, Ortega, & Cruz; Noise Pollution Alters Ecological Services: Enhanced Pollination and Disrupted Seed Dispersal; *Proceedings of the Royal Society B: Biological Sciences*; March 21, 2012.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
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JUN 04 2013

REPLY TO THE ATTENTION OF: E-19J

Public Comments Processing
Attn: FWS-R3-ES-2013-0032
Division of Policy and Directives Management
U.S. Fish and Wildlife Service
4401 North Fairfax Drive, MS 2042-PDM
Arlington, Virginia 22203

Re: Draft Environmental Impact Statement and Proposed Habitat Conservation Plan and
Incidental Take Permit for the Indiana Bat for the Fowler Ridge Wind Farm,
Benton, County, Indiana – CEQ No. 20130081

To Whom It May Concern:

In accordance with our responsibilities under Section 309 of the Clean Air Act (CAA), the National Environmental Policy Act (NEPA), and the Council on Environmental Quality regulations for implementing NEPA, the U.S. Environmental Protection Agency (U.S. EPA) has completed its review of the Draft Environmental Impact Statement (Draft EIS) prepared by the U.S. Fish and Wildlife Service (USFWS) for a Habitat Conservation Plan (HCP) for an existing wind farm and proposed Phase IV expansion located in Benton County, Indiana. The wind farm is owned by four separate companies: Fowler Ridge Wind Farm LLC, Fowler Ridge II Wind Farm LLC, Fowler Ridge III Wind Farm LLC, and Fowler Ridge IV Wind Farm LLC (FRWF). The applicant, FRWF, has applied to USFWS for an incidental take permit (ITP) under the Endangered Species Act of 1973 (ESA), as amended, for proposed impacts to the Federally-endangered Indiana bat (*Myotis sodalis*). The applicant has developed the HCP to ensure that impacts to the Federally-listed Indiana bat are adequately minimized and mitigated in accordance with the requirements of Section 10 of the ESA.

The Draft EIS analyzes the impacts associated with construction of Phase IV and the operation and decommissioning of the four phases of the Fowler Ridge Wind Farm. USFWS proposes to approve the HCP and issue a 22-year ITP to FRWF. The proposed project, specifically Phase IV, would involve construction of up to 94 turbines along with associated access roads and infrastructure, with generation of up to 150 megawatts (MW) of electricity. The first three phases of FRWF consist of 355 wind turbines with a total energy capacity of 600 MW. Total build-out for all four phases will be up to 449 turbines with a total energy capacity of 750 MW.

U.S. EPA supports the development of renewable energy resources, as recommended in the National Energy Policy Act of 2005 and President Obama's New Energy for America plan, in an expeditious and well-planned manner.

The Draft EIS analyzes the impacts of three action alternatives as well as the "No Action" alternative. The alternatives differ with respect to operation of all existing and proposed turbines. Under the No Action Alternative, the applicant would construct Phase IV, but all 449 turbines would

be non-operational from sunset to sunrise from August 1 through October 15, the primary fall migratory period of the Indiana bat, each year during the operational life (22 years) of the FRWF. Implementation of this alternative would be expected to result in complete avoidance of impacts to Indiana bats; therefore, an ITP pursuant to Section 10 of the ESA would not be necessary and an ITP would not be issued for the existing phases of the FRWF or future Phase IV. In addition, an HCP would not be prepared and the Indiana bat would not have the conservation benefits (e.g., mitigation) afforded to it through development and implementation of an HCP. However, FRWF would commit to implementing the FRWF Bird and Bat Conservation Strategy (BBCS) as part of the No Action alternative to reduce the potential for impacts to migratory birds and bat species.

Under the Applicant's Preferred Action, the "5.0 meters per second (m/s) Cut-In Speed Alternative," seasonal operational adjustments would be implemented, an HCP would be prepared to avoid, minimize, mitigate, and monitor take of Indiana bats, and an ITP pursuant to Section 10 of the ESA would be issued for the existing phases of the FRWF and the future Phase IV. The HCP contains the following measures designed to avoid, minimize, mitigate, and monitor take of Indiana bats:

- 1) FRWF would minimize potential take of Indiana bats from operations of the project by implementing seasonal turbine operational adjustments. Based on the reduced number of overall bat fatalities and lack of Indiana bat fatalities found during the spring and summer compared to the fall during three years of monitoring at FRWF Phases I-III, USFWS has determined the risk to Indiana bats at FRWF occurs during the fall. Because take of Indiana bats is expected to occur only during the fall migration season and Indiana bat fatalities are not expected during the spring migration, summer maternity, or winter seasons, no operational adjustments would be made during the spring migration, the summer maternity season, or after October 15.
- 2) FRWF would implement operational practices that are expected to reduce take of Indiana bats. However, some level of unavoidable, incidental take may still occur. Therefore, FRWF would mitigate for the unavoidable impacts of the taking of Indiana bats by coordinating, funding, and monitoring the protection and restoration of both summer habitat and winter habitat. Specifically, FRWF would preserve and restore summer maternity habitat in the vicinity of existing maternity colonies in Putnam County, Tippecanoe County, Vermillion County, or Warren County; and protect winter habitat by installing a new bat gate near the entrance of a Priority 1 hibernaculum, Wyandotte Cave, in Crawford County, Indiana.

For the term of the ITP (22 years), FRWF will raise the turbine cut-in speed to 5.0 m/s on a nightly basis from sunset to sunrise, adjusted for sunset/sunrise times weekly, starting August 1 and ending October 15 annually. HCP implementation would also include post-construction monitoring, adaptive management, and mitigation focused on the Indiana bat, but would also benefit other avian and bat species. FRWF would commit to implementing the FRWF BBCS as part of this alternative to reduce the potential for impacts to migratory birds and bat species.

A non-preferred alternative, the "3.5 m/s Cut-In Speed (Feathered) Alternative", the minimally-restricted operations alternative, would consist of the same build-out as the Applicant Preferred Action, with the exception that all turbines would be feathered until a cut-in speed of 3.5 m/s is reached on a nightly basis from sunset to sunrise, starting August 1 and ending October 15 annually. In addition to feathering turbines below 3.5 m/s, FRWF would implement an adaptive management plan that includes adjusting cut-in speeds in 0.5 m/s increments, if needed, to ensure compliance with authorized take limits. Although feathering blades below the 3.5 m/s cut-in speed is anticipated to reduce take of Indiana bats, some level of unavoidable, incidental take may still occur.

To mitigate for unavoidable impacts of the taking of Indiana bats under this alternative, FRWF will coordinate, fund, and monitor the protection and restoration of both summer habitat and winter Indiana bat habitat. The monitoring program that would be implemented as part of the HCP would consist of two components: take limit compliance monitoring and mitigation effectiveness monitoring. The goal of take limit compliance monitoring is to ensure compliance with the terms of the ITP, whereas, the goal of mitigation effectiveness monitoring is to ensure the success of mitigation efforts at offsetting the impacts of unavoidable take of Indiana bats from the FRWF. Operations under this alternative are expected to have greater adverse effects on Indiana bat populations than the Applicant Preferred Action.

Another alternative, the "6.5 m/s Cut-In Speed (Feathered) Alternative," the maximally-restricted operations alternative, includes implementation of an HCP to avoid, minimize, mitigate, and monitor take of Indiana bats in accordance with Section 10 of the ESA. This alternative would consist of the same build-out as the Applicant Preferred Action, with the exception that all turbines would be feathered until a cut-in speed of 6.5 m/s is reached on a nightly basis from sunset to sunrise, starting August 1 and ending October 15 annually. In addition to feathering turbines below 6.5 m/s, FRWF would implement an adaptive management plan that includes adjusting cut-in speeds in 0.5 m/s increments, if needed, to ensure compliance with authorized take limits. Although feathering blades below the 6.5 m/s cut-in speed is anticipated to reduce take of Indiana bats, some level of unavoidable, incidental take may still occur.

To mitigate for unavoidable impacts of the taking of Indiana bats under this alternative, FRWF will coordinate, fund, and monitor the protection and restoration of both summer habitat and winter Indiana bat habitat. The monitoring program that would be implemented as part of the HCP would consist of the same two components as the 3.5 and 5.0 m/s alternatives: take limit compliance monitoring and mitigation effectiveness monitoring. Operations under this alternative are expected to have fewer adverse effects on Indiana bat populations than the Applicant Preferred Action. Fowler Ridge would commit to implementing the FRWF BBCS as part of this alternative to reduce the potential for impacts to migratory birds and bat species.

We commend the activities the applicant has taken to avoid and minimize impacts to species, including siting the project in an area of moderate avian use; developing the project in phases to observe the effect of the project on a state-listed avian species, the American golden plover, prior to development of phases located closer to the plover Important Birding Area (IBA); micro-siting all Phase IV turbines in cultivated croplands and locating all Phase I - III turbines and facilities to avoid native bird habitat and Indiana Department of Natural Resources Gamebird Habitat Areas; building the transmission line to Avian Power Line Interaction Committee avian-safe standards; burying collection lines underground; equipping the Project substation with downward-facing shields on all lights; and, providing sensitive species awareness training for all on-site workers.

Based on our analysis, U.S. EPA rates the Draft EIS as "**Environmental Concerns – Insufficient Information**" (EC-2). Please see the enclosed "Summary of Rating Definitions." We recommend the Final EIS address the following comments regarding aquatic resources, financial assurance, reclamation, best management practices, and avian mortality in the Final EIS.

Aquatic Resources - Streams

We commend the applicant's commitment to avoidance of all wetlands within the project area. The Draft EIS indicates access roads, etc. for the 94-turbine proposed project would not entail any permanent stream crossings. However, the Draft EIS does not indicate: 1) the number of temporary

stream crossings proposed; 2) the linear feet of both temporary and permanent stream impacts; or 3) whether a Clean Water Act Section 401 Water Quality Certification will be required and obtained from the Indiana Department of Environmental Management, a Construction in a Floodway Permit will be required and obtained from the Indiana Department of Natural Resources, and a Nationwide or Regional General Permit will be required and obtained, from the U.S. Army Corps of Engineers for project-related crossings of Waters of the United States. Because proposed stream crossings are most likely temporary, it is expected that these types of stream impacts can be restored. The Final EIS should discuss whether any permanent stream crossings will be required, and measures taken to obtain regulatory approvals for both temporary and permanent impacts to Waters of the U.S. and Waters of the State. The Final EIS should discuss permits to be obtained, restoration measures to be taken, and associated mitigation (if applicable).

Aquatic Resources – Intermittent or Ephemeral Streams

Additionally, the Draft EIS does not indicate if any stream crossings would occur at intermittent or ephemeral streams. EPA recommends the Final EIS clarify this point. In the event that intermittent or ephemeral streams will be crossed, EPA supports the use of directional boring of underground utilities to avoid direct stream impacts. However, there is a possibility that intermittent streams may not be dry during construction timeframes. In the event that any intermittent or ephemeral streams have active flow at the time of construction, EPA recommends that a commitment be made to directionally bore, rather than open-trench through open stream flow. This commitment should be made in the Final EIS.

Financial Assurance

84 The Draft EIS indicates the lifespan of Phase IV will most likely be 20-22 years. An obligation to decommission the facility and perform reclamation was discussed in detail. However, information regarding financial assurance for decommissioning and reclamation was not included in the Draft EIS. Additionally, information regarding financial assurance for mitigation, monitoring, and the adaptive management portions of the HCP was not discussed in the Draft EIS. EPA recommends the Final EIS include a discussion focused on USFWS' regulatory authority under the ESA to require financial assurance from an applicant to meet their responsibilities as stated in the HCP.

Reclamation

85 The Geology and Soils Section of the Draft EIS indicates that areas subject to temporary disturbance will be re-vegetated in accordance with the Erosion and Sediment Control Plan. In non-cultivated areas, re-vegetation will involve reseeding with native vegetation or other suitable seed mix based on land use and mulching to encourage growth. We recommend referring to the Indiana Department of Natural Resources' Native Plant List for Northern Indiana to prepare a list of plants suitable for use during re-vegetation. Please include this list as an appendix to the Final EIS.

Best Management Practices (BMPs)

86 BMPs are mentioned in various sections of the DEIS as a way to minimize impacts to a particular resource. We recommend the Final EIS contain typical BMPs that could be implemented to reduce impacts, particularly during construction and decommissioning. For example, Section 5.12.6, Mitigation for Impacts to Air Quality and Climate, contains a statement that BMPs (e.g., watering roads) would be implemented to reduce the amount of fugitive dust generated during construction and decommissioning. Expanding on the idea of BMPs to include a list of typical measures (i.e., cover construction materials and stockpiled soils, cover concrete batch materials, minimize disturbed areas, and other dust abatement techniques) would provide reviewers with a better understanding of

the actions that could be employed to reduce impacts. EPA recommends the Final EIS include examples of BMPs typically used for this type of project.

Final Road Preparation, Erosion Control, and Reclamation and Decommissioning

The Draft EIS indicates that, during reclamation and decommissioning, all unused construction materials and waste will be picked up and removed from the project area and waste materials will be disposed of at approved and appropriate landfills. Likewise, if decommissioning is undertaken after the useful life of the turbines is complete, turbines, infrastructure, and facilities will be removed. Most components and materials will be removed, recycled, or disposed of in an approved and appropriate waste management facility. EPA recommends the Final EIS be revised to indicate that any and all materials from the construction and/or the decommissioning phase will be removed from the project site, recycled, or disposed of appropriately.

87

Other Sources of Mortality During Operation

Section 5.5.3, Operation Effects, Other Sources of Mortality During Operation, discusses impacts to birds from meteorological towers (MET towers). Direct avian mortality appears to be the primary impact associated with these structures depending on tower height, lighting, color, structure, and the presence of guy wires (The Ornithological Council 2007). According to The Ornithological Council, white strobe lighting typically results in the lowest mortality rate. Seven permanent, un-guyed MET towers, fitted with red strobe lighting, are located within the FRWF project area, and a maximum of three additional permanent, un-guyed MET towers will be constructed for Phase IV, and, presumably, fitted with red strobe lighting. **We recommend the use of white strobe lighting on MET towers be discussed with the Federal Aviation Administration (FAA) to reduce avian mortality in the project area.** If the use of white strobe lighting is not permissible, we recommend the Final EIS include the rationale behind the continued use of red strobe lighting at FRWF.

88

We commend the various measures the Applicant has incorporated to avoid and minimize impacts to birds, including equipping the Project substation with downward facing shields on all lights. Additionally, all operators and technicians on-site are required to turn off internal lights in turbines at night when lights are not required for safety or compliance purposes. According to the Draft EIS, of particular concern relative to bird collisions with all types of structures are episodic events involving large numbers of one or a few bird species during migration. These have been recorded at multiple locations, and are associated with lighting that attracts or disorients birds. Weather conditions and the location of the carcasses suggested that the birds were attracted to bright sodium vapor lights present at a substation located adjacent to three turbines. After these lights were extinguished, no other episodic events occurred at the substation or adjacent turbines (Kerns and Kerlinger 2004). Similarly, in September 2011 at the Mount Storm Wind Energy Facility in West Virginia, 59 bird carcasses were found on one day, 31 of which were found at one turbine whose internal nacelle light had been inadvertently left on overnight; the nacelle light was thought to have attracted the birds to the turbine during foggy weather conditions. Based on the above findings, we recommend use of motion-detection lights that will shut off automatically after a pre-determined amount of time when no human movement is detected. For a nominal cost, this type of device will ensure avian impacts are reduced from unnecessary lighting at night.

89

Draft Eagle Conservation Plan Guidance

On February 18, 2011, USFWS announced the availability of Draft Eagle Conservation Plan Guidance (Guidance). The draft Guidance provides a means of compliance with the Bald and Golden Eagle Protection Act by providing recommendations for: 1) conducting early

pre-construction assessments to identify important eagle use areas; 2) avoiding, minimizing, and/or compensating for potential adverse effects to eagles; and 3) monitoring for impacts to eagles during construction and operation. As stated in the Draft EIS, the Draft Eagle Conservation Plan Guidance interprets and clarifies the permit requirements in the regulations at 50 C.F.R. 22.26 and 22.27, but does not impose any binding requirements beyond those specified in the regulations.

90 Per the February, 2011 guidance regarding eagle conservation plans for wind energy facilities, an eagle risk assessment was conducted for the proposed project. As stated in the Draft EIS, "The public comment period on the draft Guidance ended on May 19, 2011. The Service anticipates having final guidance available in 2012." We recommend the Final EIS indicate whether this Guidance has been finalized and whether all relevant Guidance changes have been included in a revised bald and golden eagle management plan included in the Bird and Bat Conservation Strategy for the proposed project.

Whooping Crane Risk Assessment

According to the Draft EIS, approximately 94.6 acres of wetlands were identified in the vicinity of the project area with marginal habitat quality for whooping cranes. Approximately 38 acres of open water, primarily small ponds, were identified within the project area. It is possible that migrating whooping cranes may occasionally stopover in Benton County. A risk assessment determined that direct mortality during Project construction is very unlikely, especially when construction occurs outside of the spring and fall migration periods. Direct mortality was also determined to be unlikely during the steady migratory flight, since whooping cranes migrate at an altitude much higher than the rotor swept area of the turbines. The risk assessment identified greater potential for collision with turbines and/or the proposed project's transmission line during stopover periods when whooping cranes fly between foraging and roosting sites at sunset and sunrise under low-light conditions. Inclement weather was also determined to increase the chance of collision.

91 According to the Draft EIS, the potential for adverse effects to whooping cranes, particularly from turbines, cannot be reduced to discountable or insignificant levels. The risk assessment concluded that, for this reason, if the flock was protected under the ESA, the appropriate determination would be that operation of the proposed project is likely to adversely affect whooping cranes. Due to the presence of marginal stopover habitat in the proposed project area, the risk assessment considered the potential for disturbance and displacement of whooping cranes to be possible. Even through the overall risk to whooping cranes at RWF was determined to be low, based on the small total population size of the flock (~100 cranes) and the marginal quality of the habitat within the proposed project area, the Draft EIS indicated that marking power lines reduces collision rates. Based on the above, we recommend the Final EIS indicate whether the applicant will mark power lines to reduce adverse effects to whooping cranes using the project area during stopover periods when whooping cranes fly between foraging and roosting sites at sunset and sunrise.

We appreciate the opportunity to review this Draft EIS. If you have any questions or comments regarding the contents of this letter, I can be reached via telephone at 312-886-2910 or via email at westlake.kenneth@epa.gov; Kathy Kowal of my staff can be reached at 312-353-5206 or via email at kowal.kathleen@epa.gov.

Sincerely,



Kenneth A. Westlake, Chief
NEPA Implementation Section
Office of Enforcement and Compliance Assurance

Enclosure – Summary of Rating Definitions

cc: Forest Clark, USFWS-Bloomington
Aaron Damrill, Michiana Branch, Detroit District
Laban Lindley, Indianapolis Field Office (Louisville District)
Matt Buffington, IDNR-Division of Fish and Wildlife
Markita Shepherdson, IDNR-Division of Water
Samantha Gross, IDEM-401 WQC Program

From: **Buffington, Matt** <MBuffington@dnr.in.gov>
Date: Mon, Jun 24, 2013 at 10:41 AM
Subject: Fowler DEIS
To: Forest_Clark@fws.gov

Forest,

For some reason, we did not receive the Fowler DEIS for review and only learned of it when EPA forwarded their comments to us. (Or maybe it did get to us but was lost somehow.) One staff made a quick read through and I tried to get through it but only got about half way. I know the comment period has passed but thought I would pass along a couple things.

92 I mentioned to Marissa that I wasn't sure how involved we were with the Wyandotte mitigation discussion. Hopefully heavily involved given this is one of our properties. I don't know the condition of the existing Wyandotte gate. I think we would like to see as much summer habitat protection/restoration as possible as it can benefit numerous bat species. Also, we weren't sure if all the mitigation numbers for bats were taking WNS into account or not.

93 In the FEIS, you may want to correct Table 1.2. The DNR, Division of Water, is in charge of the Flood Control Act, with Fish and Wildlife doing a review of the potential impacts to fish, wildlife, and plants for those permits.

94 According to the State Land Office website, there are state-owned properties in Benton Co. Not parks, but still public land. <http://www.in.gov/idoa/StateLandOffice/>. This is correctly stated at 4.5.2.7 but the section about public use lands (4.2.2.7) suggests there is no state owned land. So technically correct but perhaps a slight misleading at first when the document states there is no state owned land in the project limits.

95 Under 4.4.3.3 and 5.4.2.3 Floodplain, not all floodplains are mapped. Just because a FEMA map does not show a floodplain does not mean one does not exist, or that actions could not affect floodwater attenuation. Every stream has a floodplain and anything with a floodplain can be altered to affect flooding conditions.

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