

**Final Environmental Impact Statement
For Proposed Issuance of an Incidental Take Permit
For the Beech Ridge Energy Wind Project Habitat Conservation Plan,
Greenbrier and Nicholas Counties, West Virginia**

Volume III: Responses to Comments



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**US Fish and Wildlife Service
West Virginia Field Office
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Elkins, WV 26241**

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

VOLUME III: RESPONSES TO COMMENTS

FINAL ENVIRONMENTAL IMPACT STATEMENT

**For Proposed Issuance of an Incidental Take Permit
For the Beech Ridge Energy Wind Project Habitat Conservation Plan**

Greenbrier and Nicholas Counties, West Virginia

TABLE OF CONTENTS

ACRONYMS AND ABBREVIATIONS IV

1 INTRODUCTION 1

 1.1 Public Comments Process 1

 1.2 Public Comments Received 1

 1.3 Comment Response Organization..... 3

2 MASTER RESPONSES..... 3

 2.1 MR-1 Overview of the curtailment plan and proposed Research, Monitoring and Adaptive Management Plan (RMAMP) 3

 2.2 MR-2 Best available scientific information regarding curtailment 4

 2.3 MR-3 Maximum extent practicable 7

 2.4 MR-4 HCP and RMAMP adequacy for addressing changed circumstances 9

 2.5 MR-5 Risk to eagles..... 11

 2.6 MR-6 Evaluation of benefits to the environment associated with employing wind-powered electricity 13

 2.7 MR-7 Likelihood of Indiana bat and Virginia big-eared bat occurrence in Project area 14

 2.8 MR-8 Little brown bat surrogate method for estimating take of Indiana bat 15

 2.9 MR-9 Level of take of listed bats..... 16

 2.10 MR-10 Effects to socioeconomic conditions in the region 17

 2.11 MR-11 Variation in effects related to turbine size in the existing Project area and in the expansion area 18

 2.12 MR-12 Compliance with Migratory Bird Treaty Act..... 18

 2.13 MR-13 Measurable Biological Objective 20

3 SPECIFIC RESPONSES TO INDIVIDUAL COMMENTS ON DEIS..... 21

 3.1 Agency Comments and Responses 21

 3.1.1 Environmental Protection Agency (EPA) 21

 3.1.2 U.S. Army Corps of Engineers (USACE)..... 22

 3.2 Native American Tribe Comments and Responses 26

 3.3 Non-Government Organization Comments and Responses..... 26

 3.4 General Public Comments and Responses 40

4 SPECIFIC RESPONSES TO INDIVIDUAL COMMENTS ON DHCP 44

 4.1 Non-Government Organizations Comments and Responses..... 44

 4.2 General Public Comments and Responses 61

5 REFERENCES..... 64

Appendix A: Comment Letters 68

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

ACRONYMS AND ABBREVIATIONS

ABC	American Bird Conservancy
APP	Avian Protection Plan
Applicant	Beech Ridge Energy LLC and Beech Ridge Energy II LLC
BBCS	Bird and Bat Conservation Strategies
BGEPA	Bald and Golden Eagle Protection Act
BRE	Beech Ridge Energy LLC and Beech Ridge Energy II LLC
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
DEIS	Draft Environmental Impact Statement
DHCP	Draft Habitat Conservation Plan
ESA	Endangered Species Act
FAC	Federal Advisory Committee
FEIS	Final Environmental Impact Statement
FHCP	Final Habitat Conservation Plan
FR	Federal Register
GE	General Electric
HCP	Habitat Conservation Plan
ITP	Incidental Take Permit
LWEG	Land-based Wind Energy Guidelines
MBTA	Migratory Bird Treaty Act
MOA	Memorandum of Agreement
MR	master response
m/s	meters per second
MW	megawatt
NEPA	National Environmental Policy Act
NWP	Nationwide Permit
RMAMP	Research, Monitoring and Adaptive Management Plan
Service	U.S. Fish and Wildlife Service
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
WNS	white-nose syndrome
WVPSC	West Virginia Public Service Commission

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

1 INTRODUCTION

1.1 Public Comments Process

The Beech Ridge Energy Wind Project Draft Environmental Impact Statement (DEIS) and Beech Ridge Energy Wind Project Draft Habitat Conservation Plan (DHCP) were officially released for public review on August 24, 2012. The public comment period was open for 60 days¹ and ended on October 23, 2012. The DEIS and DHCP were distributed to the U.S. Environmental Protection Agency (USEPA) and other parties, announced in the Federal Register (FR; 77 FR 51554), and made available in hard copy or electronic format for review at the following locations:

- U.S Fish and Wildlife Service (the Service) West Virginia Field Office (hard copy in office and electronic copy on Website)
- Federal eRulemaking Portal: <http://www.regulations.gov> (electronic copy)
- Rupert Public Library (hard copy)
- Greenbrier County Public Library (hard copy)
- Kanawha County Public Library (hard copy)

Comment letters were submitted by either of the following methods:

- Electronically: Federal eRulemaking Portal: <http://www.regulations.gov> by entering in the Search box FWS-R5-ES-2012-0059, which is the docket number.
- By hard copy: U.S. mail or hand-delivery to Public Comments Processing, Attn: FWS-R-5-ES-2012-0059, Division of Policy and Directives Management, USFWS, 4401 N. Fairfax Drive, MS 2042-PDM; Arlington, VA 22203.

1.2 Public Comments Received

The Service received 42 comment letters on the DEIS and DHCP of which 20 were form letters (summarized in Tables 1-1 and 1-2 below). The Service received comments from private individuals, non-governmental organizations, the permit applicant, a Tribe, and federal governmental agencies. Tables 1-1 and 1-2 list the name or organization of the comment submitted and the location of the response(s) in this document.

Each public comment letter was assigned a unique identifying number, and then individual comments within each letter were identified. In some cases where commenters identified a major issue and then provided extensive supporting evidence or comments on this issue, we marked, summarized, and responded to their main point rather than attempting to respond line-by-line to each individual point. We identified more than 200 individual comments from the comment letters. These individual comments were entered into a database and categorized by issue and sub-issue. Several individuals from the Service and our National Environmental Policy Act (NEPA) consultant drafted responses to public comments. We sought input from Beech Ridge Energy LLC (BRE or the Applicant) on technical comments related to their DHCP application.

¹ The DHCP became available in advance of the Service's official opening of the public comment period for the DEIS and DHCP. On May 10, 2012, BRE posted to its Web site the DHCP and sent letters to known interested parties announcing the DHCP's availability.

BEECH RIDGE ENERGY WIND PROJECT
 FINAL ENVIRONMENTAL IMPACT STATEMENT
 RESPONSES TO COMMENTS

Table 1-1. Unique public comment letters received on the Beech Ridge Energy Wind Project Draft Environmental Impact Statement (DEIS) and Beech Ridge Energy Wind Project Draft Habitat Conservation Plan (DHCP).

Letter Number	Organization or Name	Section(s) containing response to comments
1	Conservation Law Center (Jeffrey Hyman and Virginie Roveillo)	Section 2: MR-1, MR-2, MR-3, MR-4, MR-9, MR-13; Section 3.3; Section 4.1
2	Animal Welfare Institute (Tara Zuardo)	Section 2: MR-1, MR-2, MR-3, MR-4, MR-5, MR-7, MR-8, MR-9, MR-11, MR-12, MR-13; Section 3.3; Section 4.1
3	American Bird Conservancy (Kelly Fuller)	Section 2: MR-5, MR-8, MR-12; Section 3.3
4	Kauffelt and Kauffelt (Mark E. Kauffelt)	Section 2: MR-8, MR-9, MR-11; Section 4.2
5	Rick Webb	Section 2: MR-4, MR-6, MR-8, MR-13; Section 3.4; Section 4.2
6	Allegheny Highlands Alliance (Brad Stephens)	Section 3.3
7	Maryland Conservation Council (Norman Meadow)	Section 3.3
8	Environmental Protection Agency (Barbara Rudnick)	Section 3.1.1
9	U.S. Army Corps of Engineers (Susan Fields)	Section 3.1.2
10	Jean Public	Section 2: MR-2, MR-3
11	Timothy R. Ruckman	Section 3.3; Section 3.4
12	Kyle Ragan	Section 3.4
13	Chad Goldfarb	Section 2: MR-1; Section 3.4
14	Catawba Indian Nation (Wenonah G. Haire)	Section 3.2
15	David Sommerville	Section 3.4; Section 4.2
16	Friends of Beautiful Pendleton County (Larry B. Thomas)	Section 2: MR-1, MR-2, MR-3, MR-4, MR-9, MR-13; Section 3.3; Section 4.1
17	Friends of Blackwater (Judith Rodd) and 6 other non-governmental organizations	Section 2: MR-1, MR-2, MR-3, MR-4, MR-9, MR-13; Section 3.3; Section 4.1
18	Charles Rop	Section 3.3; Section 4.2
19	Earl Dodrill	Section 3.3; Section 4.2
20	Allegheny Front Alliance (Frank O'Hara)	Section 2: MR-1, MR-2, MR-3, MR-4, MR-9, MR-13; Section 3.3; Section 4.1
41	Invenergy (Bryan Schueler)	Section 2: MR-6, MR-10; Section 3.3
42	Pamela C. Dodds and Arthur Dodds, Jr.	Section 3.4

BEECH RIDGE ENERGY WIND PROJECT
 FINAL ENVIRONMENTAL IMPACT STATEMENT
 RESPONSES TO COMMENTS

Table 1-2. Individuals who submitted the comment form letter in support of the Project (Comment Letters 21-40)..		
Jeri Lynne Allison	Shannon Langley	James Phillips
Josh Bender	Gregory S. Lilly	Fred Shamblin Jr.
George M. Blankenship	Jack McClung	Dewey L. Stickler
Brandon Daily	Ricky Meadows	Betty Tharp
Milbern Ross Dowdy	Christopher W. Meehan	Stephen M. Tolley
Keely Hobbs	Delia Meadow	1 unknown (illegible signature)
Gaye Keech	Shirley Gail Ratliff	
Section containing response to form letter:	Section 2: MR-10; Section 3.4	

1.3 Comment Response Organization

The Service's responses to comments on the DEIS and DHCP are provided in the following sections. The comments reflect a wide range of issues regarding the DHCP and the DEIS and in many cases similar issues were raised among commenters. To avoid redundancy in responses to individual comments and to comments on related issues, we prepared master responses (MRs) for those key topic areas. Master responses are followed by responses to individual specific comments, which are organized sequentially by comment number.

Commenters may find their comment letter in Appendix A to determine how issues were grouped and numbered. Commenters may then review either MRs or specific responses to each numbered comment.

2 MASTER RESPONSES

2.1 MR-1 Overview of the curtailment plan and proposed Research, Monitoring and Adaptive Management Plan (RMAMP)

A number of comments pertained to the adequacy of the curtailment plan and the effectiveness of the Research, Monitoring and Adaptive Management Plan (RMAMP) in meeting the biological goals of the HCP. We provide this general overview to describe the curtailment plan as a preface to more specific responses later in this document.

As described in the RMAMP (Appendix C in the HCP), BRE's curtailment program will test various cut-in speeds as needed to meet the HCP's biological goals and objectives. The RMAMP (Appendix C in the HCP) identifies, through research (Section 2.0 in the RMAMP), a Curtailment Plan that meets the biological goals and objectives; monitoring (Section 3.0 in the RMAMP) the effectiveness of the plan for the life-of-project, and changing the plan, if needed, through adaptive management (Section 5.0 in the RMAMP).

As described in Sections 1.3 in the RMAMP, adaptive management will be used to:

- 1) identify uncertainties;
- 2) determine which experimental operational strategies to implement to achieve the HCP's biological goals and objectives;
- 3) evaluate and implement an effective post-construction monitoring program that:
 - a) is effective in providing reasonably accurate estimates of mortality; and
 - b) informs potential adjustments in monitoring; and
- 4) incorporate feedback that links implementation and monitoring to a decision-making process that results in appropriate changes in turbine operation.

The primary biological goal related to the minimization plan is to minimize potential take of Indiana bats (*Myotis sodalis*) and Virginia big-eared bats (*Corynorhinus townsendii virginianus*) through on-site minimization measures. While this goal is similar between the DHCP and final habitat conservation plan (FHCP), in response to public comments BRE incorporated measurable objectives to ensure the FHCP achieves a 60% annual reduction in *Myotis* fatalities and 50% annual reduction in fatality of Virginia big-

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

eared bats and all other bat species. These objectives will primarily be reached by implementing a turbine curtailment plan (i.e., feathering turbine blades [rotating blades to such an angle so as to reduce turbine rotations to less than 1 to 2 revolutions per minute] below specific cut-in speeds [speed at which turbine generators begin to generate electricity]), which will be evaluated through BRE's RMAMP process. Reduction in *Myotis* bat fatality is anticipated to achieve a corresponding reduction in Indiana bat fatality.

BRE has committed to implementing initially a turbine curtailment plan that includes feathering all turbines below the 4.8 meters per second (m/s) cut-in speed beginning at sunset for a period of 5 hours from July 15 through October 15. In addition, they will implement the RMAMP (an adaptive management strategy) to assess whether those minimization measures are effective in achieving the 60% annual reduction in *Myotis* fatalities and 50% annual reduction in other bat fatalities. Through the RMAMP, BRE will also evaluate the potential for additional reductions in bat fatality through several modifications to the curtailment plan (e.g., increased cut-in speeds, full-night curtailment). If the minimization measures prove to be ineffective in achieving the 60% annual reduction in *Myotis* fatality and 50% annual reduction in other bat fatality, BRE has committed through the RMAMP process to increase the cut-in speed levels, the nightly duration of applying the cut-in speeds, and/or extending the season of applying the curtailment measures until such point as the biological goals and objectives are achieved.

The Service believes that the curtailment plan, especially in light of BRE's commitment to adjust the plan to ensure effectiveness, will achieve the stated biological goals for the FHCP. Multiple studies have demonstrated that implementing turbine feathering below elevated turbine cut-in speeds can significantly reduce all bat mortality compared to wind turbines that are not operating with feathering and elevated cut-in speeds (see **MR-2** for more details). For example, in fall 2010 bat fatality was reduced by 50% at the Fowler Ridge Wind Farm when cut-in speeds were raised to 5 m/s, applied all night without turbine feathering. Similarly, in fall 2011 bat fatality was reduced by 57% at the Fowler Ridge Wind Farm by fully feathering blades all night below a 4.5 m/s cut-in speed. These fall season bat reduction estimates are higher than would be anticipated when considered across the entire year, but demonstrate that significant bat fatality reductions can result from the right combination of raised cut-in speeds and turbine feathering. BRE's biological goal and objective, to produce a 60% annual reduction in *Myotis* fatalities and 50% annual reduction in other bat fatalities, is achievable and is within the range demonstrated by other similar projects.

The Service anticipates that the RMAMP process will ensure the HCP is effective in meeting or exceeding the biological goals within the first 3 years of implementation. In the event that annual *Myotis* fatality is higher than 60% or other bat annual fatality is higher than 50% during implementation of the RMAMP process, BRE will implement additional measures to meet bat fatality reduction objectives. To account for the potential that incidental take may be somewhat higher during calibration of the curtailment plan, the HCP incorporates a higher level of incidental take for the first 3 years and thereafter assumes a lower level of incidental take through the permit duration.

We note that in the FHCP, BRE has also included an option to implement less restrictive operational protocols that achieve similar reductions in fatality rates of *Myotis* species and all bats if BRE's initial curtailment plan is demonstrated to successfully reduce annual *Myotis* fatalities by 60%. BRE has committed to consider additional intensive monitoring with any changes to their curtailment plan, assuming additional information is necessary to evaluate the revised operational protocols. Similar reduction in *Myotis* and all bat fatality rates are defined as reductions within the 90% confidence interval of a 3-year running average adjusted fatality rate. BRE's curtailment plan will only be modified with the written agreement of the Service and according to procedures identified in the HCP as well as the permit and IA.

2.2 MR-2 Best available scientific information regarding curtailment

There were a number of comments regarding the application of best available scientific and commercial information in developing and evaluating curtailment strategies in the DHCP. Several comments suggested that while the best available science was considered, in some cases it was inappropriately

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

interpreted or applied. Specifically, commenters raised the following issues with the science applied to BRE's curtailment plan:

1. The plan relies on interpretations of the Casselman study (Arnett et al. 2011), which did not find a significant difference between the effects of curtailment at 5.0 m/s and 6.5 m/s, and does not adequately incorporate information from the Fowler Ridge Wind Farm studies; and
2. The plan relies on the concept that curtailment does not minimize take significantly beyond the first 5 hours after sunset; and
3. The plan allows for curtailment at 4.8 m/s rather than the commonly studied 5.0 m/s (this issue is more fully discussed in **Letter 2, Comment 32b**).

While information regarding impacts from wind power is constantly emerging, the Service's FEIS (Table 5.24) incorporates the best available scientific information on curtailment studies (including recent curtailment studies at Fowler Ridge (Good et al. 2012), Criterion (Young et al. 2013b), Mount Storm (Young et al. 2011a, 2012d), Pinnacle (Hein et al. 2013), Laurel Mountain (Stantec 2013), Beech Ridge (Tidhar et al. 2013), and North Allegheny (Shoener Environmental 2013) wind power projects. BRE has included in the FHCP new information from 3 of these curtailment studies, from Mount Storm and Fowler Ridge (Young et al. 2011a, 2012d; Good et al. 2012).

Multiple studies have considered different cut-in speeds to date, and evidence demonstrates that use of feathering and a variety of different raised cut-in speeds can significantly reduce all bat mortality compared to wind turbines that are not operating with feathering and cut-in speeds. These studies are summarized in Section 4.1.5.2 in the FHCP, Section 2.1 in the final RMAMP, and Sections 3.2.3.1, 5.8.2.2, and 5.8.2.3 in the FEIS. The Casselman study (Arnett et al. 2010) was only one of a number of studies considered in both documents. BRE included the results of the 2010 Fowler Ridge Wind Farm studies (Good et al. 2011) in its analysis presented in Section 4.1.5 in the DHCP. In addition, the FHCP and FEIS have been updated to include information from the 2011 Fowler Ridge Wind Farm study of feathering (Good et al. 2012). The Fowler Ridge studies are also summarized here.² The commenter is correct that BRE noted that the Casselman study did not find a significant difference between the effects of curtailment at 5.0 m/s and 6.5 m/s (Arnett et al. 2010). However, BRE did incorporate studies that demonstrated differences in fatality reductions between various curtailment regimes in the DHCP (Good et al. 2011) and in the FHCP (Good et al. 2011, 2012). Existing available information from testing different cut-in speeds is inconsistent in terms of terminology, methods, and ultimately results and interpretations. The one thing that does seem to be clear is that feathering turbines below raised cut-in speeds at night during the seasons of greatest bat exposure at wind projects can significantly reduce bat fatalities.

In implementing the HCP, BRE will initially evaluate whether implementing turbine feathering below a cut-in speed of 4.8 m/s will achieve the biological goal and objective of a 60% annual reduction in *Myotis* fatalities and 50% annual reduction for Virginia big-eared bats and all other bat species (see **MR 13** Measurable Biological Objective). The best available scientific literature shows that cut-in speeds of 5.0 m/s all night have achieved an average reduction in bat fatalities of 60% for the seasonal study period, ranging between 35 and 87% for the studies (Arnett et al. 2010, Good et al. 2011, Young et al. 2013b, Hein et al. 2013). This range differs from the 44 to 93% figure cited by BRE in their HCP, which is based upon the Arnett et al. (2010) paper on curtailment trials at the Casselman project in 2008 and 2009; this paper cites a 43 to 93% nightly fatality reduction (i.e. the variation at the site from night to night), not the total fatality reduction summed across the full study season, which was 68% in 2009 and 87% in 2008. Because of the large variation among studies, there is uncertainty as to the actual results that can be achieved at Beech Ridge through particular cut-in speed adjustments. Such results are likely to be

² A curtailment study conducted in 2010 at the Fowler Ridge Wind Farm in northwestern Indiana showed that turbines with raised cut-in speeds of 5.0 m/s and 6.5 m/s all night killed fewer bats (57.5% and 78.0%, respectively) than normally operating turbines over the course of the fall migration season (Good et al. 2011). The turbine blades in this study were not feathered below the cut-in speeds, meaning they were rotating freely below cut-in speeds. The fall 2011 study at Fowler Ridge Wind Farm tested the effect of fully feathering turbine blades all night and demonstrated reduced bat fatality for the fall season by 36%, 57%, and 73%, respectively, at cut-in speeds of 3.5, 4.5, and 5.5 m/s compared to normally operating turbines (Good et al. 2012).

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

influenced by site specific variables such as blade feathering, local bat population use, habitat conditions, wind speeds, and temperatures. Rather than relying on results from any particular studies, BRE's plan relies on the RMAMP process to evaluate whether the initial curtailment plan will achieve the stated biological goals and objectives. If the RMAMP process demonstrates such objectives are not being met, BRE will implement additional changes to the curtailment plan (including the potential to raise cut-in speeds) to achieve the stated objectives.

The Service acknowledged in our EIS that higher cut-in speeds have been associated with higher fatality reductions. We also included Alternative 3 in the DEIS and FEIS to analyze the potential impacts of a curtailment strategy that includes feathering turbines below a cut-in speed of 6.5 m/s. While there is uncertainty in terms of the amount of fatality reductions associated with any given turbine cut-in speed, we noted in our DEIS that the best available information suggests that a raised cut-in speed of 6.5 m/s for the entire nightly active period could further minimize take of covered bats by 26% over the 50% reduction proposed in the DHCP. However, in the FHCP BRE's initial curtailment plan may be sufficient to achieve their biological goal and objective of a 60% annual reduction in *Myotis* fatalities and 50% annual reduction for Virginia big-eared bats and all other bat species. Further, if their RMAMP process demonstrates such objectives are not being met, modifications to the curtailment plan will be implemented.

As described in their HCP, BRE will initially evaluate whether implementing the curtailment plan beginning at sunset for a period of 5 hours during the fall season will achieve the biological goal and objective of a 60% annual reduction in *Myotis* fatalities and 50% annual reduction for Virginia big-eared bats and all other bat species. In response to public comments, BRE has included an explanation of the biological basis for this nighttime curtailment period in Section 4.1.5.2 of the FHCP. They explain and cite studies that show bat activity typically is highest in the first few hours after sunset and tapers off during the remainder of the night and the majority of bat-turbine interactions occurred roughly within 5 hours following sunset (Arnett et al. 2005, Horn et al. 2008). However, the Arnett et al. (2005) study BRE cites shows 5 bat strikes (62%) with turbines in the first 5 hours and 3 strikes (32%) the remainder of the night, which the Service considers to be a biologically meaningful level of bat mortality the second half of the night.

The Service acknowledges that information we have on curtailment related bat fatality reductions are largely based on studies that are implementing curtailment strategies during the full night-time period. To date one study of partial night curtailment has not been as effective in reducing bat fatality as full night curtailment: 7% vs. 35% respectively at the Pinnacle Wind Power Project (Hein et al. 2013). Another study found a 47% reduction in bat fatality for the first half of the night and a 22% reduction for the second half of the night, suggesting a 69% reduction for the full night (Young et al. 2011a). We note that this study at the Mount Storm Wind Power Project did not have a treatment for all night and therefore our interpretation is somewhat speculative. However, for these reasons we believe that full night curtailment is more likely to achieve BRE's biological goals and objectives than half-night curtailment. Therefore, the Service is relying on the fact that if the RMAMP process demonstrates such objectives are not being met, BRE will implement additional changes to the curtailment plan (including the potential to implement the curtailment plan for the full night-time period) to achieve the stated objectives. At a minimum, BRE's initial curtailment plan will inform future decisions related to the anticipated benefits related to nightly duration of curtailment.

In conclusion, the Service independently reviewed the best available scientific information. We acknowledge that BRE's curtailment strategy deviates in some regards from other strategies studied: curtailment speed, the addition of feathering, time of night. We note that the available studies we reviewed are not outcome determinative. They do not preclude an applicant or the Service from considering other similar options or combinations of measures that are designed to achieve similar results. That is the case here. BRE has committed to a scientifically supported methodology to test the effectiveness of its curtailment strategy and adapt it to ensure compliance with the FHCP's biological goal and objectives. As explained in **MR 13** (Measurable Biological Objective), the goal of reducing *Myotis* fatalities by 60% is scientifically supported by the most recent data and modeling.

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

2.3 MR-3 Maximum extent practicable

A number of comments pertained to whether the DHCP minimizes or mitigates the impacts of incidental take to the “maximum extent practicable.”

In order to issue an incidental take permit, the Service must find that “the applicant will, to the maximum extent practicable, minimize and mitigate the impacts of the taking.” 16 U.S.C. 1539(a)(1)(B)(ii); 50 C.F.R. 17.22(b)(2)(B) & 17.32(b)(2)(B).

The Service’s HCP Guidance (USFWS and NMFS 1996, amended June 1, 2000) states that:

[t]he applicant decides during the HCP development phase what measures to include in the HCP (though, obviously, the applicant does so in light of discussions with and recommendations from FWS or NMFS). However, the Services ultimately decide, at the conclusion of the permit application processing phase, whether the mitigation program proposed by the applicant has satisfied this statutory issuance criterion.

To do so, the Service must examine and predict the adequacy and efficacy of the applicants’ proposed minimization and mitigation measures. It is important to understand that in doing so, the Service is focused solely on measures to be undertaken to reduce the likelihood and extent of the impact of take resulting from the project as proposed, as well as appropriate compensatory measures. The Service interprets the criterion to mean that the impacts of the proposed project including the HCP that weren’t *eliminated* as a result of informal negotiation process, must be minimized to the maximum extent practicable, and then those remaining impacts that can’t be further minimized, must be mitigated to the maximum extent practicable. These standards are based in a *biological determination* of the impacts of the project as proposed, what would further minimize those impacts, and then what would biologically mitigate, or compensate for those remaining impacts.

If the applicant provides biologically based minimization measures and mitigation measures that are fully commensurate with the level of impacts, or is consistent with what current science demonstrates to be effective, it has minimized and mitigated to the maximum extent practicable. See, e.g., National Wildlife Federation v. Norton, 306 F. Supp. 2d 920 (E.D. Cal. 2004) (finding that level of mitigation provided must be “rationally related to the level of take under the plan” and that where mitigation “more than compensates” for the impacts of take, it did not need to demonstrate that more mitigation would be infeasible.)³; National Wildlife Fed’n v. Babbitt, 306 F. Supp. 2d 920, (E.D. Cal. 2005). Thus, it is only where certain constraints may preclude attaining these proven measures or thresholds, that the “practicability” issue needs to be addressed more thoroughly.

In those circumstances where the applicant cannot fully achieve the minimization and mitigation standards, the Service must evaluate whether the applicant has still minimized and mitigated “to the maximum extent practicable.” The court in National Wildlife Fed’n v. Babbitt (2005) noted that that “practicable” as used in the ESA does not simply mean “possible,” but means “reasonably capable of being accomplished.” It also corroborated that “there are two components to the mitigation finding: (1) the adequacy of the mitigation program in proportion to the level of take that will result, and (2) whether the mitigation is the maximum that can be practically implemented by the applicant”. *Id.* Factors to be considered in the practicability analysis may include constraints based on the site itself, availability of mitigation habitat, timing and nature of the project, the financial means of the applicant, costs and time associated with redesign and going through local and state permitting and zoning processes, etc. In these instances, the Service must evaluate whether the applicant has provided reasonable explanations concerning its constraints or infeasibility. The Service must also independently review the record evidence supporting the applicant’s assertions. The practicability

³ In deferring to the Service’s interpretation of the term, the Court also explained that “[t]he words ‘maximum extent practicable’ signify that the applicant may do something less than fully minimize and mitigate the impacts of the take where to do more would not be practicable. Moreover, the statutory language does not suggest that an applicant must ever do more than mitigate the effect of its take of species.”

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

evaluation is necessarily project specific, and may properly yield different determinations in different situations. This analysis is a limited, although substantive examination. But the Service need not examine practicability where the applicant has already committed to implement minimization and mitigation measures commensurate with the impacts of the taking. In those circumstances no more is required of the applicant.

The standards for assessing “maximum extent practicable” are not exact or absolute, but require the Service to examine and predict the efficacy of the Applicant’s proposed minimization and mitigation measures. It is important to note, too, that there may be various ways to achieve a level of minimization or mitigation that are commensurate with the impacts of the taking.

Here, regarding minimization, BRE has committed to two discrete measures that are both validated by the best available scientific information and are commensurate with the impact of the takings. First, the curtailment strategy is designed to achieve mortality reductions within the range of known scientific studies at other facilities. These studies demonstrate the curtailment strategies that are proven means to minimize through mortality reduction. Science is not available to conclusively show that higher curtailment will necessarily be more effective for the types of bats and behaviors evidenced at Beech Ridge site (migrating bats outside of emergence areas or maternity colonies). The best available scientific literature shows that cut-in speeds of 5.0 m/s all night have achieved an average reduction in bat fatalities of 60% for the seasonal study period, ranging between 35 and 87% for the studies (Arnett et al. 2010, Good et al. 2011, Young et al. 2013b, Hein et al. 2013). For reasons explained in **MR-13**, we conclude the BRE’s proposal will be equally as effective. Moreover, BRE commits to do more by way of operation restrictions should its current proposal not be as effective as envisioned.

BRE has also committed to achieve a biologically based threshold of *Myotis* bat mortality reduction of 60% and all bat mortality reduction of 50% (See **MR 13** Measurable Biological Objective). This threshold is biologically based and was modeled by the Service to guarantee no additive negative effect on local populations as a result of the project. Or in other words, this biological objective ensures the impact of the take of individual bats will have no greater effect on the population than if the project did not operate at all.

Given the curtailment strategy, coupled with this biological objective, BRE will be implementing minimization measures that are biologically required and commensurate with the impact of the taking. As such, the Service need not examine whether the BRE can or should do more.

While the Service is relying on the curtailment plan to minimize the impact of the taking (as demonstrated by the measurable 60% fatality reduction objective for Indiana bats and 50% for VBEBs and other bats), BRE’s mitigation commitment is also intended to be commensurate with the impact of the taking. The FHCP includes the parameters for mitigation projects intended to compensate for taking 53 Indiana bats and 14 Virginia big-eared bats over the permit duration. Mitigation may occur as fee-title purchase or conservation easements on Indiana bat caves or maternity areas, and cave gating projects for Indiana bats and Virginia big-eared bats. The intention is to target hibernacula for permanent conservation or gating that harbor at least 53 Indiana bats, but quite possibly more. Maternity colonies are expected to host an average of 60-80 Indiana bats. Thus, the mitigation was developed to replace the lost individuals and their future reproductive capacity. Moreover, the mitigation must be completed within two years of permit issuance, ensuring that the protections occur long before the cumulative take may accrue. BRE has also committed to compensate for 53 Indiana bats and 14 Virginia big-eared bats even though it is possible that the actual take of these species over the permit term may be less.

The Service notes that hibernating populations of Indiana bats are declining due to white-nose syndrome (WNS) impacts, and it is unknown how that will impact the future of BRE’s selected mitigation project. However, by protecting a known hibernaculum in perpetuity, the Service believes it will continue to serve as important refugia for surviving Indiana bats and when Indiana bat populations rebound in the future. Further, the role of smaller hibernacula (e.g., P3 and P4) may increase over time as WNS continues to influence populations.

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

While the Service has not made a final determination as to whether BRE's application and HCP meet the permit issuance criteria, preliminarily these minimization and mitigation measures appear to satisfy the requirement that the applicant has "to the maximum extent practicable" minimized and mitigated the impacts of the taking. A final determination will be made prior to reaching a permit issuance decision, which will occur after the 30-day waiting period for the FEIS, and explained in the Service's findings document.

2.4 MR-4 HCP and RMAMP adequacy for addressing changed circumstances

Several comments suggested that changed circumstances related to WNS, newly listed species, and newly discovered colonies of listed bats were not adequately addressed by adaptive management measures in the DHCP and RMAMP. We note that the FHCP has been updated to provide clarification on these issues. Section 8.2 of the FHCP addresses BRE's proposed measures for addressing changed circumstances and Section 5.0 in the RMAMP (Appendix C in the FHCP) describes their adaptive management strategy and range of possible conservation plan adjustments.

Further responses to these issues are provided below.

WNS

In response to public comments, the WNS changed circumstances sections in the FHCP and FEIS have been modified to establish clear and measurable triggers. The criteria for deciding whether additional operational changes are needed has been clarified and the range of possible operational responses has been expanded. Section 8.2.1 in the FHCP identifies how BRE will address WNS through changed circumstances. The changed circumstance trigger for Indiana bat is a 70% or greater reduction in the Indiana bat Appalachian Mountain Recovery Unit population from 2011 (USFWS 2012), based on biennial Service estimates.

Seventy percent is the approximate population reduction for Indiana bats in the Northeast Recovery Unit from 2007 to 2011, the period that reflects declining populations from WNS effects for that recovery unit based on best scientific data available to the Service as of June 2013 when we wrote this response. We anticipate other recovery units will follow the same trend as WNS continues to spread. This WNS trend is incorporated into the Indiana bat population model we are using to analyze effects to Indiana bat in our biological opinion. If, however, at any time the Appalachian Mountain Recovery Unit population decreases by 70% or greater than the 2011 level, this will constitute a changed circumstance because a key assumption of the Indiana bat population model will have been violated.

Upon receipt of the biennial Indiana bat population estimates for the Appalachian Mountain Recovery Unit, the Service will immediately evaluate whether this trigger has been met and will inform BRE if that is the case. In the event that the WNS changed circumstance has been triggered, BRE will conduct an analysis, in coordination with the Service, to determine whether the level of Indiana bat take at the project is having a material negative effect (after accounting for benefits of mitigation) to the remaining Indiana bat populations in the recovery unit. If the analysis demonstrates that a 60% take reduction is no longer sufficient to prevent material negative effects to the declining population, BRE will implement operational restrictions or minimization measures by the next bat spring emergence season (April). These additional measures will be determined through consultation with the Service, which will determine what level of take reduction prevents material negative effects. BRE will provide a written plan to the Service by December, with formal concurrence reached by February 1st. Any unresolved issues will be dealt with through the dispute resolution process described in the IA. The effectiveness of these additional measures will be evaluated by additional monitoring, which will be detailed in the written plan.

Examples of different turbine operational protocols that will be considered include changes in the turbine cut-in speed; changes in timing of turbine operating regimes (if timing of Indiana bat fatalities suggests a specific period when these species are at greatest risk); selected turbine curtailment (if evidence indicates specific turbines are causing significantly greater mortality of bats); making operational adjustments

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

based in part on other environmental factors such as temperature; and deployment and testing of bat deterrent technology if suitable technology is available.

Regarding Virginia big-eared bat, WNS has not yet been detected in that species; however, it is reasonable to expect that the fungus will evolve over time and could become more virulent and affect additional bat species. The WNS changed circumstances trigger for Virginia big-eared bat is documentation of the occurrence of WNS in the West Virginia population of Virginia big-eared bat that is having a negative effect on populations.

Based upon readily available winter and summer cave survey results for Virginia big-eared bat and other available information on WNS, the Service will evaluate whether this trigger has been met and will inform BRE if that is the case. In the event that the WNS changed circumstance has been triggered, BRE will conduct an analysis, in coordination with the Service, to determine whether the level of Virginia big-eared bat take at the project is having a material negative effect (after accounting for benefits of mitigation) to the remaining Virginia big-eared bat populations in West Virginia. If the analysis demonstrates that a 50% take reduction is no longer sufficient to prevent material additive effects with the declining population, BRE will implement additional operational restrictions or minimization measures by the next bat spring emergence season (April). The same range of different turbine operational measures considered for Indiana bats will be considered for Virginia big-eared bats. These additional measures will be determined through consultation with the Service, which will determine what level of take reduction prevents additive effects. Likewise, a written plan will be provided by BRE to the Service by December, with formal concurrence reached by February 1st. Any unresolved issues will be dealt with through the dispute resolution process described in the IA. In addition, the effectiveness of these additional measures will be evaluated by additional monitoring, which will be detailed in the written plan.

The intent of these WNS triggers and responses is to take action before the threat of jeopardy to listed species arises. However, the Service retains authority under the Revocation Rule to suspend or revoke the ITP in the event covered activities are likely to jeopardize listed species. For more details, see Section 13 in the IA (Appendix F to the HCP).

With respect to unlisted bats, please see Section 5.16.4.8 of the DEIS for the Service's cumulative effects analysis of WNS on unlisted bats. Unless these affected bats become listed, the Service has no regulatory authority to impose a WNS threshold trigger for them. Also, see text in this Master Response immediately below (*New Species Afforded Protection Under the ESA*) regarding new species listings. It is important to remember that the Applicant's proposed conservation measures, including the Curtailment Plan and off-site hibernacula protection, will minimize and mitigate the Project's effects to unlisted bats.

The Service will incorporate population modeling for the Indiana bat in our ESA Section 7 consultation, assuming presence of WNS and using conservative assumptions as a precautionary approach. A population model for the Virginia big-eared bat is not available, nor is it necessary to model population impacts to this species given the low likelihood of take.

New Species Afforded Protection Under the ESA

Several commenters expressed concern that the DHCP does not adequately specify how three unlisted bats (little brown bat [*Myotis lucifugus*], northern long-eared bat [*Myotis septentrionalis*], and eastern small-footed bat [*Myotis leibii*]) will be treated as a changed circumstance should any of these species become listed under the ESA. Commenters indicated concern that the listing of any or all of these species would not result in a major amendment to the HCP and ITP. Section 8.2.3 of the FHCP indicates "In the event of any future listing of bats or other species as threatened or endangered, BRE will confer with the Service over the need to pursue an amendment to the HCP and ITP in accordance with Section 8.4 of the HCP." Section 2.3 in the Implementing Agreement also addresses addition of new listed species as Covered Species.

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

We note that the DEIS mistakenly cross-referenced the minor amendment section of the DHCP. To be clear, while the decision to amend an HCP to include additional covered species is that of the Applicant, the Service generally considers the inclusion of additional listed species to an ITP (those not adequately considered, analyzed, or included in the original HCP, ITP, and EIS) as triggering a major amendment. The need for including additional covered species on the ITP will be evaluated by both the Service and the Permittee upon future listing actions or new information about impacts from the covered activities. Section 3.2.2.3 of the FEIS has been changed to be consistent with this explanation.

Newly Identified Roosting or Maternity Sites Belonging to Covered Species

In response to public comments, the FHCP includes additional clarifications as to how this changed circumstance will be implemented. Section 8.2.5 identifies what actions will be taken if a maternity colony is discovered in or within 2.5 miles of the project area. Specifically, BRE will evaluate Indiana bat movement in and around the maternity colony and assess the effects of project operations on the maternity colony. Potential additional surveys may include, but are not limited to, conducting additional summer mist net surveys in tandem with acoustic detectors to screen areas for high bat activity and placing radio-transmitters on captured Indiana bats to track movements and determine foraging areas of individual Indiana bats. If this evaluation and assessment demonstrate that take of reproductive females or young-of-the-year juveniles is reasonably certain to occur but such take has not yet occurred, then BRE will develop and implement operational adjustments at turbines within 5 miles (8 kilometers) of the maternity colony in consultation with the Service known to be effective in avoiding Indiana bat mortality when reproductive females or young-of-the-year juveniles may be present. In Section 8.2.5, the HCP has been revised to describe potential modified operations protocols including:

1. Changes in turbine cut-in speed;
2. Changes in timing (nighttime duration, seasonal duration) of turbine operating regimes (if timing of covered species suggests a specific period for the greatest risk);
3. Selected turbine curtailment (if evidence indicates specific turbines are causing significantly greater mortality of bats);
4. Operational adjustments based in part on other environmental factors such as temperature (if evidence indicates these adjustments significantly reduce bat fatality); and
5. Deployment and testing of bat deterrent technology if suitable technology is available.

The HCP and its conservation strategy focuses on the likely loss of migrating Indiana bats and includes a minimization and mitigation strategy to mitigate for these losses. This changed circumstance, on the other hand, accounts for the reasonably foreseeable take of reproductive females and juveniles during summer and imposes additional restrictions and conservation measures for loss of this key component of population biology. For example, loss of a reproductively active female during summer would also equate to loss of her pup and thus the impact of the taking to the population would be greater than loss of a male during summer.

The discovery of a male summer roost near the project, or mortality of a male Indiana bat during summer, may not be indicative of a nearby maternity colony. Male Indiana bats are found throughout the range of the species, but in summer are most common in areas near hibernacula. Some males disperse and roost individually or in small numbers in the same types of trees used by reproductive females. Males only occasionally roost with reproductive females in the same tree.

2.5 MR-5 Risk to eagles

A few commenters requested the Service reevaluate the Project's risk to eagles and the need for eagle permits pursuant to the Bald and Golden Eagle Protection Act (BGEPA).

In our DEIS, the Service assessed the risk of take of bald and golden eagles at the Project, based upon preliminary results of running the Service's risk assessment model (USFWS 2013a) using eagle survey data for the Project available to the Service at that time. These surveys had documented low use of the project area by migrant bald eagles and moderate use of the project area by migrant golden eagles. One

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

bald eagle was observed in the existing 67-turbine project area during spring 2011 migration and 2 bald eagle observations were made in the phase II 33-turbine expansion area during fall 2011 migration (Young et al. 2012a,c). Six golden eagle observations were made in the phase I project area during spring and 4 golden eagle observations were made in the phase I area during fall 2011 migration; the same numbers of observations of golden eagles were observed in the expansion area during spring and fall 2011 migration (Young et al. 2012a,c). It is unknown whether these observations represent 20 individual eagles or multiple observations of a few eagles.

Following release of the DEIS, BRE provided to the Service additional data on eagle winter use in the Project area to help refine our risk assessment (Young et al. 2013a). This report has been added to the appendices in the FEIS (Appendix E, Report E-8). Eagle surveys from December 14, 2011 through March 27, 2012 throughout the entire 100-turbine project area confirmed that golden eagles spend the winter in and near the 67-existing turbines and the proposed 33-turbine expansion area. A total of 25 golden eagle observations were made during this time, of which there were 10 observations of golden eagles flying within 800 meters of the project. Of these 10 observations, 3 included golden eagles flying within the rotor-swept area. No bald eagles were observed wintering in the project area during this time. Eagle observations were distributed evenly throughout the project area with no obvious areas of concentrated eagle use.

Per the Eagle Conservation Plan Guidance (version 2; USFWS 2013a), the Service is directed to use a model to evaluate anticipated levels of eagle fatalities. Via this model, the Service uses 0.03 predicted eagle fatalities per year as the threshold for recommending an eagle permit. In other words, if the model results are less than 0.03 bald or golden eagles per year, the risk of take is considered low and a permit is not recommended. If the model results are greater than or equal to 0.03 bald or golden eagles per year, then the risk of take is moderate to high and a permit is recommended unless risk can be reduced below 0.03 bald or golden eagle fatalities per year.

We have updated Section 5.7.2 of the FEIS to include the latest eagle modeling results. Model results predict that prior to implementing minimization measures, the 100-turbine alternatives (Alternatives 2 and 3) pose moderate to high risk of take of golden eagles and a risk of take of bald eagles that is slightly above the low risk threshold. For Alternatives 2 and 3 (the 100-turbine projects), the Service's model predicts that 80% of the time annual Project fatalities would be 0.34 golden eagles or fewer, suggesting that one or fewer golden eagle collision fatalities would be predicted to occur at the Project site every 3 to 4 years on average. The model predicts that 80% of the time annual Project fatalities would be 0.052 bald eagles or fewer, suggesting that one or fewer bald eagle fatalities would be predicted to occur at the Project site every 19 to 20 years on average.

Eagle fatality risk is reduced for the 67-turbine alternatives (Alternatives 1 and 4). For these alternatives, the Service's latest model results predict that 80% of the time annual project fatalities would be 0.18 golden eagles or fewer (moderate to high risk), suggesting that one or fewer golden eagle collision fatalities would be predicted to occur at the project site every 5 to 6 years on average. The model predicts that 80% of the time annual project fatalities would be 0.03 bald eagles or fewer (low risk), suggesting that 1 or fewer bald eagle fatalities would be predicted to occur at the project site every 33 to 35 years on average.

There are multiple paths to complying with BGEPA. We note that whereas the Service currently can issue permits for take of bald eagles in the eastern U.S., we are not currently issuing permits for take of golden eagles east of the 100th meridian⁴ until such time as a programmatic analysis of sustainable levels of golden eagle take is completed and the Service's eagle permit regulations are revised. Thus we are not able to issue a golden eagle take permit under BGEPA available at this time. Absent a permit option, the

⁴ The 100th meridian is an imaginary line located 100° west of Greenwich, United Kingdom. In the U.S, it is essentially a north-south line extending from North Dakota to Central Texas. In the central Great Plains, the meridian roughly marks the boundary between the moist east and arid west. The 100th meridian has often been used to illustrate a rough boundary between the eastern and western U.S.

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

Service's recommended approach is to work with a developer to develop a plan to avoid and minimize the likelihood of take of bald and golden eagles. If the likelihood of eagle take cannot be avoided, then the Service recommends that a developer either: (1) include eagles as covered species in an HCP; (2) develop an Eagle Conservation Plan; or (3) develop an alternative plan as part of larger bird conservation strategy as described in the Service's Land-based Wind Energy Guidelines. No matter which of the three options is chosen, the eagle strategy should adequately meet the regulatory requirements of 50 CFR 22.26 to support an eagle permit decision (Eagle Conservation Plan Guidance, version 2 [USFWS 2013a], at page iii).

The Service has advised BRE of the risk to eagles throughout the HCP process, the availability of BGEPA permits for bald eagles, and advised them on the options described above regarding golden eagles. BRE has chosen option 3 and included eagles in its Avian Protection Plan. The Avian Protection Plan includes measures to reduce risk to eagles and to monitor and report eagle mortality should it occur (see Appendix B in FEIS). Minimization measures in the APP are designed to reduce the risk of eagle and other raptor fatalities: (1) The transmission line incorporates practices to minimize avian collision risk and electrocution (APLIC 2006); (2) Food sources that attract eagles, vultures, and other carrion eating raptors will be reduced by removing carrion and gut piles found on the project site by Operation and Maintenance staff; (3) Hunter education will be provided regarding the importance of removing carcasses and burying gut piles before leaving the project site; (4) The project site will be monitored for perches or trees used frequently by eagles, and perches or trees attractive to eagles will be removed; (5) Personnel and visitors will be instructed to drive at low speeds (< 25 mph) to reduce risk of avian vehicle collisions; and (6) The project site does not contain a high concentration of ponds, streams or wetlands that would attract foraging eagles. These measures likely reduce risk of take of bald eagles from 0.05 before minimization to less than 0.03 birds per year with minimization measures in place. It is less certain how much the risk of take of golden eagles will be reduced.

Through adaptive management, the APP includes a commitment to monitor for eagle fatalities, promptly report them, and implement additional avoidance or mitigation measures should mortality of an eagle occur, including additional eagle surveys, removing sources of eagle attraction, implementing turbine operation or technological solutions that reduce fatality, and negotiating with transmission line owners to retrofit power poles to adhere to APLIC guidelines (APLIC 1994, 2006).

2.6 MR-6 Evaluation of benefits to the environment associated with employing wind-powered electricity

Comments indicated that the EIS and HCP lack discussions on the Project benefits to the environment with particular emphasis on the effects of energy produced with no greenhouse gas emissions and the prospect for species conservation in the long-term. Comments suggested the EIS and HCP provide a more expanded analysis of wind energy's beneficial impacts on the environment, including offsetting carbon emissions and. The commenters felt that an objective evaluation of each analyzed alternative could not be achieved without a costs-benefits analysis of:

- electricity generation,
- net reduction in greenhouse gases and other air pollutants, and
- net displacement of fossil fuel use.

Section 1.1 in the HCP has been revised to include the Applicant's assessment of the potential benefits of full build-out of the 100-turbine Project and implementation of the HCP. Benefits include job creation (temporary and permanent), increased tax base and economic growth at the local and state levels, and clean energy that potentially could offset carbon emissions associated with electricity produced from coal- or gas-fired operations; however, we are not aware of specific coal or gas-fired power plants that would be closed; thus it is not possible to say that electricity production from the project would replace electricity produced by other sources.

The EIS has not been revised to include a quantitative project cost-benefits analysis because it is not relevant to the choice among environmentally different alternatives being considered for the proposed

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

federal action. Our federal action is ITP issuance authorizing take of listed species (not construction/operation of a wind power facility). If the Service were proposing to construct a wind power facility, this type of analysis would be relevant. The project cost-benefit analysis is the project proponent's business decision. The Service is responding to an ITP application and bases its decision strictly on the permit issuance criteria (50 CFR 17.22(b) (2)).

In our findings document, the Service will analyze whether the Applicant has met the ITP issuance criteria of minimizing and mitigating the impacts of the taking to the maximum extent practical. If an applicant provides biologically based minimization and mitigation measures that are fully commensurate with the level of impacts, then the maximum extent practical issuance criteria has been met. It is only where certain constraints may preclude full minimization or full mitigation that the practicability issues need to be addressed more thoroughly. Factors to be considered in the practicability analysis may include constraints based on the site itself, availability of mitigation, timing and nature of the project, financial means of the applicant, and costs and time associated with redesign and going through local and state permitting processes. This practicability analysis, however, is unrelated to whether the project overall has a suitable cost-benefit ratio justifying its completion.

Consistent with 43 CFR 1502.23, if a cost-benefit analysis relevant to the choice among environmentally different alternatives is considered by the Service for the Proposed Action, it shall be incorporated by reference in our Record of Decision or appended to the EIS. The weighing of the merits and drawbacks of the various alternatives need not be displayed in a monetary cost-benefit analysis and should not be when there are important qualitative considerations. Table 3-4 of the EIS summarizes in both a quantitative and qualitative way important considerations (the key environmental impacts) projected to occur as a result of implementing the No-Action Alternative and each of the action alternatives. Table 3.1 of the EIS also provides a relative comparison of potential energy production among alternatives.

2.7 MR-7 Likelihood of Indiana bat and Virginia big-eared bat occurrence in Project area

Several comments related to the likelihood of listed bat presence in the project area based upon pre-construction mist-net surveys and acoustic data. These commenters believe the likelihood of listed bats in the project area is high and that additional survey and acoustic monitoring is needed. Comments suggested if the little brown bat is to be used as a surrogate for the Indiana bat then the documented presence of female and juvenile little brown bats in the project area indicates that female and juvenile Indiana bats are also in the Project Area. .

Bat mist-net surveys conducted in 2005 and 2010 on the project area did not capture listed species (BHE 2005, Young and Gruver 2011), whereas acoustic monitoring data collected in 2005 and 2010 detected likely Indiana bat calls in the Project area between late-July and early August (District Court Memorandum of Opinion December 8, 2009; Young and Gruver 2011). BRE supplemented the limited 2005 acoustic data with additional monitoring on the project site from July 21 to November 15, 2010 (Young and Gruver 2011). A total of 12,431 bat call sequences were recorded in 2010 and analyzed by 3 methods. Depending on the method used to analyze the data, anywhere from 3 to 111 potential Indiana bat call sequences were detected. Seven calls were identified as probable Indiana bat calls based on concurrence of 2 or more methods. These 7 calls were recorded during the summer breeding season and early fall migration period.

For the purposes of this ITP application, the Service assumes Indiana bat and Virginia big-eared bat use of the Project Area and a reasonable likelihood of take over the 25-year life of the ITP. Regardless of how species presence is characterized in the HCP or EIS, the Applicant has applied for a Permit that would authorize the incidental take of Covered Species. While additional mist-netting and/or acoustic data would be useful, it is not necessary as the Applicant has chosen to assume presence.

Sections 3.2.1.9 and 3.2.2.8 in the HCP described Indiana bat and Virginia big-eared bat use of the Project area. The key conclusions contained in the HCP concerning Covered Species use of the Project

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

area were subjected to independent peer review by qualified biologists. The results of these peer reviews have been incorporated into the HCP.

The surrogate method for estimating take is not intended to estimate suggested use of the Project Area by female and juvenile Indiana bats. While little brown bats and Indiana bats share habitat characteristics and sometimes are often found roosting and foraging in the same areas, little brown bats are much more flexible in their habitat requirements (Davis and Hitchcock 1965, Fenton and Barclay 1980, Crampton and Barclay 1998). It is likely that this flexibility led to the overall success of the little brown bat species (Kunz and Reichard 2010), while more stringent requirements limit the Indiana bat species (Kurta 2005). Little brown bats commonly roost in barns and buildings; they occasionally roost in trees and other places that remain dark throughout the day and provide appropriate temperature regimes; however, they rarely roost in the same trees as female Indiana bats (Hitchcock and Davis 1965, Fenton and Barclay 1980, Crampton and Barclay 1998). Little brown bats are opportunistic when selecting roost sites and are able to quickly locate and exploit new roosts (Fenton and Barclay 1980, Kurta 2005).

Indiana bats are almost exclusively restricted to tree roosts (Kurta 2005). Roosting in buildings or other structures is so uncommon for Indiana bats that each observation is notable (Kurta 2005): there have been 3 known maternity roosts observed in buildings (Butchkoski and Hassinger 2002, Chengler 2003, A. Hicks, personal communication as cited in Kurta 2005); use of 2 utility poles (Harvey 2002, Ritzi et al. 2005); and several bat houses (Butchkoski and Hassinger 2002, Carter 2003, Ritzi et al 2005). The Indiana bat also has a species range that is much more restricted than the range of the little brown bat. The plasticity of roosting for little brown bats, along with the much greater species range, likely allows it to exploit a far greater range of summer habitats than the Indiana bat.

Thus documented presence of female and juvenile little brown bats in the project area cannot be used to infer female and juvenile Indiana bats also use the Project area. Nevertheless, we have included as a changed circumstance in the HCP (Section 8.2.5) reasonably foreseeable use of the project site by reproductive female Indiana bats and their young (see **MR-4** in Section 2.4 of this document).

The surrogate method for estimating take relied on the proportion of little brown bats to Indiana bats during summer mist-netting surveys in West Virginia to inform potential take of Indiana bats largely during migration, the period of greatest concern for bat mortality and when Indiana bats may be more likely to occur in the Project area. The model is not used to show relationships about bat use as little brown bats have been documented in the Project area in summer and fall and Indiana bats have not.

2.8 MR-8 Little brown bat surrogate method for estimating take of Indiana bat

Four comment letters challenged the HCP's use of the little brown bat as the surrogate for estimating the Project's potential take of Indiana bats. Commenters noted based on a limited amount of direct observations of Indiana bat and little brown bat flight, it is possible that Indiana bats may experience greater risk for turbine interaction should they fly close to or within the rotor-swept area, whereas little brown bats may be less likely to do so. Hence, the commenters suggest the little brown bat surrogate methodology results in an artificially low level of estimated take.

Section 4.1.3 in the HCP describes how little brown bats were used as a surrogate to predict potential take of Indiana bats and explains the basis for the use of little brown bats as a surrogate species. Section 4.1.3 in the DHCP discloses the limitations, as stated by the commenters, and the rationale for using the surrogate approach. Recognizing the differences between the 2 species, the little brown bat bears the most resemblance to the Indiana bat as compared to other *Myotis*. Since direct quantification of Indiana bats is difficult at the Project site, the model used the ratio of Indiana bats to little brown bats derived from the results of other mist-net surveys in West Virginia where species composition was previously unknown. Because species composition was previously unknown, this is a reasonable solution for deriving a species ratio and reflects best available information. Little brown bat mortalities at wind projects are the most common of the *Myotis*, hence providing a large enough data source from which to model. Other datasets were considered, but ultimately not used because of bat species composition was previously known and therefore the datasets had some level of bias. For example using the ratio of Little brown to

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

Indiana bats captured at all mist-netting sites in West Virginia regardless of whether those sites were known to be occupied by Indiana bats, would overestimate Indiana bats compared to sites across the landscape where the species composition is unknown. Similarly use of winter cave survey data to inform the percent of Indiana bats relative to little brown bats is also biased because the primary focus of the surveys is for endangered Indiana and Virginia big-eared bats, and caves without listed bats are not routinely surveyed. Thus in the absence of Indiana bat capture and mortality data for the Project area, the little brown surrogate method is an acceptable approach for predicting Indiana bat take.

Whereas little brown bat fatalities at wind energy projects to date have been the most common of the *Myotis* fatalities, and provide a reasonable data set for deriving a relatively unbiased prediction of Indiana bat fatalities, bat species compositions are changing rapidly due to WNS. The number of *Myotis* killed at wind turbines has been declining in the past few years in the Appalachian Mountain Recovery Unit as populations of *Myotis* have declined due to WNS (USFWS 2013b, see Appendix F-5 in the FEIS). The post-WNS proportion of little brown bats to all bat fatalities at these wind power projects is currently in the range of 0 to 4.5% (see revised Table 4.4 in the FHCP), compared to 3.0 to 12.9% pre-WNS as reported in the DHCP. Section 3.2.1 in the RMAMP notes that for purposes of monitoring, other surrogate species (such as all *Myotis* species and all bats) may prove more useful to accurately monitor actual take of Indiana bats in Years 4-25 given potential declines in little brown bats. BRE will evaluate the use of other species for estimating take of Indiana bats. Alternative surrogate species will be determined by BRE in consultation with the Service to insure such surrogates remain appropriate for monitoring authorized levels of take.

Although the little brown bat surrogate method for predicting take of Indiana bat has been reviewed and supported by the Service, West Virginia Division of Natural Resources (WVDNR), and 3 independent peer reviewers, the Service recognizes that a key assumption in the take prediction model is virtually impossible to validate: Indiana bat fatality is proportional to the ratio of Indiana bats to little brown bats in the landscape. It would be extremely difficult to impossible to measure the population size or density of Indiana bats and little brown bats flying over the project, and then compare that to the number of carcasses found. Therefore, predictions about the level of take of Indiana bats will be verified through post-construction fatality monitoring.

The Service recognizes that wind power research tools are constantly evolving and different methods may become available in the future which could negate the need for a surrogate approach. For example, Manuela Huso of the U.S. Geological Survey currently is developing a new statistical tool for estimating fatality of rare species associated with wind projects. This tool is intended to help interpret situations when zero carcasses of a rare species are found. For example, does finding zero carcasses mean no mortality occurred or that it did occur but was not detected? What confidence does one have that zero carcasses found means zero mortality actually occurred? Alternatively, what confidence does one have that zero carcasses found means greater mortality actually occurred? The tool is intended to answer these types of questions, but at the time of this writing is not ready for use. Section 3.1 of the RMAMP notes that BRE in coordination with the Service and WVDNR will consider fatality estimators available at the time the studies are conducted, and will make use of the appropriate estimators and statistical methods when analyzing the data.

2.9 MR-9 Level of take of listed bats

Several commenters did not think the HCP's quantification of 125 Indiana bats (prior to curtailment) to be commensurate with a low amount of take given the rarity of the Indiana bats, cumulative threats to the species, and the fact that each loss of a female also constitutes the loss of an additional pup each year for what would otherwise have constituted the remainder of the female's reproductive lifespan.

In Section 4.1.3.1 of the DHCP (and now FHCP), the Applicant assumed species presence and used a variety of tools to estimate potential take over the proposed permit term. One of these estimating tools employed a surrogate species approach resulting in the estimated cumulative level of take of 0 to 125 Indiana bats in the absence of BRE's proposed avoidance, minimization, and mitigation efforts as part of

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

the HCP. However, this quantification was based upon use of pre-WNS data on bat species composition available at the time the DHCP was written.

The model used to estimate take is sensitive to total annual bat mortality rates and to the ratios of the Indiana bat to the surrogate species. Because bat species compositions are changing rapidly as a result of WNS, and because the take estimate in the DHCP was based on pre-WNS data, the take estimate in the DHCP is not current and overestimates the anticipated take. We therefore re-ran the take models using the best available post-WNS data (USFWS 2013b). This analysis has been included in FEIS (Appendix F, Report F-5). The Service has revised the EIS and BRE has revised its HCP to indicate the estimated cumulative take of up to 112 Indiana bats over the life of the Project in the absence of BRE's proposed avoidance, minimization, and mitigation efforts. With BRE's avoidance, minimization, and mitigation efforts, the Service predicts take of no more than 53 Indiana bats over a 25-year permit duration (i.e. take of 4.5 Indiana bats per year in years 1 through 3 while curtailment trials are underway and 1.8 Indiana bats per year in years 4 through 25 assuming 60% fatality reduction).

Likewise, we have updated Indiana bat take estimates for all alternatives in the FEIS using post-WNS data. Virginia big-eared bat take estimates did not change because thus far the species has not been adversely affected by WNS.

Section 4.2.1 in the FHCP explains the Applicant's assessment of the impacts of the taking of Indiana bats, annually and cumulatively. In the FHCP, BRE now estimates that the 100-turbine Project could take up to 53 Indiana bats over the life of the permit as opposed to 70 Indiana bats indicated in the DHCP. BRE considers the impact of this take to be minor because the cumulative loss of 53 individuals would be spread in small increments across 25 years (i.e. less than 2 Indiana bats killed per year on average originating from many different hibernacula and maternity colonies). BRE further maintains that the incremental loss of 53 individuals (0.016%) spread evenly over time and space would not appreciably reduce the Appalachian Mountain Recovery Unit population (estimated to be 32,529 individuals in 2011). Preliminary data indicate Indiana bat wintering populations in this recovery unit are unstable due to continued spread of WNS and the population has declined to 17,584 individuals in 2013 (USFWS 2013c), a 46% reduction compared to 2011. A loss of 53 individuals equates to approximately 0.3% of the most current population estimate for the recovery unit.

In our biological opinion, the Service will analyze in greater detail the impacts of the taking on species numbers, reproduction, and distribution. Our analysis will consider the demographic segment of the affected hibernacula and maternity colony populations, including consideration of when the mortality occurs (during summer vs. fall swarm vs. migration) and the reproductive status of individuals affected. Our analysis will include consideration of impacts to individual local hibernacula and maternity areas, as well as to recovery units and rangewide populations. In addition, our analysis will account for direct loss of females and the indirect loss of an additional pup each year for what would otherwise have constituted the remainder of the female's reproductive lifespan.

2.10 MR-10 Effects to socioeconomic conditions in the region

The Service received 20 form letters voicing support for the Project and the proposed HCP. The letters urged an expedited issuance of an ITP and included statistics on the Project's contribution to jobs, tax revenue, and the economy.

The Service acknowledges these letters of support for the Project and the economic benefits associated with the construction of 33 turbines and operation of 100 turbines. The Service has checked the economic statistics with BRE and will make changes to the FEIS to reflect those provided in the FHCP.

BRE has revised the HCP to indicate the Proposed Action will:

1. Create up to 150 construction jobs utilizing local available workers for a period of 6 to 8 months;
2. Employ three full-time wind turbine technicians, bringing the total BRE Project staff to 10 quality technical positions with an average starting annual salary of \$35,000 with full benefits;

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

3. Pay an estimated \$200,000 or more per year in taxes to the county, bringing the total for the expanded Project to over \$600,000 per year; and
4. Pay an estimated \$200,000 per year in taxes to the State of West Virginia.
5. Between taxes and salaries, not to mention direct spending, the Project will contribute over \$1,000,000 to the local, regional, and state economies.

We are processing the permit application as quickly as possible while providing due consideration to a number of significant comments received on the application. Our current staffing and budget limitations hinder faster permit processing.

2.11 MR-11 Variation in effects related to turbine size in the existing Project area and in the expansion area

Commenters expressed concern for BRE's intent to install turbines in the expansion area that are larger than those already operating in the Phase I area. Commenters suggested BRE has not adequately disclosed if the larger turbines would pose a greater or lesser risk to endangered bats. One of the commenters suggested that installing a larger turbine seems to violate the Settlement Agreement. This same commenter suggested BRE does not have West Virginia Public Service Commission (WVPSC) approval for the larger turbines. Comments referred to a statement in Section 4.1.2 of the HCP that impacts to bats are unequal across various turbine heights and rotor sizes, and taller turbines may have higher impacts. Comments contended that BRE did not develop its estimate of taking using turbines the size of those in the Project, and the take estimate for the Project is imprecise.

The Service acknowledges the concern for implementing a larger turbine model. Section 1.2.2.1 in the DHCP describes the requirements of the WVPSC permitting process. Examining mortality data from 33 projects in North America, Barclay et al. (2007) found evidence to support that taller turbines, regardless of rotor-swept area, resulted in higher fatalities of bats of those species that make up the higher percentages of mortalities (migratory tree-roosting bats). There are insufficient data to suggest this finding applies to *Myotis* bats.

On August 24, 2012, Beech Ridge Energy II, LLC filed an application with the WVPSC for a new siting certificate for the Phase II expansion area to construct and operate up to 33 turbines. The WVPSC approved BRE's application on June 19, 2013 and authorizes construction in the expansion area of an approximate 53.46 megawatt (MW), but not to exceed 85.5 MW, wind turbine facility consisting of up to 33 turbines, each with a rated capacity of 1.62 MW, but not to exceed 2.5 MW (see Appendix N in the FEIS). BRE has indicated they likely will install General Electric's (GE) 1.6-100 model turbines in the Phase II expansion area, though final turbine model selections have not been made and depend upon turbine availability from manufacturers (K. Coppinger, personal communication). BRE installed the GE 1.5sle model turbine in the Phase I area. We have added a new Table 5-17b in Section 5.8.2.2 in the FEIS comparing these 2 turbine types.

The take estimates in the HCP and mortality rates used in the DEIS were based on average fatality rates (with a reported low and high end range) from studies conducted at wind projects having a variety of turbine sizes. Most of these projects operate the GE 1.5sle MW model (a model with similar dimensions to the GE 1.6-100 model), or a larger model. The Mountaineer Project operates the only model smaller than the GE 1.5sle and had above average mortality rates, suggesting that smaller turbines do not necessarily have lower mortality rates than larger turbines. To estimate mortality impacts, the Service pooled the rates from these various projects to derive a mean fatality rate and range that could be applied to any proposed wind project in the region. A variety of factors can influence turbine fatality rates, such as turbine height, rotor swept area, cut-in speeds, degree of blade feathering, annual weather variation, topography, vegetation, and annual variation in bird and bat populations. Using an average fatality rate (with a lower and upper end range) across multiple studies accounts for this variation.

2.12 MR-12 Compliance with Migratory Bird Treaty Act

Several commenters raised questions and concerns about the appropriateness of issuing ESA Section 10 incidental take permits for projects that are anticipated to also take migratory birds.

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

For terrestrially based wind energy facilities, the Service's Land-based Wind Energy Guidelines (LWEG) serves as the primary tool to facilitate compliance with the Migratory Bird Treaty Act (MBTA). In 2007, the Service convened a Federal Advisory Committee (FAC) to obtain a wide spectrum of views regarding how to avoid and mitigate impacts of wind-energy facilities on wildlife, particularly birds and bats. The FAC spent 3 years developing its recommendations to the Service. The Service developed a draft LWEG based on the FAC's recommendations and circulated the draft LWEG for public review in February 2011. After receiving comments on that version, the Service circulated 2 more revisions for public comment prior to FAC meetings. At each FAC meeting, the public had an opportunity to provide oral and/or written comments. In March 2012, the Service released its final LWEG. Adherence is voluntary, not mandatory.

As described in the final LWEG, "the Service will regard a developer's or operator's adherence to these Guidelines, including communication with the Service, as appropriate means of identifying and implementing reasonable and effective measures to avoid the take of species protected under the MBTA and BGEPA." Although the Service has an established permitting program covering various forms of direct take, we have not yet promulgated a permitting process expressly to authorize the unintentional take of migratory birds under the MBTA. Unlike the MBTA, we can issue incidental take permits for bald eagles and golden eagles under BGEPA regulations.

In the LWEG, the Service recommends that wind developers and operators prepare Bird and Bat Conservation Strategies (BBCS; formerly called Avian and Bat Protection Plans) to serve as written records of their actions to avoid, minimize, and compensate for potential adverse impacts to migratory birds. The Service can provide technical advice during preparation of BBCSs; however, the LWEG explains that the Service does not approve or disapprove these plans. With regard to potential take of listed species, the LWEG recommends wind developers and operators seek compliance with the ESA separately through either Section 7 consultation (when there is a federal nexus) or by preparing an HCP via ESA Section 10 incidental take provisions.

As part of the Project, BRE has developed a BBCS (referred to as an APP in the HCP, FEIS, and related permit documents) and has already begun monitoring and reporting take of birds and bats at the Project. Post-construction bird monitoring results from the 2012 interim operating season have been analyzed and incorporated into the FEIS. Through implementation of the APP, BRE is working in collaboration with the Service to reduce and avoid impacts to migratory birds. The APP also contemplates possible mitigation through adaptive management to compensate for the impacts associated with the taking of migratory birds. As such, BRE is complying with Service recommendations provided for in the LWEG and is demonstrating its due diligence and good faith in addressing MBTA compliance.

More specifically, BRE's APP (found in Appendix B of the DEIS and FEIS) addresses bird species protected under the MBTA. In response to public comments, BRE has installed bird diverters on the guy wires of the 2 existing permanent meteorological (MET) towers in the Phase I area. The 2 additional permanent MET towers to be constructed in the phase II expansion area will be self-supporting and not require guy wires. Appendix C of the HCP contains BRE's RMAMP, which in addition to ESA-protected bats species, also incorporates monitoring and adaptive management for impacts to migratory birds. Adaptive management for birds includes 3 years of intensive searches, bias adjustments, and calculated fatality estimates followed by annual monitoring to evaluate mortality trends for the life of the Project. The RMAMP also includes multiple years of testing various turbine operational protocols on estimated bird fatality rates. BRE will also evaluate relationships between bird fatality rates and weather. The APP and RMAMP include procedures to address probable causes of significant fatality events, including weather events, turbine conditions, and other considerations, that could trigger the need for adaptive management.

As explained in Section 5.2 of the APP, adaptive management responses will depend on the character of the significant fatality event, i.e., affected species and identified fatality source. Adaptive management responses may include additional eagle surveys, removing/modifying the source(s) of bird attraction, implementing turbine operational protocols designed to reduce bird fatalities at turbines that data show

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

are likely to take bald and/or golden eagles or have shown higher than average fatality rates for all birds and/or for individual bird species of conservation concern, and implementing technological solutions.

The APP also includes a commitment to evaluate possible off-site mitigation (habitat preservation and/or restoration) if it is determined that modified turbine operations are not effective at reducing significant impacts to birds. This would supplement the HCP's off-site mitigation for bats which protects forested habitat and provides incidental benefits to many species of birds.

2.13 MR-13 Measurable Biological Objective

Several comments pertained to the biological goals and objectives in the DHCP. In response BRE has modified the FHCP to incorporate measurable objectives with regard to the fatality reductions that will be achieved by the conservation plan. Specifically, BRE has committed to meet the objective of a 60% reduction in *Myotis* fatalities, and a 50% reduction in all other bat fatalities (including Virginia big-eared bat).

As explained in the HCP, BRE anticipates that their curtailment strategy will achieve a 44-93% reduction in all bat fatalities. In MR-2, we provide information that shows curtailment strategies that implement cut-in speeds of 5.0 m/s all night have achieved an average reduction in bat fatalities of 60%, ranging between 35 and 87% (Arnett et al. 2010, Good et al. 2011, Young et al. 2013b, Hein et al. 2013). Regardless, for the purpose of BRE's HCP the question was what level of fatality reduction would be necessary to reduce incidental take to a level that it was not having additive effects to the existing Indiana bat population trajectory at local and regional levels. Therefore, the Service used a demographic model developed by Thogmartin et al. (2013) to compare the Indiana bat population trajectories with and without various levels of incidental take from the Project. The model is the best demographic model for Indiana bats currently available and the Service relied on the most current population and WNS data when running the model. While the Thogmartin model was designed to evaluate extinction risk in Indiana bat populations, it also can be manipulated to evaluate project effects to Indiana bat populations.

The model demonstrated that the level of incidental take associated with a 60% reduction in bat fatalities will result in an Indiana bat population trajectory (at both local and regional levels) that is nearly indistinguishable from the trajectory that will occur without the Project impacts. In other words, the Service is confident that an objective of a 60% reduction in Indiana bat fatality will result in a level of incidental take that does not have an additive negative impact on the local or regional populations. The Service anticipates that a 60% reduction in *Myotis* fatalities will also achieve that same level of reduction in Indiana bat fatalities. BRE incorporated this 60% reduction target as a measurable biological objective and committed to a conservation plan, and associated adaptive management plan (i.e., RMAMP), that will ensure the target is met.

A similar modeling approach was not conducted relative to the 50% reduction objective for other bat fatalities (including Virginia big-eared bat). This was primary because of a lack of population-level data for most bat species required to run demographic models. However, most bat populations are thought to be much larger than Indiana bats and will be able to better absorb the level of take anticipated by this Project without demographic consequences. Specific to Virginia big-eared bats, we do not have a population model for this species. However, both the risk and the level of take anticipated by this Project for Virginia big-eared bats is very small, and again, we do not anticipate take at a level that would have measurable demographic consequences. We note that the curtailment strategy required to achieve the 60% fatality reduction for *Myotis* species will have similar levels of benefits for these other species.

3 SPECIFIC RESPONSES TO INDIVIDUAL COMMENTS ON DEIS

3.1 Agency Comments and Responses

3.1.1 Environmental Protection Agency (EPA)

In **Letter 8, Comment 1**, the EPA evaluated the DEIS and rated the Project (each alternative) as an EC-2, Environmental Concerns, Insufficient Information. The EPA's rating system⁵ defines Environmental Concerns to indicate the review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. The number 2 (Insufficient Information) is used to indicate the DEIS does not contain sufficient information to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the DEIS, which could reduce the environmental impacts of the proposal. The identified additional information, data, analyses, or discussion should be included in the FEIS.

Response: The EPA's rating is acknowledged, and EPA's specific comments are addressed below.

Letter 8, Comment 2 suggested that for clarification and consistency with the rest of the alternative numbering systems, the No-Action Alternative should be identified as "Alternative 1: No Action Alternative."

Response: The Service has revised the FEIS to be consistent in identifying the No-Action Alternative as Alternative 1 in all cases.

Letter 8, Comment 3 suggested the DEIS consider an alternative having a reduced number of wind turbines with a higher power output and analyze whether this would affect bird and bat collisions.

Response: Section 3 in the DEIS describes the development of a range of alternatives to meet the Service's purpose and need and includes 2 alternatives with a reduced number of turbines, the No-Action Alternative and Alternative 4, both Phase 1 only alternatives. The Project was also reduced in size from 124 turbines to 100 turbines during settlement of the lawsuit. Section 5.8.2.2 in the DEIS analyzes effects of turbine size on bat strikes. There is little available scientific information to suggest that implementing fewer yet larger turbines will significantly impact bird or bat mortality. In response to this comment, the FEIS contains added discussion of a dismissed alternative that included implementing fewer turbines with higher MW output to minimize bird and bat mortality.

In **Letter 8, Comment 4**, the commenter suggested that the historical bat caves and hibernacula areas be referenced on a map relative to the proposed Project site.

Response: The Service has information regarding the location of known historical bat hibernacula; however, we do not believe this historical information to be essential to the analysis of the Project's potential effects to cave bats because these caves are not currently occupied. Therefore, no revisions to the map have been made.

In **Letter 8, Comment 5**, the commenter noted that according to the Purpose and Need (Chapter 2 in the EIS), the Project will produce up to 186 MW of electricity while complying with ESA; however, the stated power output performance for the alternatives is in megawatt-hours. The commenter requested the EIS provide an estimate of operating hours to illustrate if an alternative is meeting the power condition of the Applicant's purpose and need.

Response: In the FEIS, Tables 3-1 and 5-1 have been revised to show energy production and hours of operation based on the typical capacity factor (39.5%) as indicated in BRE's application to the WVPSC

⁵ <http://www.epa.gov/compliance/nepa/comments/ratings.html>

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

for the expansion area. The introductory paragraphs in Section 2.0 have been revised to state that 186 MW is the maximum nameplate capacity for the Project. Section 2.0 also has been revised to include anticipated power production based on a range of capacity factors as indicated in BRE's application to the WVPSC for the expansion area.

In **Letter 8, Comment 6**, the commenter informed us that the intent of the DEIS purpose and need is to evaluate BRE's application for an ITP. The commenter suggested that the purpose and need be specific to provide a discussion of the intent of the National Environmental Policy Act (NEPA) analysis to inform decision-making for the federal agency in issuance of the permit.

Response: Text had been revised in the introductory paragraphs of Chapter 2 to include an explanation of the purpose and need of NEPA as suggested.

In **Letter 8, Comment 7**, the EPA commented that while the DEIS identifies wetlands and streams within the area of construction for the additional 33 wind turbines, it does not clearly quantify these impacts; the EPA requested the Service provide a discussion of avoidance, minimization, and mitigation to these aquatic resources. The EPA noted that any necessary permits will need to be approved by appropriate agencies.

Response: A disclosure of wetland impacts is not necessary as BRE has committed to avoiding impacts to wetlands and streams for construction of Phase II. It should be noted that exact turbine locations for the expansion area will not be determined until just prior to construction. BRE has included alternate turbine locations to potentially avoid wetlands should they be discovered at an initially proposed turbine location.

The Service will include a permit term and condition and address in its permit Findings document that BRE needs to receive necessary permit approvals from other local, state, and federal agencies in order for the Service's ESA take authorization to be effective.

In **Letter 8, Comment 8**, the EPA commented that all construction activities and the completed facilities (including access roads and transmission line right of ways) must comply with all state, local and federal requirements for sediment and erosion and stormwater management.

Response: Acknowledged. See response to **Letter 8, Comment 7** (immediately above) regarding permit terms and conditions and the findings document. No changes are needed in the FEIS. In the DEIS, Section 5.4.2.2. Alternative 2: Proposed Action, Phase II Construction states that BRE and its contractors will employ sediment and erosion control measures and stormwater management practices to prevent erosion and protect surface water resources. In Section 3.2.2.1 Phase II Construction, Construction and Mitigation Measures, the DEIS explains that BRE will implement all practices necessary to comply with their National Pollution Discharge Elimination System permit, including sediment and erosion control and stormwater management.

3.1.2 U.S. Army Corps of Engineers (USACE)

In **Letter 9, Comments 1, 9, and 10** the U.S. Army Corps of Engineers (USACE) made reference to language discussing the Clean Water Act in the Executive Summary and Section 3.2.2.1 of the DEIS). To be more consistent with the regulatory language, the USACE recommended changing "concerning the crossing of Waters of the U.S." to "concerning any discharge of dredged or fill material into Waters of the U.S."

Response: In the FEIS text has been revised as recommended in the Executive Summary and in Section 3.2.2.2.

Letter 9, Comment 2 made reference to language discussing the Clean Water Act in DEIS Section 1.5.1.4 Section 404). To be consistent with agency regulatory authorities, the commenter suggested removing this section and replacing it with the following: "USACE is directed by Congress under Section

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

404 of the Clean Water Act (CWA) (33 USC 1344) to regulate the discharge of dredged and fill material into all waters of the U.S., including wetlands. Section 404 of the CWA authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits, after notice and opportunity for public hearing, for the discharge of dredged or fill material into the waters of the U.S. at specified disposal sites. The selection and use of disposal sites will be in accordance with guidelines developed by the Administrator of EPA in conjunction with the Secretary of the Army and published in 40 CFR Part 230.”

Response: Text has been revised in the FEIS as recommended.

Letter 9, Comment 3 referred to Section 1.5.1.4 of DEIS, Wetlands and waters of the U.S. subsection. The commenter suggested the first sentence be revised to “Waters of the U.S. are defined in 40 CFR 230.3(s).”

Response: Text has been revised in the FEIS as recommended.

Letter 9, Comment 4 referenced DEIS Section 1.5.1.4, Subsections on Floodplain Management and Invasive Species Prevention and Management and indicated these subsections likely do not belong in the Clean Water Act section.

Response: The correct headings for these sections have been added accordingly to the FEIS.

Letter 9, Comment 5 referenced Section 1.5.2.2 of DEIS, which discusses water quality certificates granted by the West Virginia Department of Environmental Protection. The commenter recommended removing the word “general” in “general permits.” The commenter stated that 401 Water Quality Certificates C is required for any 404 CWA permit, not just general permits.

Response: Text has been revised in the FEIS as recommended.

Letter 9, Comment 6 made reference to the first sentence in Section 1.6.1 of the DEIS which stated the proposed Project began under the assumption that there was no federal action requiring NEPA review or compliance. The USACE commented that the previous Nationwide Permit (NWP) #12 included a NEPA analysis that was conducted before NWP #12 was issued. The USACE suggested it would be more accurate to state no previous federal action necessitated a project-specific NEPA analysis.

Response: Subsections in DEIS Section 1.6 are conveying Consultation and Regulatory Compliance History with all agencies. This paragraph is describing any prior USACE consultation and permitting relative to the Project. We are not suggesting that NEPA was not conducted in the issuance of this particular NWP #12.

In **Letter 9, Comment 7a** in reference to Section 1.6.1.2 of the DEIS, the USACE indicated this section will require revision. The USACE provided an initial NWP #12 verification on October 3, 2006, stating the discharge of fill material to waters of the U.S. for the construction of the proposed transmission line met the criteria for authorization under NWP #12 (67 FR 2020). This version of NWP #12 expired on March 18, 2007. On May 6, 2008 the USACE issued a NWP #12 verification stating the discharge of fill material into waters of the U.S. for the construction of the proposed transmission line met the criteria for authorization under NWP #12 (72 FR 11092).

Response: Text has been revised in the FEIS as recommended.

In **Letter 9, Comment 7b** in reference to DEIS Section 1.6.1.2, the USACE noted that to date they have not accepted the results of the wetland delineation for Phase II. The USACE jurisdictional determination for Phase II is still pending.

Response: Text in the FEIS has been revised to clarify that the USACE has reviewed the delineation, but the USACE’s jurisdictional determination is still pending.

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

Letter 9, Comment 7c made reference to DEIS Section 1.6.1.2. In comparing Figure 1-4 of the DEIS with the 2010 delineation report the USACE received, the USACE is concerned the Project areas do not match, particularly in the area of Blue Ridge. Based on this, the USACE cannot verify that aquatic resources within the expansion area have been adequately described.

Response: Two turbines, associated roads, and the electrical collection and communications system in this part of the Phase II Project area were not formally reviewed by the Applicant's consultants, Potesta and Associates, in their 2010 Wetland Delineation report. However, BRE has reviewed this area informally, and they did not detect any additional wetlands or streams within the potential impact area. Should BRE seek a USACE permit for phase II, this area along Blue Ridge will be formally delineated and the report will be provided to the USACE for review.

Letter 9, Comment 8 made reference to the first sentence of Section 1.6.2.2 of the DEIS that states there was no identified federal action and no consultation under Section 106 of the NHPA for the original proposed Phase I Project. The USACE commented they cannot concur with this statement. The USACE took a federal action when they issued the NWP #12 verification. However the Section 106 scope did not include the entire wind farm Project area.

Response: Text has been revised in the FEIS to clarify that the USACE took a federal action and the scope for the NWP #12 permit included the transmission line and the footprint of its associated wetland impacts, but not the wind Project turbines. Hence, cultural resources were not reviewed under Section 106.

Letter 9, Comment 11 referenced DEIS Section 4.4.2.4. In comparing Figure 1-4 of the DEIS with the 2010 delineation report the USACE received, the USACE is concerned the Project areas do not match, particularly in the area of Blue Ridge. Based on this, the USACE cannot verify that aquatic resources within the expansion area have been adequately described.

Response: See response to **Letter 9, Comment 7c** above.

Letter 9, Comment 12 makes reference to DEIS Section 4.4.2.4. Previous sections of the DEIS indicate 5 wetlands were identified in the Phase II area. This section lists all 6 wetlands described in the 2010 delineation report. The USACE thought this was confusing and the document should be revised for consistency. The USACE notes that Potesta, on behalf of the Applicant, has indicated Wetland 6 is not within any area proposed for construction.

Response: Text in Section 1.6.1.2 of the FEIS has been revised to reflect that Potesta identified what they determined to be 3 jurisdictional wetlands in the Phase II Project Area. The text in Section 4.4.2.4 indicates the number of wetlands identified by Potesta, 6 in total, 3 jurisdictional and 3 non-jurisdictional wetlands. No text in Section 4.4.2.4 has been changed; the text still reflects 3 jurisdictional wetlands.

Letter 9, Comment 14 referenced Table 4.4 in the DEIS. The USACE suggested the title of this table be revised to "Potential jurisdictional wetlands...." The USACE has not approved the delineation for the Phase II Project.

Response: Text has been revised in the FEIS as recommended.

Letter 9, Comment 15 makes reference to Table 4.4 in the DEIS. The USACE indicated that footnote 2 does not appear to apply to any resource shown in Table 4.4.

Response: The footnote has been deleted from the FEIS. This resource is not in Table 4.4.

Letter 9, Comment 16 referenced Table 4.4 in the DEIS. The USACE noted acreages for Wetlands 4 and 5 do not match the information in the 2010 delineation report.

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

Response: The acreages in Table 4.4 match those in the 2010 delineation report. The values were rounded to the nearest 1/100 of an acre. Based on the level of accuracy of the wetland delineation conducted and because the acreages were provided as approximations, we accept that 2 significant figures is the appropriate degree of precision for these acre values.

Letter 9, Comment 17 refers to Section 4.4.2.4 in the DEIS in the 2 paragraphs following Table 4.4. The USACE noted it has not verified the findings of the 2010 delineation report. The USACE recommended the paragraphs caveat the statement about meeting the definition of waters of the U.S. accordingly.

Response: Text in Section 4.4.2.4 in the FEIS has been revised as recommended.

Letter 9, Comment 18 made reference to DEIS Section 5.4.2.2, 100-Turbine Decommissioning. The USACE stated it cannot concur with a sentence that indicates BRE does not anticipate having to implement temporary stream crossing to remove the transmission line during decommissioning as temporary stream crossing were not needed for construction of the transmission line. Based on its Administrative Record, the USACE indicated its previous NWP #12 verifications authorized the discharge of fill material into waters of the U.S. associated with the construction of 11 temporary access crossings required for the construction of the 15-mile transmission line. This should also be considered in the Phase I Decommissioning subsection in Section 5.4.2.1.

Response: The sentence has been revised in the FEIS to reflect the potential for additional USACE permitting for temporary stream crossings associated with removing the transmission line.

In **Letter 9, Comment 19**, the commenter asked where is "Appendix 4.C" in the DEIS. Appendix 4.C is referenced in Section 5.16.4.4 Water Resources, Subsection Surface Water.

Response: The reference to "Appendix 4.C" refers to documents relevant to BRE and USACE correspondence that were not provided inadvertently in the Appendices. Based on the USACE's recommendation we delete this text, the reference to the Appendix has been removed.

Letter 9, Comment 20 made reference to DEIS Section 5.16.4.4. The USACE recommended changing the word "activities" to the phrase "the discharge of fill material into waters of the U.S. associated with the construction of the transmission line..."

Response: Text has been revised in the FEIS as recommended.

Letter 9, Comment 21 made reference to DEIS Section 5.16.4.4.2. The USACE recommended revising the last part of the last sentence in the first paragraph to read "the discharge of fill material into waters of the U.S. associated with the construction of the transmission line would meet the criteria for authorization under NWP #12."

Response: Text has been revised in FEIS as recommended.

Letter 9, Comment 22 referenced DEIS Section 5.16.4.4, Surface Water subsection. The USACE commented on a sentence that indicates the project the USACE authorized under NWP #12 was not constructed. If this is the case, this should be made clear throughout the document. If this work was not conducted, the USACE is unsure why any discussion of the work is included in the document, especially this cumulative effects section.

Response: The transmission line, which was permitted under the NWP#12, was constructed. This transmission line crossed wetlands, but poles were not sited in the floodplain, and BRE did not install temporary culvert crossings because they were able to avoid doing so. However, references to this construction history have been deleted in the FEIS. The transmission line is a past cumulative effect,

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

however, no waters of the U.S. were affected, so there were no past cumulative effects to water resources associated with the transmission line.

Letter 9, Comment 23 made reference to DEIS Section 5.16.4.4. The USACE noted a typographical error in the word “implementation.”

Response: The error has been corrected in the FEIS as recommended.

3.2 Native American Tribe Comments and Responses

In **Letter 14, Comment 1**, the Catawba Nation expressed no immediate concerns with regards to traditional cultural properties, sacred sites, or Native American cultural sites within the boundaries of the proposed Project areas. However, the Catawba are to be notified if Native American artifacts and/or human remains are located during the ground disturbance phase of this Project.

Response: The Service appreciates the Catawba Indian Nation’s review of this Permit application and DEIS. Tribal representatives requested to be a signatory to the cultural resources Memorandum of Agreement (MOA) pursuant to the National Historic Preservation Act. We have since sought their involvement in preparing this MOA in coordination with other signatories. The final MOA was signed by all parties in June 2013 and has been added to Appendix K in the FEIS.

3.3 Non-Government Organization Comments and Responses

Letter 1, Comments 19 – 20 suggested the DEIS did not consider and analyze a reasonable range of alternatives. The commenter felt the DEIS’s alternatives did not allow for informed decision making because each alternative had such different combinations of operational variables: seasonal period (spring/summer/fall), nightly period (curtailment at night versus day, and at various times during the night), mechanical changes (cut-in speed, blade feathering), and turbine number (67 turbines versus 100 turbines). Hence, the DEIS evaluates a set of alternatives with such different combinations of operational variables that the comparison is rendered non-useful. The commenter then suggests the EIS should analyze in detail other alternatives that vary 1 category of variable at a time.

Response: Chapter 3 in the DEIS explains the Service’s process for developing a range of alternatives that meet the Service’s purpose and need. Agencies do not need to consider alternatives that are infeasible, ineffective, or that are not “significantly distinguishable from alternatives actually considered, or which have substantially similar consequences,” *Westlands Water District versus U.S. Department of Interior*, 376 Federal Reporter 3d 853, 868 (9th Circuit Court 2004) (quoting *Headwaters, Inc. versus U.S. Bureau of Land Management*, 914 Federal Reporter 2d 1174, 1180–81 (9th Circuit Court 1990)). In the DEIS, the Service considered 8 alternatives altogether. Four alternatives were analyzed in detail, and 4 alternatives were considered but eliminated from further analysis. The 4 retained alternatives illustrate options with different numbers of turbines, varying energy capacity, different cut-in speeds, and different mitigation measures under the HCP. These options represent a feasible range of alternatives for the Applicant that would achieve the agency’s purpose in issuing the ITP, without unnecessary duplication of variables that would result in numerous alternatives with substantially similar consequences. Please note the FEIS now includes a fifth dismissed alternative at the request of the EPA. The fifth alternative dismissed included implementing fewer turbines with higher MW output to minimize bird and bat mortality.

Letter 1, Comment 21 suggested the EIS should study an alternative that reflects the terms of the modified stipulation agreement. The commenter felt it would be useful to complete this analysis on both a 67-turbine and 100-turbine Project, thereby providing 2 baseline measures.

Response: It would not be appropriate to include alternatives that implement the modified stipulation agreement for the 25-year operating life of the Project as the stipulation is a short-term agreement intended to avoid the likelihood of take while an ITP is pursued. Should the Service select the No-Action/No-Permit alternative, BRE would need to operate the Project in manner that continues to avoid take of listed species. Under our No-Action/No Permit alternative, we did not presume the Judge would order or approve of BRE continuing to implement the terms of the modified stipulation agreement. There

BEECH RIDGE ENERGY WIND PROJECT
 FINAL ENVIRONMENTAL IMPACT STATEMENT
 RESPONSES TO COMMENTS

is more than one way to avoid take and BRE could propose another method subject to the judicial review and approval process.

In our FEIS, affected environment sections 4.7.3 and 4.8.3 include the bird and bat mortality results of the turbine searches during the period for implementing the 2012 Stipulation Agreement for comparison purposes only. Turbine searches found eastern red bats (*Lasiurus borealis*), hoary bats (*Lasiurus cinereus*), silver-haired bats (*Lasionycteris noctivagans*), and tri-colored bats (*Perimyotis subflavus*). Searchers also found 3 Birds Species of Conservation Concern: wood thrush (*Hylocichla mustelina*), black-billed cuckoo (*Coccyzus erythrophthalmus*), and prairie warbler (*Setophaga discolor*). We continue to assume that curtailed operations do not affect bird mortality as supported by the 2012 actual monitoring results (Tidhar et al. 2013).

To further respond to the commenter's suggestion, we present in the table below the annual bat and bird mortality estimated from implementing the 2012 Stipulation Agreement at 67- and 100-turbine Projects compared to each of the 4 alternatives in our FEIS and unrestricted operation of the 67- and 100-turbine Projects. With the exception of the 2012 operations, estimates are based on 25.98 bats per turbine per year 5.61 birds per turbine per year for the mortality rates derived from estimates from 17 post-construction studies conducted in the Mid-Atlantic Highland Region. The 2012 operations resulted in an estimated mean fatality rate of 3.04 bats per turbine per year and 1.79 birds per turbine per year.

Alternative	Estimated annual Project mortality of all bats	Estimated annual Project mortality of all birds
Alternative 1: No-Action – No ITP/HCP [67 turbines; no night-time operation Apr-Nov]	0	376
Alternative 2: Proposed Action – ITP with Full Implementation of HCP [100 turbines; 4.8 m/s cut-in speed; 50% all bat mortality reduction]	1,299	561
Alternative 3: Additional Covered Species with ITP and HCP with Additional Measures [100 turbines; 6.5 m/s cut-in speed; 78% all bat mortality reduction]	831	561
Alternative 4: Phase I Only with ITP and HCP with Reduced Measures [67-turbines, 4.8 m/s cut-in speed; 50% all bat mortality reduction]	624	376
Unrestricted Phase I Operation [67 turbines; 3.5 m/s cut-in speed]	1,741	376
Unrestricted Phase I and II Operation [100 turbines; 3.5 m/s cut-in speed]	2,598	561
2012 Modified Stipulation Agreement Operation (67 turbines; 6.9 m/s cut-in speed)	204	120
2012 Modified Stipulation Agreement Operation (100 turbines; 6.9 m/s cut-in speed)	304	179

Letter 1, Comment 22 recommended the EIS incorporate an alternative that mirrors Alternative 3 but only for Indiana bats and Virginia big-eared bats.

Response: The analysis for Alternative 3 includes a separate analysis for listed bats. Thus information on effects to Indiana bats and Virginia big-eared bats is already embedded in Alternative 3 and can be readily teased out. In the DEIS, see Section 5.8.2.3 Listed Bats. Table 5.28 provides a synopsis of the listed bat mortality under implementation of Alternative 3. Creating a separate alternative that mirrors

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

alternative 3 but only for Indiana bats and Virginia big-eared bats would be duplicative of information reasonably apparent from the analysis in alternative 3. As noted in our response to **Letter 1, Comments 19-20** above, agencies do not need to consider alternatives that are not significantly distinguishable from other alternatives considered.

Moreover, in making a decision on a selected alternative, the Service could issue a permit only for Indiana bats and Virginia big-eared bats that mirrors Alternative 3 cut-in speeds and mitigation. The U.S. Department of Interior regulations for implementing NEPA state that the responsible official must not consider alternatives beyond the range of alternatives discussed, but may select elements from several alternatives discussed if the effects of such combined elements are reasonably apparent from the analysis in the EIS (43 CFR 46.420(c) and 46.20(d)).

In **Letter 1, Comment 23**, the commenter noted the DEIS's Alternative 3 contains a more restrictive curtailment regime of 6.5 m/s from April 1 to October 15 and also incorporates additional covered species. The commenter asked why the DEIS did not explain why the inclusion of 3 additional species alone triggered a more restrictive curtailment regime.

Response: Section 5.8.2.3 of the DEIS explains that reproductive individuals and juveniles belonging to the 3 additional species were captured during summer mist-netting in the Project Area. The period of curtailment from April 1 through October 15 and higher cut-in speeds would be implemented to protect known breeding individuals of the 3 additional species. A longer season of curtailment and higher fatality reduction was used in Alternative 3 because the ITP under this alternative would authorize take of breeding individuals of the 3 additional species should they become listed during the permit term. Breeding individuals are key drivers of species population dynamics. More restrictive operating regimes are needed under this alternative because taking reproductively active individuals during the breeding season has greater impacts to the population than taking non-breeders during migration. Both the female and her pup are lost that year, and in subsequent years her future reproductive contributions also are lost. By comparison, the permit for Alternative 2 would authorize take primarily of migrating Indiana bats. While breeding Indiana bats are not currently known on site, alternative 2 includes a changed circumstance response for a more restrictive curtailment regime should an Indiana bat maternity colony be found on or near the Project site, or should take of a reproductive female Indiana bat or young-of-year occur during the life of the permit (see DHCP Section 8.2.5).

Letter 1, Comment 24 suggested the DEIS should analyze an alternative with an ITP term of a shorter duration than that of 25 years. The commenter suggests a shorter permit term would address changed circumstances better than the measures proposed in the Applicant's HCP.

Response: The Service considered and dismissed an alternative that included an ITP and full implementation of the proposed HCP with a reduced permit term (see Section 3.3.2 of the DEIS). The Service determined an alternative with a reduced permit term would not provide substantially different protection for listed bats beyond what is proposed in the retained alternatives. The proposed HCP, RMAMP, and ITP include research, monitoring, and adaptive management throughout the life of the permit to address uncertainty, evaluate the effectiveness of the HCP in reducing take, ensure that the HCP is properly implemented and that authorized take levels are not exceeded, and ensure that a variety of potential changed circumstances are responded to over the life of the permit. Inclusion of adaptive management and changed circumstances addresses the need for flexibility over the long-term should assumptions be proven inadequate (e.g. the effectiveness of cut-in speeds) or the status of the species changes (e.g., WNS). Therefore a shorter permit term is not needed.

Letter 1, Comment 27 suggested that of the 3 action alternatives presented in the DEIS, the Service should select Alternative 3 as the preferred alternative.

Response: We received several comments regarding the alternatives we retained for detailed analysis in the DEIS. Comments included those that indicated what should be the Service's preferred alternative providing us with the following breakdown.

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

Alternative 1: No-Action Alternative	4
Alternative 2: Proposed Action	23
Alternative 3: ITP and Modified HCP with Additional Covered Species	1
Alternative 4: ITP and HCP for Phase I Only	2

The Service acknowledges all offered suggestions for the preferred alternative. The Service will select an alternative in the Record of Decision. Chapter 5 in the DEIS assesses the impact of each alternative. The impacts of each alternative relative to the others are summarized in Table 3.4 in the DEIS.

Letter 1, Comment 39 suggested the Service and its DEIS take a hard look at the cumulative impacts to bat and bird species by using a Leslie Matrix model or an equivalent population model with formalized uncertainty analysis.

Response: With respect to wind projects, use of the Leslie Matrix model for individual bird or bat species would provide a simplistic method for making a comparison between a population size affected by Project mortality with that of one unaffected by Project mortality. The model would represent a “best case” population scenario, as it does not address stochasticity or other high impact stressors that may impact the population, such as WNS stress to individual species of bats or the many cumulative sources of bird mortality (e.g. collisions with buildings, powerlines, automobiles, etc. shown in Table 5-36 in the DEIS). Mortality data on these other stressors are not available for individual bird species or for different regions of the country.

In Sections 5.16.4.7 and 5.16.4.8, the DEIS analyzed cumulative effects to birds and bats, respectively, using the best available information. In addition, the Service is using a population model for the Indiana bat and will further discuss its use and outputs in our biological opinion, including an analysis of cumulative impacts. For the reasons explained below it is not necessary to use population models for other species of birds or bats to make a reasoned choice among alternatives.

First, population estimates needed for models are incomplete, outdated, or unavailable for many species of birds and unlisted bats. . The Council on Environmental Quality (CEQ) regulations for NEPA (43 CFR 502.22) specify when an agency is evaluating reasonably foreseeable significant adverse effects, and there is incomplete or unavailable information, the agency shall always make clear that such information is lacking. The CEQ regulations state that the agency is to collect additional information if it is essential to a reasoned choice among alternatives and the overall costs of obtaining it are not exorbitant.

Although population estimates are available for the Virginia big-eared bat, the likelihood of Project take is low (predicted worst case of 0.5 bats per year with curtailment) based upon known distribution and limited dispersal of the species. We noted in our DEIS that Virginia big-eared bat carcasses have not been found at any wind power project to date; however, no projects have been built within the 6-mile radius of occupied hibernacula (the high risk zone where Virginia big-eared bats spend most of their time). Considering the small areal extent of these 6-mile radii, compared to the large area where wind power may be developed, we concluded in our DEIS the likelihood of significant cumulative mortality of Virginia big-eared bats from future wind energy projects is relatively low. Because the effects to this species are not reasonably foreseeable as significant, we see no need to use a Leslie Matrix model or an equivalent population model with formalized uncertainty analysis.

In our EIS, population models cannot be used for most of the unlisted bats due to the absence of population estimates and the exorbitant costs of obtaining this information for many individual species at hundreds or perhaps thousands of caves throughout their range. Current bat population monitoring focuses on winter surveys of caves where ESA-listed bats occur and thus underestimate unlisted bat numbers. In the absence of population data, our DEIS (pages 336-339) included a risk assessment of cumulative effects to bats, clearly indicating that population level responses for bats remain uncertain because information is lacking, incomplete, or inadequate. Our analysis showed a cumulative effect of wind power projects on unlisted bats at the population level (an additive effect to other population

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

stressors) but great uncertainty regarding the magnitude of this risk to unlisted bats. This risk can be greatly reduced through operational curtailment.

We can make a reasoned choice among alternatives in our EIS because available studies have demonstrated that turbine curtailment is effective in reducing bat mortality. Differences among alternatives in the curtailment regime (ranging from turning turbines off at night to feathering blades below winds speeds of 4.8 and 6.5 m/s) can be quantified and one can make a reasoned choice among alternatives by considering the estimates of predicted unlisted bat mortality. For these reasons, population modeling of effects to unlisted bats is not essential to a reasoned choice among alternatives.

In Section 5.16.4.7 of the DEIS (Subsection Bird Group Differences) and in Table 5-41, we showed a small cumulative annual percent impact to bird populations at the regional scale (<0.3%). Even after revising the regional estimator for bird mortality in our FEIS (Table 5.37) to include results from other studies (as recommended in **Letter 3, Comment 5**), the cumulative annual impact to bird populations at the regional scale is still less than 0.5% (Table 5-41). Significant population-level effects at this scale are not anticipated and modeling is not essential to making a reasoned choice among alternatives. Furthermore, population models cannot be used to assess impacts to local rare breeding bird populations because population estimates of breeding birds on or near the site are unavailable and the costs of obtaining this information for the half a dozen or so rare bird species would be exorbitant. Credible scientific evidence from other wind power projects supports the view that mortality of rare bird species on the Project site is expected to be infrequent, based on finding 0 to a few carcasses per year of any rare bird species.

During post-construction monitoring of 67 turbines at the Project from April 1 through October 28, 2012, carcasses of 3 of the 10 Bird Species of Conservation Concern were found: 1 fall migrating prairie warbler, 2 late spring migrating or summer resident wood thrushes, and 4 black-billed cuckoos (1 summer resident and 3 likely summer residents or late spring migrants) (Tidhar et al. 2013). The 2 Met towers were not monitored. There was no evidence of fatality of the other 7 Bird Species of Concern. When one factors in scavenger removal, searcher efficiency and other biases, and when one factors in predicted fatality at the unmonitored MET towers, the estimated annual Project fatality for 67 turbines and 2 guyed MET towers in 2012 was approximately 2 prairie warblers, 3 wood thrushes, and 8 black-billed cuckoos. Our DEIS predicted estimated annual Project mortality at 67 turbines and 2 Met towers of 1 to 2 prairie warblers, 5 to 12 wood thrushes, and 4 to 10 black-billed cuckoos (Table 5-9). Thus based upon the evidence to date, our predictions are reasonable.

In addition, because few studies have been done to determine if curtailment designed for bats also benefits birds, our DEIS assumed that curtailment for bats is ineffective in reducing bird mortality. Thus differences among alternatives in the curtailment regime (ranging from turning turbines off at night to feathering blades below winds speeds of 4.8 and 6.5 m/s) were predicted to have little to no effect on mortality rates of birds. The only factor affecting bird mortality that varies among alternatives is the number of turbines. One can make a reasoned choice among alternatives by considering the estimates of predicted bird mortality. For these reasons, population modeling of effects to birds is not essential to a reasoned choice among alternatives.

Letter 2, Comment 2 indicated the commenter's order of preference for a selected alternative as such: Alternative 4, Alternative 1, Alternative 3, and Alternative 2.

Response: See the Service's response to **Letter 1, Comment 27** in Section 3.3 of this document regarding selection of an alternative.

Letter 2, Comment 4 maintained the Service should reassess the potential impacts of the Project on eagles and reevaluate such impacts in the EIS. The commenter further asserted the Service should either direct BRE to apply for an eagle take permit or explain why a permit is not necessary in this case. The commenter offered that if the Service plans to allow take of golden eagles, the Service would need to conduct a separate NEPA review before the current NEPA process is completed.

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

Response: See **MR-5** for the Service's response to concerns regarding the Project's risk to eagles and our re-analysis of impacts to eagles in the FEIS in Section 5.7.2. The Service is not currently issuing permits for take of golden eagles east of the 100th meridian until a programmatic analysis of sustainable levels of golden eagle take is completed and the Service's eagle permit regulations are revised. Should the Service issue such permits in the future, we would assess the need for additional NEPA review at that time.

Letter 2, Comment 5 suggested the EIS should analyze impacts to bat and bird habitats, including critical habitat essential to proper ecosystem functioning and species survival by avoiding disruption of essential biological behaviors, as well as direct impacts to bats and birds.

Response: The Project will not affect designated critical habitat of threatened or endangered species. The DEIS analyzes the effects of habitat loss and alteration on bats and birds in association with the proposed Project in Sections 5.7 and 5.8. When one considers the context of the extensive surrounding forested landscape, habitat impacts from the Project are not anticipated to have a major impact on ecosystem functioning and species survival.

Letter 2, Comment 22 expressed concern about cumulative take of listed species particularly in combination with existing and future threats, including those linked to WNS. The commenter suggested the HCP and EIS should address a 'worst case' scenario.

Response: We appreciate the commenter's concern about cumulative impacts to listed species, including WNS. Section 5.16.4.8 in the DEIS and FEIS discusses cumulative effects to listed species in relationship to estimated effects of the Project and other wind power projects on listed species. The EIS includes a range of possible mortality estimates, including high end estimates which reflect a worst case analysis.

Letter 2, Comment 50 suggested the EIS incorporate an alternative that mirrors Alternative 3, but only for Indiana bats and Virginia big-eared bats.

Response: See the Service's responses to **Letter 1, Comments 19 – 20** and **Letter 1, Comment 22** in Section 3.3 of this document regarding our alternatives analysis.

Letter 2, Comment 57 indicated the Project does not possess a permit under the MBTA, nor does it provide for mitigation for take, thus effectively authorizing take of migratory birds without a permit.

Response: See **MR-12** in Section 2.12 of this document for the Services response to concerns surrounding the MBTA.

Letter 2, Comment 58 expressed concerned about the potential impacts of the Project on eagles.

Response: See **MR-5** in Section 2.5 of this document for the Service's response to concerns regarding the Project's effects to eagles.

Letter 2, Comment 59 supported the Service's recommendation that bird diverters be used on MET towers in adherence with voluntary wind guidelines.

Response: The Applicant's APP (Section 2.8.5) has been revised to reflect that BRE has installed bird diverters on the guy wires of the existing 2 MET towers. Two future MET towers in the expansion area will be un-guyed.

Letter 3, Comment 1 suggested the Service will be authorizing the take of thousands of birds without an MBTA permit and not requiring mitigation that will prevent this take.

Response: See **MR-12** in Section 2.12 and response to **Letter 2, Comment 57** immediately above.

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

In **Letter 3, Comment 2**, the commenter noted the DEIS states on page 18 that there is no MBTA take permit that the Service can grant. The commenter suggested that this is true only because the Service has chosen not to use its delegated authority to promulgate regulations that would create MBTA take permits for wind projects, most recently when it rejected the American Bird Conservancy's (ABC's) rulemaking petition earlier this year.

Response: As explained in our March 22, 2012 response to ABC's petition for rulemaking, the Service has taken a multi-faceted enforcement approach for the MBTA that uses a combination of tools, including education, permits for certain activities, and appropriate criminal enforcement that takes into account voluntary implementation of plans to minimize harm to migratory birds.

Such voluntary efforts do not provide legal assurances, but rather document an individual's willingness to employ all current avoidance and minimization measures available. The Service exercises its enforcement discretion in such cases, as appropriate. Current regulations authorize permits for intentional take of migratory birds for activities such as scientific research, education, depredation control, and "special purposes" (50 CFR Part 21). However, these regulations do not expressly address incidental take, but do contemplate permit issuance where an applicant demonstrates "a benefit to the migratory bird resource, important research reasons, reasons of human concerns for individual birds, or other compelling justification." (Special Purpose Permit [50 CFR 21.27]). The Service has been examining approaches to developing incidental take regulations under the MBTA, a difficult task considering the magnitude and scope of implementation to adequately address 1,007 species and the wide variety of activities that might incidentally take migratory birds.

Letter 3, Comment 3a referenced the multi-party North American Landbird Conservation Plan, which states the goal for golden-winged warbler (*Vermivora chrysoptera*) and cerulean warbler (*Setophaga cerulea*) is to increase their populations by 100%. The commenter then referenced the DEIS, indicating the document states that the Project would be expected to contribute to their population decline (page 192). The commenter asked what steps would the Service take to ensure that the Project contributes to the 100% population increase conservation goal as opposed to contributing to species decline?

Response: The species population goals in the North American Landbird Conservation Plan are at the continental scale and equate to doubling the rangewide population of golden-winged and cerulean warblers in 30 years. To achieve such goals at the continental scale requires numerous voluntary partnerships that combine resources and significantly coordinate on-the-ground conservation of federal, state, and private land-owners. To contribute toward these overarching goals, the Service has taken steps to ensure that the Project minimizes and mitigates mortality of migratory birds (including the Birds of Conservation Concern named by the commenter) commensurate with the Project's level of impact.

The DEIS states that the Project is expected to contribute slightly to the ongoing declines originating from many sources of bird mortality, including sources other than wind projects. As explained in Section 5.7.2.2, Subsection Bird Group Differences, we expect a small amount of mortality, i.e., a few individuals on occasion spread over many years. We do not predict that this amount of mortality will have a significant effect at the North American population level of any of the Birds of Conservation Concern listed in Table 5-16 of the DEIS. Post-construction fatality monitoring will determine if actual operations are having a significant effect on bird populations, including golden-winged warblers. Thus far no golden-winged or cerulean warbler carcasses have been found at the Project during one year of post-construction monitoring (searching all 67 existing turbines every 2 days, from spring through fall 2012, and during ongoing monitoring from April 1, 2013 to the present (Tidhar et al. 2013).

Although migrating cerulean warblers were detected in the Phase II expansion area during pre-construction surveys, the nature of the Project setting (a large block of industrial forestland) is not conducive to taking additional land management actions locally that would contribute to population increases for cerulean warblers, a bird of mature forests having structurally diverse canopies with multiple vegetation layers. One of the primary actions identified in the Conservation Action Plan for the Cerulean

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

Warbler (USFWS 2007b) is preventing the permanent loss of large areas of forest and implementing forest management recommendations on the breeding grounds to improve reproductive success. BRE's proposed off-site conservation land would benefit cerulean warblers through protection and management of breeding habitat: a large tract of deciduous hardwood forest that has tall, large-diameter trees, with diverse vertical structure in the forest canopy and some small forest openings. Protection of this high quality breeding habitat in perpetuity removes a significant threat of logging and development on this site and thereby contributes toward the continental goal of secure and increasing populations.

Resident golden-winged warblers are present in the Project area because of the early-successional habitat created by timber harvesting, particularly clear-cutting, which occurs on managed timber lands throughout the mountains of West Virginia. Whereas golden-winged warblers are not expected to benefit from the off-site conservation of mature forest, should significant mortality of this species occur, BRE will consult with the Service to reduce mortality and appropriately mitigate for it, if needed, taking into account the current land use practices surrounding the Project area.

Appendix C of the HCP contains BRE's RMAMP, which in addition to ESA-protected bats species, also incorporates monitoring and adaptive management for impacts to migratory birds, including Birds of Conservation Concern, which could trigger the need for adaptive management. As further described in Section 2.5.2 of the APP, the RMAMP will measure baseline bird mortality rates and determine the effectiveness of various turbine operation protocols in reducing bird mortality. If bird fatalities are greater than predicted and determined to be significant, BRE will meet and confer with the Service. If a specific cause can be identified, BRE will develop specific additional mitigation measures to address the occurrence. Adaptive management responses relevant to cerulean and golden-winged warblers and other songbirds may include removing/modifying the source(s) of bird attraction, implementing turbine operational protocols designed to reduce bird fatalities at turbines that have shown higher than average fatality rates, implementing technological solutions, and habitat protection and restoration. These measures and procedures should be adequate for the Project to minimize and mitigate impacts to the cerulean and golden-winged warblers, should they occur, commensurate with the level of impacts.

From this it is clear that the Service has considered this Plan in its NEPA analysis. However, we note that nothing in the statutes or regulations governing our issuance of an ITP requires the applicant to comply with or implement the North American Landbird Conservation Plan.

Letter 3, Comment 3b asked if BRE's habitat mitigation for endangered bats would meet the habitat management needs of golden-winged warbler and cerulean warbler.

Response: See response to **Letter 3, Comment 3a** in Section 3.3 of this document. Section 4.1.5 of the APP has been revised to provide further detail about mitigation for birds. Through adaptive management, BRE's APP commits to consider off-site mitigation for birds if mortality is greater than predicted and significant. The mitigation project undertaken for bats within 2 years of issuance may afford provide incidental benefits to birds. As explained, it is possible that BRE will select a different site or type of project for its mitigation (e.g., only cave gating), so the likely benefit to birds, not less a particular bird species, is difficult to predict at this juncture. BRE's APP acknowledges this, and therefore commits to explore additional mitigation for birds later, if needed. But as the commenter notes, one potential off-site mitigation parcel that is generally described in the HCP for bat mitigation would likely provide habitat for a variety of forest birds, including cerulean warbler, Kentucky warbler (*Geothlypis formosa*), wood thrush, and Canada warbler (*Cardellina canadensis*) as it is a mature, mesophytic mixed oak forest with an average tree diameter of 16 inches at breast height. Because it contains only a limited amount of early successional habitat and will not be managed for this habitat type, the off-site mitigation parcel is not expected to provide long-term benefits for golden-winged warblers or other species that require some forest openings to create the thick understory to which they are attracted (e.g., blue-winged warbler [*Vermivora cyanoptera*] and prairie warbler).

Also, current land use practices (logging) by the landowner on and near the Project site create forest openings and early-successional habitat required by these species.

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

Letter 3, Comment 4a referenced the North American Landbird Conservation Plan, which recommends a 50% population increase for bay-breasted warbler, blue-winged warbler, Kentucky warbler, wood thrush, prairie warbler, and Canada warbler. The commenter indicated the DEIS states that the Project would be expected to contribute to population declines for them (page 192). The commenter asked what steps will the Service take to ensure that the Project contributes to that 50% population increase conservation goal instead of contributing to species decline.

Response: See response to **Letter 3, Comment 3a** above in this section (Section 3.3) of the document.

To contribute toward these overarching continental goals, the Service has taken steps to ensure that the Beech Ridge Project minimizes and mitigates mortality of migratory birds (including the Birds of Conservation Concern named by the commenter) commensurate with the Project's level of impact. As described in the APP, forest clearing and fragmentation has been minimized by siting the Project in a previously disturbed landscape (industrial forest and abandoned mine lands), by minimizing construction of new roads, and by clearing vegetation in a manner which avoids take of bird eggs and young. The APP also includes a provision that should significant bird mortality of any species occur, BRE will coordinate with the Service and take steps to reduce the mortality and/or mitigate for it. The Service concluded on page 211 of the DEIS that the 100-turbine Project and 2 existing guyed MET towers would be expected to contribute only slightly to ongoing population declines of Birds of Conservation Concern, amounting to no more than 0.6% of the estimated West Virginia population of any Bird Species of Conservation Concern. The DEIS further noted that this analysis likely overestimated the effect because it assumed all mortality would be to birds originating from local populations and did not account for annual recruitment. Following publication of the DEIS, BRE installed bird diverters on the existing MET towers, thus reducing bird mortality even further.

Regarding mitigation, see the response to **Letter 3, comment 3a**, above.

The natural regeneration of forest on the Beech Ridge Project site over time (i.e., the 20-25 year period between construction and repowering or decommissioning) will benefit birds that use early successional and edge habitats. Blue-winged warblers and prairie warblers are present in the Project area because of the early-successional habitat created by timber harvesting, particularly clear-cutting, which occurs on managed timber lands throughout the mountains of West Virginia.

Biologists recorded bay-breasted warblers (*Setophaga castanea*) during spring migration surveys conducted in the Phase II expansion area and in the Phase I Project area (Canterbury 2006, Young et al. 2012c). However, conservation efforts related to the Project would not be meaningful for increasing bay-breasted warbler populations because they do not breed in this region of North America. In the unlikely event that the Project results in significant mortality of bay-breasted warblers, conservation projects outside of the Appalachian region may be considered.

Letter 3, Comment 4b asked if the Project's proposed habitat mitigation for endangered bats would meet habitat management needs of bay-breasted warbler, blue-winged warbler, Kentucky warbler, wood thrush, prairie warbler, and Canada warbler.

Response: See responses to **Letter 3, Comments 3a, 3b, and 4a** located immediately above in this document. In summary, the proposed off-site mitigation parcel currently being negotiated for purchase would provide breeding and migratory stop-over habitat for Kentucky warbler, wood thrush, and other songbirds that use large blocks of mature forest. It would provide suitable migration stop-over habitat for bay-breasted warblers. It would provide a limited amount of potential breeding and migration habitat for birds that use more open, brushy, early- to mid-successional, or forest/edge habitats such as blue-winged warbler, Prairie warbler, and Canada warbler. This latter type of habitat is found in small openings on the edges of the mitigation parcel, along an abandoned road within the parcel, and in ravines with brushy rhododendron thickets within the parcel, as well as throughout the extensive surrounding landscape of

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

managed timberlands. As stipulated in earlier responses, BRE may end up mitigating for bat impacts on a different site or with a different type of project, which might yield more or less incidental benefits for birds.

In **Letter 3, Comment 5**, the commenter requested we revise the regional estimator for bird mortality used in the DEIS. Our list of mean estimated mortality rates in Table 5-12 should include results from the April to November 2011 post-construction monitoring at the Criterion Wind power project in Maryland.

Response: The fatality estimates in the analysis presented in Section 5.7 and in Table 5-12 in the FEIS have been revised and now factor in the Criterion Project 2011 fatality estimate for birds (Young et al. 2012e) along with those from 2 additional 2011 post-construction studies, Sites 2-10 and 2-4 in Pennsylvania. This is information that has become available to us since we began finalizing our DEIS. These 3 studies fit the criteria for comparable studies we identified in our DEIS, including daily turbine searches and a monitoring period spanning early April through at least mid-October (see DEIS Section 5.7.2.2, page 204). We considered but did not include other newer studies that did not meet these criteria (e.g. only weekly searches or shorter monitoring periods). With the addition of the data from these 3 studies that met the criteria, the regional mortality estimate for birds is slightly higher than our previous rate, 5.32 birds per turbine per year (with a range of 0 to 15.69) in the DEIS compared to 5.61 birds per turbine per year in the FEIS (with a range of 0 to 23.49). The revised rate of 5.61 birds per turbine provided in the FEIS is within the range of what we would expect for average mortality in the region (roughly 5-6 birds per turbine per year) in most years.

Our FEIS evaluates the upper end (23.49 birds per turbine per year) as a worst case scenario. We would not expect most projects to have this high a rate of bird mortality for a sustained period of time. The high rate observed at the Criterion Wind Project in 2011 was related in part to birds being attracted to lights left on at night inside the nacelles of two turbines. Excluding the data from these two turbines, the fatality rate at Criterion in 2011 was 11.52 birds per turbine per year (with a 90% confidence interval of 8.59 to 15.10), still higher than the regional average but far lower than 23.49 (Young et al. 2012e).

The Service also considered whether to include in the revised regional bird and bat fatality rates from the 2012 monitoring results from the Project. However, the fatality estimates from the 2012 post-construction monitoring at the Project are not appropriate values. These estimates are based on curtailed operations. For our analysis we assume curtailment does not affect bird mortality. The results from the 2012 monitoring indicate a mean rate of 1.79 birds per turbine per year, which is relatively low compared to some of the Projects listed in Table 5-12. It is unknown whether the bird mortality at the Project site is naturally low, how much it varies across years, and whether the 6.9 m/s interim operation regime for bats reduced bird mortality to a low level. Because the Project's 6.9 m/s operations did not include control turbines (fully operating at 3.5 m/s) we can only relate the Project's potential fatality rates to other projects with uncurtailed operations. We have avoided using mortality estimates from curtailed operations until such time that this assumption can be verified at multiple projects. Although curtailment benefits bats, we have insufficient information on the number of projects implementing curtailment for bats, as well as inconclusive evidence that such curtailment benefits birds. Thus our derivation of regional bat and bird fatality estimates in the DEIS and FEIS are based on a worst-case scenario that assumes no curtailment.

In **Letter 3, Comment 6**, the ABC noted the population figures we used in Table 5-16 in the DEIS for the Birds of Conservation Concern are based on data representing 1995 estimates with no adjustment for population decline since then, even though some species are believed to be declining at a rate of 8% to 9% annually. ABC recommends revising the EIS to show possible population ranges for these species that address the annual decline.

Response: The Partners in Flight (PIF) updated population estimates are not yet available and could not be incorporated into the FEIS. We did not attempt to update the PIF 1995 population estimates by applying the U.S. Geological Survey trend values (mean annual percent change). As stated in our DEIS, this simple calculation would likely be inaccurate and compound many sources of error and variation in the data. The PIF population estimates are derived using complex formulas that make several adjustments to the data, not simply applying a simple percent adjustment. Even so, our DEIS explained

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

the PIF population estimates are rough ball-park figures. Further tweaking of rough ball-park estimates is not necessary.

Section 43 CFR 150.22 of the CEQ's regulations for implementing NEPA states when the acting agency is evaluating reasonably foreseeable significant adverse effects in an EIS and there is incomplete or unavailable information, the agency must state that such information is lacking.

In Section 5.7.2.2, *Subsection Bird Group Differences*, we state the information is unavailable but present the best available information we do have to conduct our analysis. Our use of the 1995 population estimates to conduct our evaluation of the impacts to Birds of Conservation Concern is based upon theoretical approaches and methods generally accepted in the scientific community. Our evaluation is not based on conjecture and therefore is reasonable. We do not consider the lacking information to be essential for making a reasoned choice among the alternatives analyzed.

Consistent with the Service's final land-based wind energy guidelines, BRE's APP includes a provision to validate predictions about bird mortality during post-construction monitoring. Should significant mortality of any migratory bird species occur, BRE has committed to minimizing and mitigating for it. On an annual basis, when we review BRE's monitoring reports to determine if significant bird mortality of any species has occurred, we will make use of the best available scientific information on bird species population sizes. Thus when the updated PIF bird population estimates come out, we will make use of them in evaluating whether Project mortality is significant.

In **Letter 3, Comment 7**, ABC suggested the mortality predictions for rare species in the EIS could be improved through the use of an approach to predicting mortality ranges for rare species at wind projects developed by Manuela Huso and David Dail of U.S. Geological Survey. ABC recommended the Service consult with Dr. Huso about using the new fatality estimator for the rare species present at the Project site.

Response: To estimate rare bird species mortality, the DEIS and FEIS used species proportions of total birds killed from the BRE 2012 interim operations study (Tidhar et al. 2013) and post-construction surveys from other wind projects in the Eastern US with publicly available data on mortality surveys (see Table 5-16 in DEIS and FEIS).

As noted in MR-8, the new fatality estimator for rare species is still under development by Dr. Huso is not yet publically available. Section 4.1.1.1 in the RMAMP includes a provision that BRE, in consultation with the Service, will evaluate fatality estimators available at the time the studies are conducted, will investigate the potential use of other estimators (e.g. the Huso estimator) and will make use of the appropriate estimator. In its post-construction monitoring reports, BRE will calculate estimated fatality rates for listed species of bats and rare species of birds.

In **Letter 3, Comments 8 – 10**, the commenter indicated if eagles are killed, the Project will be violating BGEPA unless it has an eagle take permit. The commenter expressed concern the Service would permit BRE to take golden eagles, and advised the Service should analyze those impacts under NEPA before allowing take of eastern golden eagles to occur. The ABC was concerned that the EIS underestimates the potential risk to golden eagles at the Project site. ABC therefore recommended that Service re-run its eagle take prediction model once the Project's additional eagle surveys are complete, and ask the Project owner to adjust the Project's eagle take permit acquisition plans and mitigation accordingly.

Response: Please see **MR-5** in Section 2.5 of this document for the Service's response to concerns for the Project's risk to eagles.

Letter 3, Comment 11 suggested the DEIS be revised to clarify whether the Service believes the cut-in speed mitigation proposed for Indiana bats will be helpful to birds and if so, upon what basis.

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

Response: Section 5.7.2 in the DEIS notes that there is insufficient evidence to suggest that curtailment will result in reduced rates of bird mortality, and thus, our analysis does not assume that BRE's Curtailment Plan is a measure to avoid and minimize bird collisions. Results from the 6.9 m/s trials conducted at the Project in 2012 (Tidhar et al. 2013) cannot be used as evidence to ascertain the effects or lack of effects of curtailment on bird mortality. There were no control turbines (those operating with no restriction) to facilitate a comparison. The post-construction monitoring derived 1.79 fatalities per turbine per year as the overall adjusted fatality rate for all birds. This is a relatively low rate compared to other studies where rates ranged from 0 to 23.49 birds per turbine per year. With only 1 year of sampling and no control turbines, we cannot evaluate if this relatively low rate is related to site conditions, yearly variation, or curtailed operations.

Letter 3, Comment 12 pointed out the DEIS states that the Service has recommended the Project owner add bird diverters or high-visibility markers to the guy wires of permanent MET towers on the site, but the Project owner has refused.

Response: In response to this comment, BRE has installed bird diverters on the existing MET towers. See response to **Letter 2, Comment 59** in Section 3.3.

In **Letter 6, Comment 1**, the commenter stated their support and endorsement of the comments submitted by the Conservation Law Center, particularly those addressing lack of attention in the DEIS to cumulative impacts from activities inside the "action area," which was not defined by the Service in the DEIS.

Response: Commenter's endorsement of another letter is acknowledged. Although the commenter refers to the topic lacking in the DEIS, we understood the Conservation Law Center was directing their comment to the DHCP. Please see response to **Letter 1, Comment 31** in Section 3.3 of this document. In Section 5.16, the DEIS addresses cumulative effects associated with past, on-going, and reasonably foreseeable future activities within an analysis area deemed suitable for each resource, i.e., a reasonable area for which that resource is likely to experience effects. Action area is a term more often applied to ESA Section 7 review.

In **Letter 6, Comment 2** the commenter lauds the Conservation Law Center for proposing that a reliable population model be utilized to determine cumulative impacts from wind projects to bats and birds on a broader scale, whether that be across the Indiana bat's Appalachian Mountains Recovery Unit or another reasonably defined geographic area.

Response: See response to **Letter 1, Comment 39** in Section 3.3 of this document.

Letter 6, Comment 3 expressed skepticism that wildlife studies conducted at wind facility sites will yield good science, absent vigilance by the Service to ensure the integrity of these undertakings.

Response: Commenter's opinion is acknowledged. The Service applies due diligence in review and comment on wildlife study designs and results.

Letter 7, Comment 1 stated that cumulative ecological effects of wind projects are beyond estimation given our current understanding of ecosystem dynamics.

Response: Commenter's opinion is noted. Pursuant to the requirements of NEPA and its implementing regulations, cumulative impacts of the Proposed Action and alternatives were analyzed in Section 5.16 in the DEIS. Our analysis fully disclosed what we know and do not know. Adaptive management is included in the HCP to deal with uncertainty by testing assumptions, establishing triggers for operational changes, and making appropriate changes based on what we learn.

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

Letter 7, Comment 2 indicated the DEIS elaborates only on avian and bat mortality, and the DEIS does not acknowledge the significant cumulative ecological impacts associated with loss of habitat and forced energy expenditure from extensive arrays of wind turbines.

Response: The DEIS analyzed the effects of habitat loss and potential changes in bird and bat behavior (displacement and avoidance) in association with the proposed Project in Sections 5.7 and 5.8. The DEIS analyzed the cumulative effects of habitat loss, displacement, and avoidance on birds and bats in association with the Proposed Project and other wind Projects at a regional scale in Sections 5.16.4.7 and 5.16.4.8. Thus no changes to the FEIS are needed.

Letter 7, Comment 3 recommended the DEIS cite another ornithological study, "Wind and Waterbirds" (Watts, B. D., 2010, Center for Conservation Biology, Technical Report Series, College of William and Mary, Virginia Commonwealth University), which elaborates on these effects of habitat loss and forced energy expenditure from extensive arrays of wind turbines.

Response: Section 5.16.4.7 of the FEIS has been revised to include information from the Watts (2010) paper.

Letter 7, Comment 4 questioned the accuracy of our estimation of power generating capacity for the Project under each of the 4 Alternatives.

Response: See response to **Letter 5, Comment 4** located below in Section 3.4 of this document.

Letter 7, Comment 6 urged the Service to select the contractor to conduct monitoring at the Project.

Response: The Service does not have regulatory authority to involve itself in an Applicant's decision on selection of a contractor for post-construction monitoring. However, the Service will be reviewing all monitoring reports. See response to **Letter 2, Comments 9 – 11** in Section 4.1 of this document regarding contractors and quality control.

Letter 7, Comment 7 concluded that nuclear power is by far the most benign method for electricity production, because; 1) industrial-scale renewable electricity production cannot be implemented without the use of fossil fuel backup generation; and 2) renewable installations adversely impact orders of magnitude more biological habitat than nuclear power to generate an equivalent amount of electricity.

Response: Commenter's opinion is acknowledged. The Service is responding to an application for an ITP for an industrial wind-power project. We must base our decision to issue or deny the permit based upon the application submitted and whether it meets issuance criteria. We have no authority to require an ITP applicant to construct a nuclear power facility or any other form of alternative energy production.

Letter 16, Comment 1 expressed support for comments filed by the Conservation Law Center. The commenter indicated concern for the impacts of the Project's alternatives, the effectiveness of mitigation measures, and the cumulative impacts of the many threats of numerous industrial wind projects throughout the Allegheny Highlands to bats and birds, which are highly uncertain and must be evaluated using the best available data, reasonably obtainable new data developed, and risk assessments.

Response: Commenter's support of the Conservation Law Center comments is acknowledged. The Service has used the best available data, conducted new analyses using these data, and performed risk assessments in preparing the DEIS and FEIS.

Letter 16, Comment 2 indicated the Service must uphold the law to the fullest extent possible in their consideration of the Project.

Response: The Service fully understands and takes seriously its role and responsibility in administering and upholding the statute set forth in the ESA. The DEIS discloses the direct, indirect, and cumulative

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

environmental impacts (both positive and negative) of the proposed issuance of an ITP based upon implementation of an HCP. The Service will determine if the HCP and related commitments contained in the Permit application will meet Permit issuance criteria specified in 50 CFR §§17.22-23. In the event the Service deems it necessary, the Permit may include additional conditions to insure compliance with the ESA. Issuance criteria include the criterion that the permitted taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild.

Letter 16, Comment 3 indicated that the Friends of Beautiful Pendleton County fully support the Conservation Law Center's comments filed October 23, 2012.

Response: Please see our responses to **Letter 1, Comments 1 through 41** in Sections 3.3 and 4.1.

Letter 17, Comment 1 expressed concern about bats whose populations are plummeting due to WNS and which the commenter felt will be driven closer to extinction as they are killed by industrial wind turbines. The commenter found the Project DHCP and DEIS to be completely inadequate. The commenter agreed with the points raised by the Conservation Law Center in their letter dated October 23, 2012.

Response: Commenter's opinion is acknowledged. Please see our responses to issues raised by the Conservation Law Center, **Letter 1, Comments 1 through 41** in Sections 3.3 and 4.1 of this document.

The Service shares the commenter's concern about the impacts of WNS on bats. We uphold our responsibility to ensure that applications for ITPs meet all permit issuance criteria, that our decisions to issue or deny permits are based on use of best available science, and that we prepare thorough analyses of the environmental effects of our proposed actions. In particular, we take seriously our responsibility to ensure that ITPs do not result in jeopardy to listed species, especially in the face of WNS population effects to Indiana bats. We will document this jeopardy analysis and conclusions in our biological opinion before reaching a conclusion on ITP issuance.

Letter 20, Comment 1 indicated that the Allegheny Front Alliance agrees with and supports the Conservation Law Center's comments on the Project DEIS and DHCP.

Response: Commenter's support of the Conservation Law Center comments is acknowledged. Please see our responses to **Letter 1, Comments 1 through 41** in Sections 3.3 and 4.1 of this document.

In **Letter 20, Comment 2**, the commenter has observed that government agencies evaluate and approve individual wind power project sites on an individual basis with no regard for the potential cumulative effects to birds or bats from other nearby wind power facilities or other potential sources of bat mortality. The commenter suggested the Service should examine the cumulative impact of industrial wind development across a large unique biological and ecological geographical landscape. The commenter provided a list of proposed and operating wind projects to be included in the cumulative effects analysis.

Response: Section 5.16.4.7 and Section 5.16.4.8 in the DEIS addressed the cumulative effects of industrial wind development to birds and bats, respectively. The spatial scales of the cumulative effects analysis for birds and bats were based on the extent of those populations with potential for being affected by the proposed Project.

We have reviewed the list of proposed and operating projects provided by the commenter. In our DEIS cumulative effects analysis, to derive an applied mortality estimate, we used best available post-construction data that met certain criteria (see page 204 in DEIS), including daily searches of turbines from early-April to mid-October. From the commenter's list of projects, this includes Mount Storm (Ned Power) and Mountaineer, and we have added to the FEIS fatality information from the Criterion Project as presented in their 2011 post-construction monitoring report (Young et al. 2012e). The AES Laurel Mountain post-construction monitoring data did not meet the criteria for duration of study and frequency of searches.

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

We used the number of turbines from all operating projects to assess the present cumulative effect in addition to the Project. The commenter's list of projects also includes those that are either proposed or under construction. We have factored in estimated turbine build out for these projects to estimate future wind energy development to assess reasonably foreseeable cumulative effects.

In **Letter 41, Comment 1**, BRE stated they believe construction and operation of the Project will provide a range of benefits not only to the local community, but to the region as a whole by providing an important source of clean, renewable energy.

Response: Comment acknowledged.

In **Letter 41, Comment 2**, BRE urged the Service to select Alternative 2: Proposed Action as the preferred alternative.

Response: See the Service's response to **Letter 1, Comment 27** in Section 3.3 of this document regarding selection of an alternative.

Letter 41, Comment 3 noted that the federal action under consideration is the proposed issuance of an ITP by the Service. BRE recommends that the Service review statements throughout the EIS in this regard, and clarify, where appropriate, the federal action under review in this case.

Response: In the DEIS, statements that the federal action under consideration is the proposed issuance of an ITP by the Service can be found in the following places:

- Executive Summary, 1st sentence
- Section 1.1 Introduction, 1st sentence.
- Section 2.1 Action Agency Purpose and Need
- Chapter 3, introductory paragraphs, 3rd sentence
- Section 3.2, Alternatives, introductory paragraphs, 3rd sentence

In the FEIS, statements that the federal action under consideration is the proposed issuance of an ITP by the Service have been added in the following places:

- Section 1.4 Propose Project Potential Effects to Listed Species, 1st paragraph, last sentence
- Section 2.2 Decisions to be Made, 1st sentence
- Chapter 5, introductory paragraphs, 2nd paragraph, 1st sentence.

In **Letter 41, Comment 4**, BRE indicated the opinion that the DEIS provided a limited discussion of the environmental benefits of the Project. BRE expressed their belief that the EIS would benefit from a fuller discussion of the beneficial impacts of the Project, particularly the reduction of greenhouse gases, and how such benefits may contribute to species conservation in the long-term.

Response: Please see **MR-6** for the Service's response to comments about addressing Project benefits in the EIS.

3.4 General Public Comments and Responses

Letter 5, Comments 2 and 4 pointed out that the DEIS provides no cost benefit analysis for the Project or for the alternatives considered. The commenter suggested that the DEIS should provide an objective evaluation of the purported benefits associated with electricity generation, net reduction in greenhouse gases and other air pollutants, and net displacement of fossil fuel use for each alternative considered. The evaluation of alternatives presented in the DEIS does not include explicit evaluation of Project benefits versus Project costs, and it does not include any determination that Project benefits offset Project costs.

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

Response: See **MR-6** in Section 2.6 of this document for the Service's response to comments regarding benefits to the environment associated with employing wind-powered electricity.

Letter 5, Comment 3 questioned the accuracy of our estimation of power generating capacity for the Project under each of the 4 Alternatives.

Response: The energy generation estimates in Tables 3-1 and 5-1 of the DEIS are provided to illustrate a relative comparison or contrast among alternatives. They are not an attempt to estimate actual energy generation realized. It is the differences among the values that facilitate an understanding of the contrast among alternatives rather than the actual values themselves. The Applicant has provided the estimated capacity factor for the Project, a range from 34% to 40%. Capacity factor is the ratio of the actual energy produced in a given period to the hypothetical maximum possible, i.e. if all turbines were operating full time at the Project's rated power.

In the FEIS, Tables 3-1 and 5-1 have been revised to show energy production and hours of operation for the 4 Alternatives based on the typical capacity factor (39.5%) as indicated in BRE's application to the WVPSC for the expansion area. We want to caution that these numbers are for comparison and contrast purposes only. To estimate operating hours, we assumed the Project would be curtailed during the entire period of restriction. We have also assumed that the 100-turbine Project will have a nameplate capacity of 187 MW, which is the maximum interconnect approved by the WVPSC in the original application. We recognize the Project's nameplate capacity could only be roughly 153 MW if the turbines installed are the 1.6 MW model. Because these estimates of power generation are based on imprecise values, they should not be considered accurate attempts to estimate the Project's energy production.

Letter 5, Comment 5 suggests the DHCP and the DEIS both tie consideration of WNS to an as-yet-undetermined percentage reduction in the population of currently listed endangered bats (Indiana bats and Virginia big-eared bats). The commenter feels this approach ignores the effect of WNS on other bat species and precludes effective consideration of WNS on both listed and unlisted bat species in the NEPA review process, including the identification and evaluation of alternatives in the DEIS.

Response: See **MR-4** in Section 2.4 of this document for the Service's response to comments on WNS as a changed circumstance. In Section 5.16.4.8, the DEIS considers cumulative effects, including WNS, on both listed and unlisted bats. The Service does not have regulatory authority over unlisted bats and cannot require a threshold trigger for them as for listed bats; however, actions implemented to reduce mortality of listed bats also benefit unlisted bats. Although not required, the HCP includes a measurable objective to reduce all bat fatality by 50%.

Letter 5, Comment 9 recommended the Service take a precautionary approach to protection of bat species and to effective implementation of both the ESA and NEPA. The commenter suggested the Service apply rigorous population models to examine and project the status of both listed and unlisted bat species in the context of the range of WNS and the range of the Project's potential to result in bat mortality. Such models should be run on a range of geographic scales and should quantify uncertainty. The results of such analyses should then provide an objective basis for predicting how bat populations will fare given a range of project alternatives.

Response: The Service believes we have taken a precautionary approach both in the spirit of the ESA and NEPA. See **MR-13** for how modeling has been incorporated into establishing the biological goals and objectives. The curtailment strategy proposed for listed bats would benefit all bats. The Service will use a population model for the Indiana bat as part of our biological opinion analysis using conservative assumptions (such as including WNS and modeling worst case scenarios) as a precautionary approach. However, we are unable to model unlisted bats because we lack starting population estimates. As further explained in response to letter 1, comment 39 in Section 3.3 of this document, modeling of minor impacts to Virginia big-eared bat is not necessary

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

Letter 5, Comment 10 suggested the Service withdrawal the DEIS for further analysis because the DEIS does not adequately evaluate the costs / benefits of wind power, added effects of WNS, uncertainties associated with mortality on bat populations, and cumulative effects.

Response: See response to **Letter 5, Comments 1, 2, and 4** immediately above. See **MR-4** in Section 2.4 of this document for the Service's response to comments on changed circumstances, including WNS. The DEIS and FEIS address the cumulative effects to WNS in Section 5.16.4.8.

Letter 5, Comment 11 suggested the Service should adopt Alternative 1, the No-Action Alternative.

Response: Commenter's preference is acknowledged. See the Service's response to **Letter 1, Comment 27** in Section 3.3 of this document regarding selection of an alternative.

Letter 11, Comment 1 expressed the commenter's hope the Incidental Take Permit will be issued soon and the Project will be allowed to proceed without further delay.

Response: The comment is acknowledged. See the Service's response to **Letter 1, Comment 27** in Section 3.3 of this document regarding selection of an alternative.

Letter 12, Comment 1 indicated the commenter felt that appropriate measures have been taken to consider and mitigate the impact of the wind farm on endangered bats. It appears that, with the proper precautions, the impact on the endangered bats will be minimal, and that appropriate monitoring protocols will be in place.

Response: Commenter's opinion is acknowledged. Please see **MR-1** in Section 2.1 of this document for the Service's response to comments on the HCP, specifically the proposed Curtailment Plan and RMAMP.

In **Letter 13, Comment 1**, the commenter expressed concern about the Service's plan to maintain, operate, and construct the Project. The commenter was concerned that the Project could have a major impact on its already diminishing Indiana bat population and habitat, and reminded the Service that Indiana bats are endangered. If the proper measurements are taken in the construction of these turbines, the commenter approves the EIS.

Response: Commenter's concerns are acknowledged. Please see **MR-1** in Section 2.1 of this document for the Service's response to comments on the proposed HCP. The Service recognizes the endangered status of the 2 bats. The Service will consider fully the direct, indirect, and cumulative impacts of the proposed issuance of the permit on ESA-listed bat species, including bat habitat. The EIS discloses the direct, indirect, and cumulative environmental impacts (both positive and negative) of the proposed issuance of the permit based upon implementation of the HCP. The Service will determine if the HCP and related commitments made by the Applicant contained in the Permit application will meet permit issuance criteria located at 50 CFR §§17.22-23. In the event the Service deems it necessary, the permit may include additional conditions to insure compliance with the ESA. ITP issuance criteria include the criterion that the permitted taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild. The Service wishes to clarify our proposed action is issuance of an ITP to BRE; the Service will not be constructing, operating, or maintaining the Project.

In **Letter 15, Comment 1**, the commenter indicated their wish to see the Project approved. The commenter expressed concern that impacts to birds and bats could prevent Project approval, which may not be appropriate for a "green" project.

Response: We acknowledged commenter's desire and concerns. It is the Service's responsibility to administer and uphold the statute set forth in the Endangered Species Act. The Service bases its decision to issue or deny ITPs based upon the permit issuance criteria (50 CFR 17.32(b)(2)). If we find the criteria have been met, the Service is required by law to issue the ITP.

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

Form Letters 21 – 40 all expressed their support for the Project largely because of the potential socioeconomic benefits that would result from full build-out of the Project.

Response: Acknowledged. Please see **MR-10** in Section 2.10 of this document for the Service's response to comments on the Project's effects to socioeconomic conditions.

Letter 42, Comment 1 indicated that the Service must uphold the law. Judge Titus ruled that BRE could not continue Project construction until an ITP was obtained and that operation can only occur during the periods of time when Indiana bats are in hibernation from November 16 to March 31.

Response: The commenter is directed to the Court's rulings for a full account regarding these matters. Judge Titus originally ruled and endorsed a settlement stipulation that until the Applicant is issued an ITP, nighttime operations could only occur during the period of time when Indiana bats are in hibernation, i.e., from November 16 to March 31. In the Modified Stipulation, the U.S. District Court approved limited Project operations from April 1 through November 15, 2012 with operations to occur at night, from dusk to dawn, while implementing a turbine cut-in speed of 6.9 m/s. The U.S. District Court approved the Modified Stipulation again from April 1 through November 15, 2013. More information regarding these matters is available in Appendix L in the FEIS.)

Letter 42, Comment 2 stated that to uphold the ESA and honor the court order, FWS must maintain that there can only be wind turbine operation during hibernation periods for Indiana bats.

Response: Doing so would likely completely avoid take of listed bat species, thereby negating the need for a permit. But the purpose of the permit is to authorize otherwise lawful activities. ESA Section 10(a)(1)(B) and 50 CFR 17.32(b)(2) require the Service to issue an ITP if we find that the permit issuance criteria () have been satisfied.

Letter 42, Comment 4 indicated both the HCP and DEIS ignored Paul Cryan's evidence that male bats are drawn to the highest tree as part of the mating behavior, with the "highest tree" being the wind turbine. Wind turbines operating at this time of mating behavior will kill bats.

Response: In Section 5.8.2.2, the FEIS now includes a reference to Cryan (2008), Cryan and Barclay (2009), and Cryan et al. (2012). Text added to the FEIS explains that the observed pattern of high incidences of tree-roosting bats at wind projects in autumn led Dr. Cryan to hypothesize tree-roosting bats may gather at visually conspicuous tall structures for mating during autumn migration. Hence, male tree-roosting bats may die while gathering at the tallest 'trees' in the landscapes through which they are migrating. Dr. Cryan further cautions the hypothesis that mating is a cause of bat exposure to wind turbines is supported only by anecdotal evidence and more data is needed. Cryan et al. (2012) provide the first detailed, published information on tree-roosting bats found dead at commercial wind farms in North America in late-summer. Cryan et al. (2012) examined reproductive anatomy of hoary bats, red bats, and silver-haired bat found dead beneath industrial-scale wind turbines. All of the male red bats and most of the adult and half of the juvenile male hoary bats had conditions indicating they were ready to mate (fertilize females).

Letter 42, Comment 5 stated that the EIS must include a more comprehensive watershed analysis than the West Virginia Department of Environmental Protection's National Pollutant Discharge Elimination System (NPDES) requirements in order to evaluate the greater flow of water downstream that causes stream bank erosion and aquatic habitat destruction downstream.

Response: We interpret the commenter's concern to be referring to vegetation removal associated with constructing of the existing 67 turbines and up to 33 additional turbines. Water may rapidly run off cleared mountain slopes, discharge into streams at high rates, create high-energy flows in streams, and result in bank erosion, siltation, and degrade aquatic habitat. BRE has indicated they are committed to complying with the best management practices outlined in the Storm Water Pollution Prevention Plan (SWPPP), as

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

well as all maintenance and monitoring conditions of the NPDES permit. Water bars or small terraces will be constructed along access road ditches on hillsides to minimize water erosion and to facilitate natural revegetation. Roads, portions of roads, crane paths, and staging areas not required for operation and maintenance will be restored to the original contour and made impassable to vehicular traffic. Areas to be reclaimed will be contoured, graded, and seeded as needed to promote successful revegetation, provide for proper drainage, and prevent erosion. We feel BRE's implemented and proposed sediment and erosion control practices will provide the necessary measures to prevent high-energy run-off into streams. We are not proposing additional erosion and sediment control or stormwater measurements for the Project. At this time, we do not believe a comprehensive watershed analysis is necessary.

4 SPECIFIC RESPONSES TO INDIVIDUAL COMMENTS ON DHCP

4.1 Non-Government Organizations Comments and Responses

Letter 1, Comment 1 states the DHCP's proposed operational measures do not satisfy the "minimize to the maximum extent practicable" permit issuance criterion of the ESA or the DHCP's goal of avoiding and minimizing potential take. This commenter cited the Service's Region 3 guidelines, which read "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 the 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" (USFWS 2011a).

Response: See **MR-1** in Section 2.1 of this document for the Service's response on the curtailment plan and proposed Research, Monitoring and Adaptive Management Plan (RMAMP).

As to the Project's turbine siting, Sections 1.6, 2.1.4.5, and 5.2.1 in the HCP explain the steps BRE implemented to site the existing 67 Phase I turbines and to plan the location of up to 33 additional Phase II turbines to minimize risks to listed bats. The Project was modified to limit the Project's exposure to listed bats associated with known hibernacula. Additionally, in response to this comment, BRE has modified Section 1.6 of the HCP to indicate they will work with the Service during micrositing of the planned Phase II turbines to adjust, where feasible, the location of Phase II turbines to minimize impacts to covered species and their habitat. For example, the Service will be working with BRE to avoid placing turbines in or near riparian areas, wetlands, ponds or other water features, or at the heads of ravines in which bats forage upslope. Post-construction fatality monitoring also will determine if certain turbines or geographic areas of the Project are causing significantly higher bat mortality than others. The RMAMP (Section 5.1) includes provisions to develop turbine-specific operational protocols to reduce take in these areas. In its Findings document, the Service will evaluate the turbine siting measures, together with the other minimization and mitigation measures, to determine if the HCP meets the maximum extent practicable permit issuance criterion.

In Section 3.3.3 in the Alternatives Analysis for the DEIS, the Service evaluated the potential for an alternative Project site. However, such options are limited by the fact that prior to initiating an ITP process with the Service, BRE had already built 67 turbines, and a 124-turbine Project had already been approved by the WVPSC. Moving the existing 67 turbines would not be practical given foregone costs of previous permitting and construction. The Project is sited in an area that has been deemed suitable for wind energy production. Demonstrating this suitability is a requirement for a WVPSC Siting Certificate. Moving the entire Project may site it in a place that would not be practical for wind energy production. Moreover, moving the entire Project would not necessarily make the Project risk-free to endangered bats, and it may put completely different resources at risk.

Letter 1, Comment 8 suggested that the DHCP's use of a "rationally related to take" standard is unwarranted; the National Wildlife Federation's court's ruling and approval of a "rationally related to the level of take" standard was directed at and applied to compensatory mitigation, not to minimization.

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

Response: The applicant's interpretation of the term "maximum extent practicable" does not reflect that of the Service largely because it only focuses on whether its actions are "rationally related" to the impacts of the taking. As explained our response in **MR-3**, a rational relationship between the chosen measures and the impact of the take is but one component element of the Service's analysis, as validated by the Court (National Wildlife Federation, et al. vs. Norton, et al., 306 F.Supp.2d 920 [E.D. Ca. 2004]). We are concerned about solely applying a "rationally related" test when scrutinizing an applicant's proposal, as this test appears unbounded. The Court articulated its standard when evaluating claims brought regarding mitigation, not minimization. But we also recognize that judicial decisions interpreting the Service's incidental take permitting actions are scant, and those discussing the term maximum extent practicable even more so. That fact that the cited decision deals with mitigation does not render its holding irrelevant. See **MR-3** in Section 2.3 of this document regarding the Service's interpretation of the term "maximum extent practicable" and how it applies to this Project.

Letter 1, Comments 9 - 10 indicated the DHCP does not explain why implementing a "minimization" plan expected to reduce take by 50%, and starting only in the fourth year of the ITP, is more rationally related to an expected take of 5 Indiana bats per year than would be an alternative curtailment plan that is expected to reduce take by 76% (e.g., Alternative 3)

Response: The curtailment plan is to be implemented in Year 1 at the beginning of the permit duration. The FHCP has been modified to include additional text to clarify certain aspects of the RMAMP that seem to be creating some confusion. Section 2.2.2 in the RMAMP explains the design of the curtailment experiment. In Year 1, all turbines will be curtailed at the 4.8 m/s from July 15 through October 15 excepting the 10 control turbines that are part of the curtailment study. Ten of the experimental turbines will be curtailed for the entire night, while the other curtailed turbines will be curtailed for the first 5 hours of the night. This Curtailment Plan may be modified, beginning in Year 2 to include higher cut-in speeds, more hours, and/or more days of restricted operations based on the results of research and monitoring (see Project HCP, Appendix C, Sections 2.0 and 3.0), which will be available after Year 1 of the ITP. See **MR-1** for a fuller explanation of the curtailment strategy. In addition, see **MR-3** regarding the Service's interpretation of the term "maximum extent practicable" and how it applies to this Project. Finally, see **MR-13** regarding the Service's evaluation of the adequacy of a 60% fatality reduction objective. A take reduction of 76% is more applicable to Alternative 3 because it specifically contemplates incidental take of several species of currently unlisted bats that are assumed to be breeding on or near the Project site. In that case, a higher fatality reduction would be warranted due to the increased impact of the take to reproductively active individuals. For example, take of reproducing females during summer would also result in loss of their young. Under Alternative 2 (Proposed Action), the risk of take is assumed to occur primarily during migration (after young have learned to fly), thus the impact of the taking to the population during migration is less severe than had it occurred during the reproductive season.

Letter 1, Comments 11 – 14 indicated that the DHCP has not shown that further curtailment than that proposed in the Curtailment Plan is impracticable. The commenter suggested the costs to the Applicant must be viewed in relation to the resources and financial ability of the Applicant. The commenter went on to provide a set of considerations to lead to an operational plan that minimizes the impacts of take to the maximum extent practicable.

Response: See **MR-3** regarding the Service's interpretation of the term "maximum extent practicable" and how it applies to this Project. See our response to **Letter 2, Comment 32** regarding the Service's evaluation of different curtailment speeds. Taken together, these responses demonstrate why the proposed curtailment appropriately minimizes the impact of the taking and greater cut-in speeds (other than those contemplated in the RMAMP and through Changed Circumstances) are not necessary.

In **Letter 1, Comments 15 – 17**, the commenter insisted that BRE cannot rely on adaptive management measures to satisfy the maximum extent practicable criterion for permit issuance

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

Response: See **MR-1** in Section 2.1 of this document for the Service's response to concerns about the curtailment plan and proposed RMAMP and **MR-3** for our response to concerns surrounding maximum extent practicable.

In **Letter 1, Comment 18**, the commenter recommended that the adaptive management plan should contain triggers and specific modifications to the curtailment regime if roosting or maternity sites are newly identified. The commenter further recommended that the adaptive management plan and the changed circumstances provisions should provide for locating previously unobserved roosting sites and maternity colonies within commuting distance of the Project and provide for specific modifications over and above the baseline minimization and mitigation plans if any are found.

Response: See **MR-4** in Section 2.4 in this document for the Service's response to concerns about newly identified Indiana bat roosting and maternity sites. Section 8.2.5 in the DHCP and FHCP address the discovery of a maternity colony as a changed circumstance. If BRE discovers a reproductive female or young-of-the-year juvenile Indiana bat fatality from May 15 to August 15, this could indicate the presence of a maternity colony on or adjacent to covered lands. This would then trigger additional surveys and minimization measures known to be effective in avoiding additional take of reproductive individuals.

Letter 1, Comment 25 stated the commenter's belief that the DHCP does not propose to implement adaptive management that is compatible with a changed circumstances plan. The commenter refers to language in the HCP Handbook Addendum (65 FR 35242-35257), which states that an adaptive management strategy, when used, should clearly state the range of possible operating conservation program adjustments due to significant new information, risk, or uncertainty.

Response: See **MR-1** and **MR-4** in Section 2 of this document for the Service's responses to concerns regarding the effectiveness of the RMAMP and changed circumstances.

Letter 1, Comment 26 stated the DHCP fails to state any range of possible adjustments to its proposed curtailment plan in light of White-Nose Syndrome, such as what additional turbine operation measures are possible. The commenter insisted that without such specificity, neither the HCP nor the agency can delineate "the limits of what resource commitments may be required of the permittee (65 FR 35242-35257)." In addition, the changed circumstances plan does not commit to implementing the results of the research plan.

Response: See **MR-1** and **MR-4** in Section 2 of this document for the Service's responses to concerns regarding the effectiveness of the RMAMP and changed circumstances.

Letter 1, Comment 28 indicated the DHCP does not include consideration of cut-in speed alternatives in its discussion of alternative actions to the proposed takings.

Response: BRE has modified Sections 7.4 and 4.1.5.2 of the HCP to discuss consideration and evaluation of higher cut-in speeds as alternatives to the taking. As described in the RMAMP (Appendix C in the Project HCP), BRE's curtailment program will test various cut-in speeds as needed to meet the HCP's biological goals and objectives. Additionally, the FEIS considers an alternative with a higher cut in speed, and also examines the scientific literature detailing the effectiveness of different curtailment regimes (see table 5.24 and associated text in Section 5.8.2.3 in FEIS).

In **Letter 1, Comments 29 – 30**, the commenter pointed out that the DHCP does not fully address ESA Section 7 criteria and does not delineate an action area.

Response: A number of comments pertained to the intra-Service consultation process under ESA Section 7. Comments included such issues as how the action area will be defined and how baseline mortality rates will be incorporated with Project impacts. As part of our permit issuance decision, the Service will be preparing a biological opinion that will address these issues.

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

It is not the permit applicant's responsibility to specifically address the standards of Section 7 in the HCP. However, the applicant is required to provide sufficient information in the HCP for the Service to be able to fully evaluate the Project's effects on the listed species.

Neither Section 7 nor Section 10 requires that a Section 10 applicant is to identify an "action area" as defined in 50 CFR 402.02.⁶ The biological opinion will define the action area, a term often applied specifically in the Section 7 process to describe the effects analysis area for each listed species. The HCP identifies the "covered lands" (the geographic area in which activities resulting in take are expected to occur). While covered lands should be analogous to the action area, the applicant is not required to specifically identify the Section 7 action area in the HCP).

Letter 1, Comment 31 suggested the DHCP should, but currently does not, assess cumulative effects.

Response: Whereas HCPs are not required by statute or regulation to disclose cumulative effects, the Service analyzed cumulative effects to the Covered Species, unlisted bats, and birds in Sections 5.16.4.7 and 5.16.4.8 of the DEIS as required by NEPA. Pursuant to NEPA regulations, this includes reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other action (40 CFR 1508.7). Pursuant to the ESA Section 7 regulations the Service also will analyze cumulative effects to listed bats in our biological opinion (50 CFR 402.14(g)(3) and (4)). This includes the effects of future State, Tribal, local, or private actions, not involving a federal action, that are reasonably certain to occur within the action area considered in the biological opinion. Future federal actions requiring separate consultation (unrelated to the proposed action) will not be considered in the cumulative effects analysis of the biological opinion. The Applicant has no responsibilities under Sections 7 or 10 of the ESA to conduct cumulative effects analysis.

Letter 1, Comment 32 – 34 indicated that the DHCP does not adequately describe how federal listing of new species will be treated as a changed circumstance. The commenter suggested that both the EIS and HCP must clearly specify how BRE will seek to comply with the ESA if other bat species become federally listed as threatened or endangered.

Response: See **MR-4** in Section 2.4 of this document for the Service's response to concerns regarding changed circumstances including new species listings.

Letter 1, Comment 35 stated the DHCP shortsightedly discounts the possibility that the Project could jeopardize the Indiana bat, i.e., reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild, given the dire circumstances of a listed species.

Response: Appropriately, the HCP and EIS do not make a jeopardy determination. This assessment is reserved for the Service's ESA Section 7 consultation process. The Service is preparing a biological opinion analyzing the effects of the Proposed Action on listed species and will make a jeopardy determination in the biological opinion prior to signing its ESA permit Findings document and NEPA Record of Decision on the proposed ITP.

Letter 1, Comment 36 suggested the DHCP should propose a plan to reduce the requested take of covered bats in response to White-Nose Syndrome.

Response: See **MR-4** and **MR-9** in Section 2 of this document for the Service's response to concerns regarding changed circumstances including WNS and BRE's requested take of listed bats. BRE has reduced the amount of requested take of Indiana bat in response to population declines due to WNS. The requested take of Virginia big-eared bats remains unchanged as this species has not been affected by WNS.

⁶ Action area means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02).

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

Letter 1, Comment 37 referenced Section 8.2.1 of the DHCP, Impacts of WNS on Covered Species, which states that “If Indiana bat and Virginia big-eared bat take from the Project has been negligible or the estimated take as determined by evaluation of impacts to other species is negligible, it is possible that no additional actions will be needed.” The commenter noted the DHCP does not explain the meaning of “negligible” take and how many bats this would entail and asked that “negligible take” be quantified as to be meaningful.

Response: See **MR-4** in Section 2.4 of this document and revisions to Section 8.2.1 in the HCP. The concept of negligible take has been deleted. Measurable WNS triggers have now been included for both covered species: a 70% or greater population reduction in the Indiana bat Appalachian Mountain Recovery Unit compared to 2011 estimates, and documentation of the occurrence of WNS in Virginia big-eared bat that is having a negative effect on the population. In the event the WNS changed circumstance has been triggered, BRE will conduct an analysis, in coordination with the Service, to determine whether the level of take of Indiana bat and Virginia big-eared bat is having a material negative effect to the remaining populations (after accounting for the benefits of mitigation). If the analysis demonstrates that a 60% take reduction of Indiana bat, and/or a 50% take reduction of Virginia big-eared bat, is no longer sufficient to prevent material negative effects to these species, then BRE will implement additional operational restrictions or minimization measures by the next bat spring emergence season. These additional measures will be determined through consultation with the Service to determine what level of take reduction prevents negative population effects. The Service considers material negative effect to mean that there is a measurable (i.e., not de minimis) difference in the population trajectory when comparing the population demographics with and without incidental take that is occurring from this Project. It is difficult to quantify this metric now, as it will entirely depend on both the Indiana bat population level and the estimated Project take at the time the changed circumstance is triggered.

Letter 1, Comment 38 references Section 8.2.1 Impacts of WNS on Covered Species in the DHCP, which states with respect to WNS, “Under this scenario, BRE will confer with the Service over potential changes to the HCP that recognize these factors and potential declining risks of take.” The commenter then suggested a catastrophic decline in a population does not necessarily correlate well to “declining risks of take.” The commenter noted in Section 5.16.4.8, Subsection Cumulative Effect of WNS, the DEIS states, “A linear relationship between average mortality rates and population estimates may be a logical and best guess scenario; however, it discounts smaller regional population fluctuations or reduction of population levels to a point that risk is minimal. The total number of bats killed goes down as populations decrease, but risk remains unless the population is zero.”

Response: Acknowledged.

Letter 1, Comment 40 indicated the DHCP’s biological goals and objectives are not sufficiently differentiated from the measures to be implemented in the proposed conservation plan. The commenter suggested the DHCP’s second goal is better characterized as a management proposal rather than a biological goal. The second goal’s reference to “operational protocols learned through the RMAMP in consultation with the Service” is the means by which BRE seeks to achieve minimization of take and, as such, is neither a biological objective nor a biological goal.

Response: The Applicant has revised Section 5.1 Biological Goals and Objectives in the HCP to better define the intent of the HCP. With respect to operational minimization measures, Section 5.1 indicates the broad guiding principles or goals of avoiding and minimizing mortality of listed bat and all bats and describes the specific measurable step-down objectives for achieving these goals as such:

1. a 60% reduction in *Myotis* fatalities (which includes the Indiana bat),
2. a 50% reduction in Virginia big-eared bat fatalities, and
3. a 50% reduction in all bat fatalities.

Letter 1, Comment 41 suggested the DHCP’s biological goals and objectives are not sufficiently different from the proposed Project operational measures. The commenter recommends the goals be based on

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

the biological and ecological needs of the Indiana bat and the Virginia big-eared bat and any other covered species.

Response: For Indiana bat, the Service is currently emphasizing those biological needs centered on protecting and minimizing disturbance to winter hibernaculum and wintering bats, protecting and minimizing disturbances to summer roosting habitat and roosting bats, protection of swarming habitat, and research on WNS. For Virginia big-eared bat, the Service is targeting biological needs centered on protecting known hibernacula from human disturbance, development, and vandalism.

As defined in the Addendum to the Handbook for Habitat Conservation Planning and Incidental Take Permitting Process (65 FR 35242-35257), the biological goals and objectives of an HCP should be commensurate with the specific impacts and duration of the applicant's proposed action. The goals should include the expected biological outcome for the covered species and habitats; in other words, what the plan hopes to achieve. The objectives are the specific, measurable actions the applicant will implement to achieve the stated goals.

For Indiana bat, the biological needs include responding to WNS, and the Service recognizes more research is needed, but research unrelated to Project impacts, will not necessarily mitigate take, and, therefore, cannot be considered mitigation. Conversely, protecting hibernacula and summer roosting habitat is a measurable objective related to achieving the goal for mitigating the impacts of taking Indiana bats. For Virginia big-eared bat, BRE is proposing to implement a gating project at a known Virginia big-eared bat hibernaculum that is exposed to threats of human disturbance, development, and vandalism that may affect bat survivorship. This objective is directly related to the goal of mitigating the impact of taking Virginia big-eared bats.

The biological goals and objectives for take minimization (the bat fatality reduction measures) would be in place for the 25-years in which take would occur due to Project operations. However, because loss of individual bats permanently removes them from the population, the off-site mitigation intended to compensate for these permanent impacts would be in perpetuity. A higher percent fatality reduction for Indiana bats (60%) than Virginia big-eared bats (50%) is needed because of the higher predicted annual take of Indiana bats (4.5 per year before curtailment) versus Virginia big-eared bats (1 per year before curtailment), and because of the greater impact of the taking due to WNS adversely affecting populations of Indiana but not Virginia big-eared bats. Based upon population modeling (with and without the Project assuming WNS), the Service has determined that the 60% fatality reduction objective for Indiana bats avoids the potential for the Project take to have a negative additive effect on Indiana bat populations (individual local hibernacula and maternity areas) compared to scenarios without the Project. See **MR-13** for additional explanation.

Recovery plans identify the biological and ecological needs of listed species rangewide; however, the biological goals of an individual HCP are not necessarily equivalent to the range-wide recovery goals and conservation of the species. When viewed collectively, multiple HCPs for the same species should support the recovery goals and conservation measures specified in the recovery plan. BRE's HCP goals, objectives, and minimization and mitigation measures support the species recovery plan goals by decreasing sources of human disturbance and mortality, and by acquiring, protecting, and managing hibernacula or maternity colonies in perpetuity.

Letter 2, Comment 3 indicated that the Project area is not ideal eagle habitat, but it is very near a major raptor corridor, and it should be assumed that eagles may transit the Project area. Therefore, the HCP should include eagles as covered species

Response: See **MR-5** for a more complete response. However, we note that it is ultimately the applicant's decision what species to include as covered species in an HCP.

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

Letter 2, Comment 6 indicated that should the 15-acre exclusion for tree cutting be used, the Permittee must be required to inspect trees for any evidence of bat use prior to clearing up to 15 acres of land during the bat active season.

Response: The FHCP (Section 2.1.4.5) and FEIS (Section 5.6.2.2) now reflects that the Applicant has agreed to use a qualified wildlife biologist to conduct a survey for potential Indiana bat roost trees prior to clearing during the bat active season and confirm that the trees are not occupied by roosting bats. If trees are determined to be occupied, they will be marked and tree cutting will be delayed until the trees are unoccupied.

Letter 2, Comment 7 suggested that higher cut-in speeds and limits on night-time operations should be the standard for turbine operations with the potential to reduce such restrictions only if documented take is sufficiently low to justify such alterations.

Response: See **MR-1** in Section 2.1 of this document for the Service's response to concerns for implementation of the Curtailment Plan and RMAMP, and see **MR-3** in Section 2.3 of this document for our response to how implementation of the Curtailment Plan and RMAMP relate to maximum extent practicable.

Letter 2, Comments 8 – 11 recommended that BRE hire independent biologists to conduct more research to adequately determine Indiana bat and Virginia big-eared bat use of the Project area. Making reference to the acoustic data indicating that Indiana bat calls may have been recorded on the Project site, the commenter believes that additional mist netting and acoustic monitoring are needed to identify other locations of heavy Indiana bat use on the Project site to better inform micro-siting decisions for additional turbines. Specifically, **Letter 2, Comment 10b** indicated AWI's expert analyzed the acoustic data and identified certain turbine locations and mist-netting locations as receiving particularly high concentrations of Indiana bat calls, suggesting that these locations might be unsuitable for wind energy production on a micro-siting level.

Response: See **MR-7** in Section 2.7 of this document for the Service's response to concerns surrounding the certainty of listed bat use in the Project area. Also see specific responses to **Letter 1, Comment 1** regarding turbine siting and **Letter 2, Comment 19** below regarding independent contractors.

The main risk to listed species from this Project is turbine mortality during migration. Unfortunately, we know little about bat migration and whether bats use the same or different migration routes each year. Although some studies have attempted this, in the Appalachians, one loses the telemetry signal very quickly in the mountainous terrain. Therefore, given these difficulties and the lack of information on migration corridors, it does not appear to make sense to site turbines to avoid specific ridgelines. The post-construction monitoring reports we reviewed at other projects generally do not describe instances of "problem" turbines. Bat fatalities commonly are observed to be well distributed among all turbines. In Section 5.2.1, the DHCP explains that as part of their adaptive management BRE may implement selected turbine curtailment if post-construction monitoring results indicate specific turbines are causing significantly greater mortality of bats.

It may be useful to avoid placing turbines in area of known bat use, such as within a swarming zone or within overlapping home ranges of bats in a maternity colony. There is some evidence that individual Indiana bats fly and forage in the same areas within their home ranges, and that home ranges of individual bats from a colony overlap to a limited degree. Thus radio-tagging a few individuals from a maternity colony would help in micro-siting turbines to avoid impacts to those individuals. However, it is not feasible to radio-track all bats in a maternity colony (e.g. 60 females). It is more practical to use landscape features to micro-site turbines, for example avoiding placement of turbines near a wetland or riparian area that may attract foraging bats, or at the head of a stream where bats may forage up a ravine. In Section 1.6 of the FHCP, BRE has indicated they will work with the Service during micro-siting of Phase II turbines to adjust, where feasible, the location of turbines to minimize impacts to covered species and their habitat.

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

Letter 2, Comment 12a suggested if the little brown bat is to be used as a surrogate for the Indiana bat, then the documented presence of female and juvenile little brown bats in the Project area must be assumed to suggest that female and juvenile Indiana bats are also in the Project area.

Response: See **MR-7** in Section 2.7 of this document for the Service's response on the likelihood of Indiana bat occurrence in the Project area.

Letter 2, Comment 12b suggested on the HCP be modified to reflect that presence of male Indiana bats is not only "possible," but is in fact likely because Indiana bat presence has now been documented by acoustic testing on the Project site in 2005 and 2010.

Response: See **MR-7** in Section 2.7 of this document for the Service's response on the likelihood of Indiana bat occurrence in the Project area.

Letter 2, Comment 13 requested that the AnaBat data be analyzed by 1 of the leading experts capable of identifying species by calls (e.g., Dr. Lynn Robbins or Dr. Eric Britzke).

Response: While the Service has not been privy to the 2012 acoustic data, a summary report of this data has been provided by BRE (Young and Gruver 2011) and that information is included in the FEIS, Appendix F-3. Regardless of whether additional analysis of this acoustic data is completed, the Service assumes Indiana bats are present on the Project site. Please see **MR-7** in Section 2.7 of this document for our response on bat use in the Project Area.

Letter 2, Comment 15 stated that there is no objective rationale for limiting a species presence inquiry to caves within 12.6 miles of the Project site. The commenter suggested all potential migration risks, including impacts to bats migrating to/from Hellhole and other caves distributed throughout the region, must be considered in assessing the level of presence, as well as the level of expected take.

Response: In our biological opinion, the Service will analyze effects to Indiana bat populations within a 100-mile migration radius of the Project. This will include an analysis of potential risk and the effect of take on Indiana bats source populations from individual bats migrating from Hellhole and other hibernacula to maternity areas.

In **Letter 2, Comment 16**, the commenter referred to text in Section 4.1.5.1 of the DHCP and indicated their belief that given the rarity of Indiana bats and the cumulative threats to the species, BRE's estimate of 125 bats is not commensurate with the description of a "low" amount of take. Either the low likelihood language should be eliminated or a lesser take number should be sought, because the two cannot be reconciled as currently written.

Response: As further explained in MR-9, the requested amount of take has been reduced to 53 Indiana bats total over a 25-year permit duration. BRE has modified its HCP to characterize the impact of this take as minor to local populations, the Appalachian Mountain Recovery Unit, and the rangewide population of Indiana bats under the assumption that the cumulative loss of 53 individuals likely would be widely distributed in small increments across 25 years (i.e. approximately 2 Indiana bats killed per year on average originating from many different hibernacula and maternity colonies). See Section 4.2.1 of the FHCP for further details. The Service will further evaluate this assumption in our biological opinion by modeling worst case scenarios.

Letter 2, Comment 17 asked for clarification on how BRE intends to accurately measure take of listed species if only 30 turbines are searched during the intensive monitoring. **Letter 2, Comment 18** suggested the use of only 30 turbines (10 for each treatment) is unlikely to result in a strong sample size for the intensive monitoring study. Experts consulted by AWI believe that the use of at least 45 turbines (with treatments of 15/15/15) would be more appropriate.

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

Response: Section 3.0 in the RMAMP describes the proposed intensive monitoring program, and Section 4.0 explains how the monitoring data will be analyzed. Measuring bird and bat mortality at wind projects is multi-faceted and includes parameters associated with the number of actual carcasses discovered, searcher efficiency in locating carcasses, scavenger removal of carcasses, number of turbines searched, area of turbine searched, and search conditions (carcass visibility, usually hampered by vegetation). All of these elements will be taken into account for calculating an estimate of take.

Section 2.0 in the RMAMP (Appendix C in the Project HCP) describes BRE's proposed research program, which was peer reviewed by independent experts. Section 2.2.2 explains how BRE derived the number of turbines to be searched during the intensive monitoring. Using power analysis, BRE has determined that sampling 30 turbines (each turbine receives each treatment for 28 nights) is sufficient to evaluate reductions in fatality rates due to the treatment (different operational protocols) and determining the level of Indiana bat take.

Table 3.2 in the RMAMP shows that sampling 30 turbines daily should ensure greater than 85% likelihood that 1 or more Indiana bat fatalities will be detected during the first 3 years of intensive monitoring. In addition, 24 turbines not included in the intensive research study also will be monitored weekly, further increasing the likelihood of detection of rare events.

Statistical power is the ability to find a statistically significant difference when a real difference exists between 2 treatments. The power analysis used pairwise comparisons among treatments testing different numbers of turbines per treatment and different fatality rates. Table 2.2 in the RMAMP shows that with 10 turbines sampled, the power to detect a 20% to 40% difference between treatments varies from 0.43 to 0.99 depending on the fatality rate. The power of detection will be based on the realized mortality estimate, with the higher mortality rate indicating a more powerful detection of the effects of the treatments. If the mortality rate is low, then the power to detect differences among treatments will not be as high.

For example, assuming an average mortality rate of 2 bats per turbine per week (which corresponds to the entry in Table 2.2 of the HCP of 24 bat fatalities per turbine for a 12-week study period), the power to detect a 20%, 30%, or 40% change in all bat mortality while sampling 10 turbines per treatment is 67%, 92%, and 99%, respectively. Thus the study would be able to statistically detect (with greater than 90% power) a difference of 30% to 40% between the means. Said another way, if the control had a mean of 4 bats per turbine, and the treatment reduced fatality by 40% to 2.4 bats per turbine, the probability of a type 2 error (determining that these means are the same when they are actually different) would be less than 10%.

Compared to 10 turbines, Table 3.3 in the HCP shows that increasing the sample size to 12 turbines per treatment, assuming an average weekly fatality rate of 2 bats per turbine, would slightly improve the power to detect a 20% change in bat mortality from 67% to 69%, but have little effect on the ability to detect a 30 or 40% change. Whereas increasing the sample size to 15 turbines per treatment, as suggested by the commenter, would increase the power to detect small changes in bat mortality of 20% or less, it likely would have little effect on increasing the power to detect more biologically meaningful differences that meet the HCP objectives. The objectives of the HCP are to reduce Indiana bat fatality by 60%, Virginia big-eared bat fatality by 50%, and all bat fatality by 50% compared to control turbines operating at manufacturer settings.

Conducted prior to an experiment, power analyses provide a guide to sample size to achieve a reasonable ability to detect differences among treatments. For the intensive monitoring study, the power to detect experimental effects will depend on the parameters mentioned above. Section 3.2.3.1 of the RMAMP explains if considered necessary, this power to detect differences in treatments will be evaluated after each year of intensive monitoring, and BRE may adjust sample sizes as appropriate through discussions with the Service. As part of its review of annual monitoring reports, the Service will evaluate the adequacy of sample sizes and coordinate with BRE on the need for adjustments. Any number of

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

variables could be altered to increase the power to detect treatment differences (e.g. number of turbines, searchable area, searcher efficiency, interval between searches, etc.).

Letter 2, Comment 19 insisted that any searchers utilized by BRE be entirely independent (i.e., not employed by BRE or a hired consultant) to avoid any concerns with conflicts of interest. The commenter also encouraged BRE to engage in additional carcass survey studies utilizing trained dogs.

Response: The Service works with applicants and their consultants in many contexts and we generally consider consultants to be the appropriate way an applicant can obtain needed specialized expertise. Consultants may be hired by an applicant to do a survey for the presence or absence of a species, and may monitor post-construction wildlife fatality and conduct studies to measure the effectiveness of curtailment measures in reducing wildlife fatality. The Service will include as a permit term and condition a requirement that reports include basic information on each bat or bird carcass found from which fatality estimates are calculated. We also can require field forms and other raw data and carcasses to be submitted for our review should questions arise. The Service will independently evaluate the reports and associated data, including an assessment of the quality, and quantity of data, methods used, and conclusions reached. We believe that we can assess the veracity of the information and the qualifications of the consultants, employees, or contractors in order to raise any concerns should the qualifications be too limited. While there is always some level of trust that is required when individuals are collecting field data, this trust is also required of scientists and biologists in academia, and state and federal government. In addition, the consultants have their own professional interest in providing accurate data to the Service as any suspicion that it is not accurate would severely limit their future business. Thus overall, we consider the data and analyses provided by consultants to be generally verifiable and objective unless our interaction and independent assessments suggest otherwise.

The Service takes its responsibility seriously to monitor a permittee's compliance with the permit, HCP, and implementing agreement, as well as tracking the HCP's progress and success. As such, the Service will be carefully evaluating work products submitted by permittee's and their contractors to ensure compliance with the permit, effectiveness of the mitigation measures, as well as the quality and integrity of data collection, analysis, and reporting. The Service also will conduct periodic site visits as needed during the monitoring efforts.

Section 3.2.4.4 of the RMAMP explains the searcher training. BRE plans to use their staff to conduct the annual monitoring. BRE will contract a qualified biologist to train their staff in the skills necessary for post-construction monitoring, including handling and photographing carcasses, wildlife identification, and recording data. A qualified biologist will be used to identify carcasses to species, and the Service can request carcasses be provided for their inspection. BRE staff will also be responsible for documenting carcasses discovered outside of the scheduled turbine searchers, such as those discovered during maintenance activities. BRE plans to use qualified biologists to conduct the intensive monitoring.

Using dogs to conduct carcass searches is not used much of late. Each detection dog must be evaluated for efficiency just like any human. While researchers have found dogs to be significantly more efficient at locating carcasses than humans, there are several factors that complicate using dogs for post-construction monitoring. First, there is not a ready source of trained dogs. Second, because detection dogs work at such high rates of intensity, they tire more quickly than a human searcher. Hence, it takes several dogs to conduct a daily search. Third, dogs are more easily incapacitated in warm environments than humans. The use of fatality formulas and searcher efficiency metrics makes it possible to achieve reasonably accurate estimates of fatality rates in the absence of high rates of carcass detection, as one would find in a well-trained detection dog.

Letter 2, Comment 20 referenced pages 79, 81, and 91 in the DHCP and suggested there should be some discussion concerning why minimization measures are only legally required to reduce mortality by 44%, as opposed to a more restrictive, and thus more species-protective, threshold when dealing with an endangered species. The commenter posed if BRE were to utilize a 6.5 m/s cut in speed as the trigger for

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

turbine operations, the available evidence suggests that this would reduce potential bat mortality by 76%, a far more protective amount compared to the 44%.

Response: Please see **MR-1** and **MR-3** in Section 2 of this document for the Service's responses to concerns surrounding the proposed curtailment plan and maximum extent practicable, respectively. See **MR-13** regarding the Service's evaluation of the adequacy of a 60% fatality reduction objective. A take reduction of 76% is more applicable to Alternative 3 because it specifically contemplates incidental take of several species of currently unlisted bats that are assumed to be breeding on or near the Project site. In that case, a higher fatality reduction would be warranted due to the increased impact of the take to reproductively active individuals. For example, take of reproducing females during summer would also result in loss of their young. Under Alternative 2 (Proposed Action), the risk of take is assumed to occur primarily during migration (after young have learned to fly), thus the impact of the taking to the population during migration is less severe than had it occurred during the reproductive season.

Letter 2, Comment 21 expressed concern with BRE's dismissal of the impacts associated with taking up to 70 Indiana bats in the DHCP. The commenter suggested the loss of 70 bats over time could entirely devastate a hibernaculum or local population, especially considering that each loss of a female also constitutes the loss of an additional pup each year for what would otherwise have constituted the remainder of the female's reproductive lifespan. The commenter requests the HCP or the DEIS address the loss of replacement bats linked to adult female mortality.

Response: See **MR-9** in Section 2.9 of this document for the Service's response to concerns surrounding the permitted level of take of listed bats, and our assessment of effects to local hibernacula and maternity colonies, including loss of females and their pups.

Letter 2, Comment 23 requested the HCP provide more information on background mortality for covered species.

Response: See our response to **Letter 1, Comments 29 – 30** in Section 4.1 of this document. The Service will address background mortality on covered species in the biological opinion.

Letter 2, Comments 24 – 25 indicated that maternity colony surveys have not been conducted in the Project area. Hence, BRE cannot conclude that Indiana bat maternity colonies are unlikely on or near the Project area. The commenter contends that the best available science supports the likelihood for female and juvenile Indiana bats to occur in the Project area and makes reference to a maternity colony at Shaffer Mountain in relationship to the North Allegheny Wind Project in Pennsylvania.

Response: See **MR-7** in Section 2.7 of this document for the Service's response regarding listed bat use in the Project area. In Section 4.1.5.2 of the FHCP, BRE has added text that contrasts their Project's landscape with that of the North Allegheny Wind Farm, including differences in elevation, forest type, land uses, and geology. We are not certain that comparing the BRE Project with the North Allegheny Wind Farm is appropriate with regard to the likelihood of the occurrence of listed bats at the Project. Nonetheless, the Service assumes that Indiana bats and Virginia big-eared bats could occur in the Project area.

Letter 2, Comment 26 recommended that the HCP address measures to be taken if there are newly listed bat species and BRE finds maternity colonies in the Project area belonging to these newly listed species.

Response: See **MR-4** in Section 2.4 of this document for our response regarding changed circumstances associated with newly listed bat species.

Letter 2, Comment 27 requested that Section 4 of the RMAMP include a brief description of the difference in the first 3 years and the following years of monitoring in more detail than simply saying Years 4-25 will be less intensive.

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

Response: Section 3.0 in the RMAMP describes the proposed monitoring program. Section 4 of the RMAMP explains how the monitoring data will be analyzed. Section 3 contains a discussion contrasting what will occur during Years 1-3 and Years 4-25. During Years 1-3, intensive monitoring includes daily searches of 30 turbines from April 1 through November 15. Years 1-3 will also include weekly searches at 24 different turbines. In Years 4-25, 24 turbines will be searched weekly from April 1 through November 15.

Letter 2, Comments 28 – 29 raised concerns about BRE's choice to use the little brown bat surrogate to estimate take of Indiana bats. The commenter cites Dr. Alan Kurta's observation that Indiana bat flight behavior may predispose them to higher exposure to wind turbines as compared to little brown bats. The commenter was concerned this key distinction between the two species may lead to a higher proportional amount of take of Indiana bats as compared to little brown bats, and BRE's derived surrogacy ratio does not account for this difference in calculating the take estimate for Indiana bats.

Response: See **MR-8** in Section 2.8 of this document for the Service's response to concerns regarding BRE's use of little brown bats as a surrogate for estimating take of Indiana bats.

Letter 2, Comment 30 indicated their understanding that the most statistically significant mortality of bats occurs on forested mountain ridgetops in the east and that should be emphasized because the Project is situated in such an area. The commenters also indicated they understand searcher efficiency is almost always lower on ridgetop sites because of the features involved, therefore this should be explicitly discussed and accounted for in the HCP

Response: Please see response to **Letter 2, Comment 17** above in Section 4.1 of this document. In the DEIS, Section 5.8.2.2, subsection 100-Turbine Operation, *Geographic Variation*, acknowledges the evidence supporting that estimates of bat fatalities tend to be highest at wind energy facilities located on forested ridges in the eastern U.S. Section 3.0 in the RMAMP (Appendix C in the DHCP) describes how searcher efficiency will be calculated to account for this potential source of bias, including biases associated with search conditions.

Letter 2, Comment 31 requested an explanation of protocol and methodologies used for the netting survey to determine the little brown bat to Indiana bat ratio used to estimate Project take.

Response: To derive the little brown bat to Indiana bat ratio in its DHCP, BRE used data from WVDNR mist-netting efforts that would have employed the methodology described in the Service's 2007 protocol for determining presence/probable absence of Indiana bats. The mist-net protocol is provided in Appendix 5 of the Indiana Bat (*Myotis sodalis*) Draft Recovery Plan (USFWS 2007a).

In brief, the 2007 mist-net protocol specify the netting season is from May 15 to August 15. Nets are fine, low-visibility mesh with holes measuring approximately 38 millimeters (1.5 inches) across. Nets are to be placed perpendicular across potential travel corridors, such as streams or logging trails, and fill the corridor from side to side and from stream or ground level up to the canopy. Recommended spacing is 1 net site per kilometer (0.6 miles) of stream or linear corridor and 2 net sites per square kilometer (123 acres) of non-linear habitat. Netting at each site should include at least 4 net nights, consisting of:

1. a minimum of 2 net locations at each site at least 30 m apart (particularly in linear habitats); and
2. a minimum of two nights of netting (i.e., 2 net locations for 2 nights = 4 net nights per site).

One net night is defined as 1 net set run for 1 night. To determine presence/probable absence, 4 net nights are unnecessary once an Indiana bat is captured at that set. Netting begins at sunset and continues for at least 5 hours. Netting is to be conducted during nights with no precipitation, low wind, and temperatures $\geq 10^{\circ}\text{C}$ (50°F).

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

While the Service has recently updated its Indiana bat capture protocol to include more net nights and use of acoustic data, survey results using more intensive netting efforts are not yet available to determine the little brown bat to Indiana bat ratio. BRE, however, has updated the little brown bat to Indiana bat ratio in its FHCP to reflect the most recent post-WNS data available from West Virginia in 2012. Mist-net data collected during 2012 followed the 2007 netting protocol with one exception; the netting season started one month later that year (on June 15) due to concerns about WNS.

Letter 2, Comment 32a referenced page 78 of the DHCP and asked if cut-in speed limitations are being considered for spring migration.

Response: In Year 1, BRE is not initially proposing to implement their Curtailment Plan in the period from April 1 through July 14. The primary season of concern for bat mortality is during the fall migration. Please see Table 4.10 in the DHCP. However, post-construction monitoring will be conducted during this period as well as during the fall migration period. Intensive monitoring will occur from April 1 to November 15 for Years 1-3. Annual monitoring will occur from April 1 to November 15 each year of the ITP term (Year 1-25). Post-construction monitoring in all years will facilitate identification of significant bat mortality in spring and all months from April 1 to November 15. The adaptive management strategy described in the RMAMP allows for modification to operational protocols to improve and refine the avoidance/minimization strategy in successive years of the ITP including the possibility of extending the curtailment season should monitoring results indicate the need to do so as explained in Section 5.2.4 Item 3 of the HCP and Section 5.2.1 of the RMAMP.

Letter 2, Comment 32b referenced page 78 of DHCP and asked how was the 4.8 m/s cut-in speed arrived at considering that the best available science indicates that 5.0 m/s and above is the most effective for eliminating mortality, and the RMAMP also states that 5.0 m/s is the “most cost-effective way to reduce bat mortalities.”

Response: In Section 4.1.5.2, the FHCP contains added detail for BRE’s rationale for implementing the 4.8 m/s cut-in speed. As more fully described in **MR-1**, results from a 2010 study (Good et al. 2011) showed that unfeathered turbines with a cut-in speed of 5.0 m/s all night during the fall season had bat mortality approximately 50% less for the season than that of normally operating turbines. A 2011 study looked at the effect of feathering turbine blades below various cut-in speeds and showed that turbines with feathered blades operating at a 4.5 m/s cut-in speed all night during the fall season had approximately 57% less bat mortality for the season than normally operating turbines, an even higher reduction at a lower cut-in wind speed (Good et al. 2012). These fall season bat reduction estimates for full-night curtailment are higher than would be reasonably anticipated when considered for half the night across the entire year, but demonstrate that significant bat fatality reduction can result from the right combination of raised cut-in speeds and blade feathering. See **MR-2** for discussion of additional studies.

The currently best available science on bat mortality and wind turbine operation entails non-standardized methods across a variety of site conditions, making definitive conclusions elusive. The Service acknowledges that BRE’s curtailment regime differs in cut-in speed from those speeds implemented and studied at other sites. Specifically, the proposed 4.8 m/s curtailment differs than the 5.0 m/s discussed in multiple scientific studies (e.g., Arnett et al. 2010, Good et al. 2011, Young et al. 2013b, Hein et al. 2013). The Service independently reviewed all the available scientific information and believes BRE’s proposed curtailment plan of 4.8 m/s is unlikely to have a statistically different result than 5.0 m/s curtailment. The Service believes this to be true given the minor difference between 4.8 m/s and 5.0 m/s, plus the curtailment plan’s inclusion of feathering (i.e., limiting turbine rotations to below 2 revolutions per minute below the 4.8 m/s cut-in speed).

Most importantly, as BRE implements the RMAMP, they must manage turbine operations to meet the HCP’s biologically based objective to reduce *Myotis* fatalities by 60%, Virginia big-eared bat fatalities by 50%, and all bat fatalities by 50% on an annual basis (see **MR 13** Measurable Biological Objective). Should the initial minimization approach fail to deliver the expected reduction in bat mortality, BRE’s adaptive management plan must adjust their operational protocol such that the objectives are met. These

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

adjustments might include higher cut-in speeds, and longer periods of nighttime or longer seasons of curtailment.

Letter 2, Comment 32c referenced page 78 of DHCP and asked why cut-in speed restrictions will not be initiated immediately upon hibernacula emergence by bats in the spring instead of mid-July.

Response: See response to **Letter 2, Comment 32a** immediately above in Section 4.1 of this document. The Service accepts the evidence that bat mortality at wind projects tends to be highest during the late-summer dispersal or fall migration period from roughly late-July to mid-September (Baerwald et al. 2009, Arnett et al. 2010, Good et al. 2011, 2012). Table 4.8 in the HCP provides a summary of bat fatality data during years 2008-2010 from the Mount Storm Wind Project, which is also in West Virginia. The average number of bat fatalities measured per turbine search was roughly 7 and 14 times higher in the months of August and September than in the months of April and May.

The Project's post-construction monitoring will help to indicate if extension of the curtailment period into early-summer or spring is warranted. If HCP's initial minimization strategy fails to deliver anticipated results, BRE's RMAMP provides for adjustments to turbine operational protocols, including testing elevated cut-in speeds during spring migration or summer, to achieve the HCP's biological goals and objectives.

Letter 2, Comment 32d referenced to page 78 of the DHCP and asked why cut-in speed restrictions will not be extended into November to ensure that Indiana bat and Virginia big-eared bats are hibernating before reducing such restrictions.

Response: See response to **Letter 2 Comment 32a** immediately above in Section 4.1 of this document. Section 3.0 of the RMAMP describes the post-construction monitoring protocol. Intensive monitoring (during Years 1-3) and annual monitoring (every year of the permit duration) will be conducted from April 1 through November 15. The RMAMP provides for the possibility of extending the curtailment season should monitoring results indicate the need to do so.

Letter 2, Comment 32e referenced page 78 of DHCP and asked why the 6.5 m/s cut-in speed, which has been identified as more effective for reducing bat fatalities, is not being implemented as opposed to the 4.8 m/s cut-in speed.

Response: Please see **MR-1** and **MR-2** in Section 2 of this document for the Service's response to concerns surrounding BRE's curtailment plan and RMAMP, and efficacy for reducing bat mortality.

Letter 2, Comments 33 – 34 suggested that not utilizing the most protective cut-in speed would violate the "minimization" mandate of the ITP process and, if not changed, would warrant rejection of the ITP application. The commenter recommended BRE justify their decision for not implementing the most protective cut-in speed.

Response: See **MR-1** and **MR-3** in Section 2 of this document for the Service's responses to concerns surrounding the Curtailment Plan and maximum extent practicable, respectively.

In **Letter 2, Comment 35**, the commenter stated they understand that turbine searches will occur but asked that the HCP clarify how the intensity of the searches will vary.

Response: See response to **Letter 2, Comment 27** in Section 4.1 of this document.

Letter 2, Comments 37 - 38 referenced Section 4.2, Impacts of the Taking, Subsection 4.2.1 Indiana Bat of the DHCP and suggested BRE makes an illogical leap to a conclusion not supported by the emerging data concerning WNS and its impact on Indiana bats. The DHCP states that "with impacts such as WNS occurring, this trend (referring to an increase in the Indiana bat population) is likely to change over time to a population decrease." The DHCP then states "triggers have been developed for the HCP that will allow

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

appropriate response in the event of substantial population declines that would ensure that the authorized level of take does not appreciably reduce the likelihood of recovery and survival of the species in the wild and that the proper type and amount of mitigation is being provided. The commenter asked for clarification on what population triggers are being referenced or how population size will be appropriately monitored.

Response: The Service provides funding to state natural resource agencies to regularly conduct winter cave counts of Indiana bats and to conduct winter and summer cave counts of Virginia big-eared bats throughout their ranges. Preliminary results from the 2012 winter cave count data indicate while Virginia big-eared bat populations continue to grow and remain unaffected by WNS, Indiana bat population have been hard hit by WNS. The Indiana bat population trend in the Appalachian Mountain Recovery Unit has changed from a positive to a negative trend 3 years after WNS was first detected in the unit. The Service has notified BRE and requested they revise their HCP accordingly to reflect this trend. In response to this comment, the Service has clarified the population triggers and response for WNS for both species (see **MR-4** in Section 2.4 of this document).

In **Letter 2, Comment 39**, the AWI indicated their belief that the use of larger turbine blades is inappropriate in light of the Settlement Agreement.

Response: See **MR-11** in Section 2.11 of this document for the Service's response to concerns surrounding the potential for BRE to construct larger turbines in the Phase II Project area compared to those installed in the Phase I area.

Letter 2, Comment 40 referenced page 84 of the DHCP, Section 4.1.5.3 Take Limits. The text identifies 2 situations in which further discussions with the Service will be triggered. AWI believes that a third important situation that should trigger discussions with the Service is if the number of little brown bat mortalities equivalent to 5 Indiana bat mortalities occur in 1 year, per the ratio established by the company as the appropriate little brown bat to Indiana bat ratio. This accounts for scenarios in which rare Indiana bats are not all accounted for in carcass searches, but where the more common little brown bat, as a surrogate to the Indiana bat, would serve to identify the concern despite the missing Indiana bat data.

Response: In Section 4.1.5.3 of the FHCP, annual take thresholds triggering potential operational modifications to reduce take have been revised and clarified. The first threshold applies to all years of the permit and is dependent upon finding Indiana bat carcasses. This threshold has changed from exceeding take of an estimated 5 Indiana bats per year, based on actual carcasses found adjusted for field biases (in the DHCP), to exceeding 4.5 estimated Indiana bat fatalities in a given year (in the FHCP). The numerical threshold decreased based upon updating the estimated take utilizing post-WNS data that reflect decreased bat populations and altered species compositions (see **MR-9** in Section 2.9 of this document).

The second threshold applies to years 4 through 25 of the permit when less intensive monitoring is occurring. It accounts for scenarios in which rare Indiana bats are not detected in carcass searches, and therefore relies on finding other species under the turbines and using them as surrogates for estimating Indiana bat take. It allows use of the little brown bat as a surrogate for Indiana bat, as well as other potential surrogates (for example, all *Myotis* or all bats). As little brown bat and other *Myotis* populations continue to decline due to WNS, our ability to detect them under wind turbines will also likely decrease. Thus we have maintained flexibility in determining an appropriate surrogate species for Indiana bat.

The second threshold triggering potential operational changes to reduce take now reads as follows: "If the 3-year running average estimated Indiana bat fatalities exceeds 1.8 (with 90% confidence interval), based on the actual number of surrogate carcasses found corrected for field bias and corrected for the Indiana bat –to-surrogate species ratio."

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

In the DHCP this second threshold was based simply upon using all bats as the appropriate surrogate for Indiana bats. It also was based upon the annual all bat estimated fatality rate exceeding for three consecutive years in a row the mean baseline fatality rate at fully operational turbines (determined during Years 1 through 3 of the permit). In hindsight, the Service believes this threshold in the DHCP would have allowed an unacceptably high level of take to occur for 3 consecutive years, putting the permit at risk of exceeding the overall take limit if the threshold were repeatedly triggered. In the FHCP BRE has changed the surrogate threshold from 3 years of consecutively exceeding the all bat baseline fatality rate to a 3-year running average of estimated Indiana bat fatalities for the year exceeding 1.8 (based upon finding surrogate species and correcting for field biases and the Indiana bat-to-surrogate ratio). The figure of 1.8 tracks to the objective of achieving a 60% annual reduction of fatality rates compared to fully operational turbines. Thus this threshold is tripped if the permit is trending toward taking surrogate bats at a higher average rate than the measurable objective.

A surrogate approach to monitoring in Years 4-25 is warranted given that (1) it is impracticable to intensively monitor for take of Indiana bats for the duration of the ITP given that such take is an extremely rare event, and (2) a surrogate species monitoring approach will provide adequate monitoring levels to ensure the Project remains in compliance with authorized take limits over the term of the permit.

Based on this protocol, item (2) addresses the potential for little brown bat mortality to trigger discussion between the Service and BRE, but only during Years 4-25. It is important to note that the surrogate approach may be little brown bat, another bat species that may be more suitable, all *Myotis*, or all bats. During Years 1-3, the intensive monitoring will estimate Indiana bat mortality based on actual Indiana bat fatalities. We believe the intensity of the monitoring conducted in Years 1-3 will be adequate to locate Indiana bat fatalities should they occur.

In **Letter 2, Comment 41**, the commenter referenced page 111 of the DHCP in Section 8.2.1. The commenter questioned how BRE intends to measure the effects of WNS in order to assess what actions must be taken. Will it depend on local hibernacula impacts, regional impacts, or some other metric? This needs to be more clearly articulated and a sound basis provided for that reasoning.

Response: See **MR-4** in Section 2.4 of this document for the Service's response regarding concerns for changed circumstances associated with WNS.

Letter 2, Comment 42 referenced page 111 in the DHCP, Section 8.2.1 Impacts of WNS on Covered Species. The commenter believes it is inappropriate under Section 10 of the ESA for any project, including renewable energy projects, to receive mitigation or conservation credit because 1 aspect of the project, by its nature, might have a smaller impact on greenhouse gas emissions than another project.

Response: Acknowledged. Regardless of how the Applicant characterizes the environmental benefits of its Project in its HCP, the Service does not intend to give "credit" or imply that mitigation credit is given for listed bats as a contribution toward meeting ITP issuance criteria because the Project has lower greenhouse gas emissions than nonrenewable energy projects.

Letter 2, Comment 44 recommended BRE conduct additional acoustic monitoring to further assess the potential presence of listed bats.

Response: See **MR-7** in Section 2.7 of this document for the Service's response to comments on listed bat use in the Project area.

Letter 2, Comment 45 suggested that the HCP's proposed operational measures do not satisfy the "minimize to the maximum extent practicable" permit issuance criterion. The commenter stated the Service must determine if the proposed locations of some or all of the turbines will cause impacts to listed bats and, if so, has the Applicant minimized those impacts by moving the turbines to more suitable locations. If the 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.

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

Response: See **MR-1** and **MR-3** in Section 2, and **Letter 1, Comment 1** in Section 4.1 of this document for the Service's responses to concerns surrounding the proposed Curtailment Plan, maximum extent practicable, and turbine micro-siting, respectively. In Section 1.6 of the FHCP, BRE has indicated they will work with the Service during micro-siting of Phase II turbines to adjust, where feasible, the location of turbines to minimize impacts to covered species and their habitat.

Letter 2, Comment 46 indicated the HCP does not explain that an alternative curtailment plan with 6.5 m/s cut-in speed for the entire nightly active period is impracticable. The commenter contended BRE cannot rely on adaptive management to satisfy the "minimize to the maximum extent practicable" standard, particularly since measures reasonably expected to minimize take are immediately available.

Response: See **MR-1** and **MR-3** in Section 2 of this document for the Service's responses to concerns surrounding the proposed curtailment plan and maximum extent practicable, respectively.

Letter 2, Comment 47 specified the HCP's proposed curtailment plan is not supported by the best available science, as demonstrated by the DEIS. The commenter found that the Service provides in the DEIS a more complete set of curtailment measures that include a cut-in speed of 6.5 m/s for the entire nightly active period which will further minimize take of covered bats by 26% over the proposed plan, especially when combined with feathering.

Response: See **MR-1** and **MR-3** in Section 2 of this document for the Service's responses to concerns surrounding the proposed curtailment plan and maximum extent practicable, respectively.

In **Letter 2, Comments 48 – 49**, the commenter believed the DHCP is proposing a minimization plan that is likely to be less effective at reducing take than Alternative 3 as described in the DEIS. The commenter understands BRE would implement the RMAMP to determine the effectiveness of the Curtailment Plan, resolve uncertainty, determine the potential effects of an activity on a species, and test hypotheses concerning the effectiveness of measures that are not planned. But the commenter states that the RMAMP cannot serve as a substitute for assurances that substantive criteria will be met for minimizing and mitigating the impact of take to the maximum extent practicable.

Response: See **MR-1** and **MR-3** in Section 2 of this document for the Service's responses to concerns surrounding the proposed curtailment plan and maximum extent practicable, respectively.

Letter 2, Comment 52 suggested that Section 7 of the HCP include a discussion of an alternative with a more restrictive curtailment and why this alternative was not selected.

Response: Section 7 of the FHCP now includes a discussion of BRE's consideration of operating the Project at cut-in speeds higher than their proposed 4.8 m/s. BRE believes their proposed cut-in speeds can meet the biological goals and objectives, and that higher cut-in-speeds result in lost production as described in Section 4.1.5.2 of the FHCP. Section 4.1.5.2 of the FHCP now provides an expanded explanation of BRE's rationale and biological basis for their proposed curtailment plan.

Whereas BRE may have dismissed this more restrictive curtailment initially as an alternative, the adaptive management framework of the HCP allows for testing and implementing a more restrictive curtailment regime if needed to meet goals and objectives. Should BRE's initial implementation of the curtailment plan fail to deliver the expected mortality reduction (60% reduction in *Myotis* fatalities), the RMAMP incorporates adjustments to the operational protocols, including testing higher cut-in speeds.

Letter 2, Comment 53 noted the DHCP is missing a separate section titled "Action Area" to be based on potential impacts to Indiana bats and Virginia big-eared bats.

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

Response: See response to **Letter 1, Comments 29 - 30** in Section 4.1 of this document for the Service's response to questions about the ESA Section 7 process including questions about the action area.

Letter 2, Comment 54 noted the draft HCP fails to assess cumulative effects of future non-federal activities within the action area on the covered species.

Response: See response to **Letter 1, Comment 31** above in Section 4.1 of this document.

Letter 2, Comments 55 – 56 indicated the DHCP does not adequately address WNS and newly listed species as changed circumstances.

Response: See **MR-4** in Section 2.4 of this document for the Service's response to comments regarding changed circumstances including those surrounding newly listed species and WNS.

Letter 7, Comment 6 urged the Service to select those individuals to be employed to conduct the post-construction monitoring and to be the first to evaluate the post-construction monitoring data.

Response: See response to **Letter 2, Comment 19** above in Section 4.1 of this document.

4.2 General Public Comments and Responses

Letter 4, Comments 1 - 3 suggested BRE's method for estimating take of Indiana bats is faulty, and take is likely to be much higher. Specifically, the commenter found no indication that BRE developed its take estimate using turbines the size of those in the Project, and hence, the estimate of take is inadequate.

Response: See **MR-8, MR-9, and MR-11** in Section 2 of this document for the Service's response to concerns surrounding BRE's method for estimating take, their take estimate, and the potential for increased risks to bats associated with implementation of a larger turbine in the Phase II Project area, respectively.

Letter 4, Comment 4 suggested there does not seem to be any scientific evidence to support the conjecture the Curtailment Plan will reduce the taking by 50%. The commenter supports BRE's proposal to conduct a study to see whether an increase in the cut-in speed will have a beneficial effect. The commenter believes there is no reason to alter current operations until that study is completed and no reason to permit BRE to construct an additional 33 turbines while serious questions exist about the current turbines' impacts on Indiana bats.

Response: The 50% reduction in take in the DHCP was based upon reduction of estimated mortality for all bats observed during curtailment studies at other projects (Baerwald et al. 2009, Arnett et al. 2010, Good et al. 2011), which showed turbines operating at cut-in speeds that ranged from 5.0 m/s to 6.5 m/s killed fewer bats than normally operating turbines (3.5 m/s to 4.0 m/s) by 44% to 93%. Please see more detailed explanations in the DHCP (Section 4.1.5.2) and DEIS (Section 5.8.2.2, 100-Turbine Operation, Seasonal Timing and Weather, and Table 5-24) that summarize the curtailment studies.

For the term of the ITP, BRE will adjust the turbine cut-in speed from 7.8 mph (3.5 m/s) to 10.7 mph (4.8 m/s) for a 12-week period from mid-July to mid-October and for the time of night from sunset for a period of 5 hours (BRE's Curtailment Plan). If the initial minimization approach fails to deliver the expected reduction in mortality, BRE's adaptive management plan calls for adjustments to the operational protocols, including testing higher cut-in speeds, to achieve the HCP's biological goals and objectives.

Based on best available science and the adaptive management provisions described above to ensure the objectives are met, it is not necessary for the Project to avoid take of listed species until the on-site studies have been completed.

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

Letter 4, Comments 5 – 7 found no indication that BRE has determined how a larger turbine would affect the level of risk to the Indiana bat. The commenter suggested that BRE's plan to install a larger turbine violates the spirit of the Settlement Agreement and BRE does not have the Public Service Commission's approval for a larger turbine model.

Response: See **MR-11** in Section 2.11 of this document for the Service's response to concerns about the potential for increased risks to bats associated with implementation of a larger turbine in the Phase II Project area, for which BRE is seeking approval in their application to the WVPSC.

In **Letter 5, Comment 1**, the commenter referred to Section 8.2.1 in the DHCP which states that the Project is designed "to address climate change through production of non-polluting electrical energy for consumer use." The commenter then indicated that DHCP provides no analysis or quantification of this benefit and published findings suggest that wind energy projects may provide only minimal benefits with respect to offsetting carbon emissions.

Response: Section 1.1 in the FHCP now includes added detail describing benefits of full build-out of the Project. BRE specifies the Project will produce enough energy annually to power about 48,000 homes. BRE estimates that Project construction and operation will avoid the emission of over 7 million metric tons of carbon dioxide compared to a similar amount of electricity produced from coal-fired generation over the life of the Project.

Letter 5, Comment 6 indicated that WNS is not a potential "changed circumstance" that can appropriately be addressed in a context of conference and discussion at some later date after an HCP has been adopted and an ITP has been issued. The commenter stated that WNS is a significant current circumstance and recommended that it should be addressed in the context of the NEPA review and prior to the adoption of an HCP and issuance of an ITP.

Response: See **MR-4** in Section 2.4 of this document for the Service's response to comments regarding changed circumstances, including WNS. Our response incorporates what we currently know about the spread of WNS and impacts to covered species. In Section 8.2.1, BRE has added detail to the FHCP about responding to WNS should specific triggers occur creating a changed circumstance. The triggers relate to violation of key assumptions we have made about WNS (i.e. the assumption that Indiana bat population trends in the Appalachian Mountain Recovery Unit will mirror WNS trends in the Northeast Recovery Unit, and the current assumption that WNS is not adversely affecting the Virginia big-eared bat). Effects of WNS expected to result from the Proposed Action and alternatives are addressed in Sections 5.8 and 5.16.4.8 in the DEIS and FEIS.

Letter 5, Comment 7 suggested the estimates of future mortality of endangered bats at BRE's facility are unreliable given the uncertainties associated with the proposed surrogate approach. Even if these uncertainties could be resolved, the current rapid changes in bat populations and communities resulting from WNS will likely alter the critical relationships that underlie BRE's analysis.

Response: Section 3.0 in the RMAMP (Appendix C in the Project HCP) describes the proposed monitoring plan which includes both direct monitoring for Indiana bat fatalities and use of surrogates. See Section 2.4 of this document for **MR-4** that discusses changed circumstances, including WNS, and **MR-8** that discusses the use of the surrogate approach. The Service recognizes the commenter's concerns about the reliability of the surrogate approach. Because Indiana bats were not captured at the site and no roosts have been located, there is little information to inform a different approach to estimating take. The RMAMP is designed to validate the predictions of take.

The amount of take initially authorized is the amount that is "not to be exceeded" and could be modified over time in response to new information. Our take estimates are predictions based on best available information. The baseline bat fatality rate (without curtailment) will be determined during years 1 through 3 of the permit. It may be higher or lower than predicted. The 60% Indiana bat fatality reduction, and 50% Virginia big-eared bat fatality reduction, is then applied to the average baseline fatality for years 1 through

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

3. If baseline fatality levels are low, the estimated future take will be lower than currently predicted. If baseline fatality levels are high, the estimated future take will be higher than currently predicted, which could trigger the need for a permit amendment. If necessary, and consistent with the HCP No Surprises policy, the Service could amend the permitted take consistent with 50 C.F. R. 13.23(b).

Letter 5, Comment 8 questioned BRE's approach in the HCP for addressing the Project's effects to listed bats in the context of the effects of WNS sustained by the 2 species, particularly if BRE views the Project's effect to the 2 bats to be negligible.

Response: See response to **Letter 1, Comment 37** in Section 4.1 and **MR-4** in Section 2.4 in this document for the Service's response to comments on WNS as a changed circumstance.

Letter 7, Comment 5 indicated the HCP does not propose using surrogate species mortality to estimate Indiana bat mortality, and that these surrogate data should be used as a potential source of confirmation of the Indiana bat data.

Response: See **MR-8** in Section 2.8 of this document for the Service's response to comments on BRE's surrogate approach for estimating take of Indiana bats. Also see the Service's specific response to **Letter 2, Comment 40** above in Section 4.1 of this document.

Letter 10, Comment 1 recommended the Service deny BRE their application for the permit.

Response: In this document, please see **MR-1** in Section 2.1 for the Service's response to comments on the Curtailment Plan and RMAMP, **MR-3** in Section 2.3 for an explanation of the Service's decision process on issuance criteria, and the Service's response to **Letter 1, Comment 27** in Section 3.3 regarding selection of an alternative.

In **Letter 15, Comment 1**, the commenter indicated their support for the Project and asked that the Service authorize the permit for the incidental take of the 2 endangered bats. The commenter views the large turbines as a positive asset to the area and shares turbine viewing with others. The commenter expressed the concern that any kind of "green" energy project will be delayed or hindered by complaints about adequate protection for the 2 bat species. The commenter believes because the wind turbines are not placed side by side, there is plenty of room for bats, birds, and other flying creatures to navigate around them.

Response: Commenter's opinion is acknowledged. It is the Service's responsibility to administer and uphold the statute set forth in the ESA. Post-construction fatality monitoring at many wind energy projects supports that birds and bats can be killed by a single turbine as well as turbines in groups with plenty of room between turbines.

Letter 18, Comment 1 urged the Service to deny BRE's application for the permit.

Response: See the Service's response to **Letter 1, Comment 27** in Section 3.3 of this document regarding selection of an alternative.

Letter 19, Comment 1 recommended the Service approve BRE's application for the permit.

Response: See the Service's response to **Letter 1, Comment 27** in Section 3.3 of this document regarding selection of an alternative.

BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

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FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

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RESPONSES TO COMMENTS

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BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

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BEECH RIDGE ENERGY WIND PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT
RESPONSES TO COMMENTS

Appendix A: Comment Letters



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October 23, 2012

Public Comments Processing

Attn: FWS-R5-ES-2012-0059

Division of Policy and Directives Management

U.S. Fish and Wildlife Service

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Arlington, VA 2203

Electronic Portal submission: receipt verification requested

Re: Comments on Draft EIS and Draft HCP for Beech Ridge Energy Wind Facility

Dear Ms. Hill:

We offer these comments on both the Draft National Environmental Policy Act Environmental Impact Statement (“DEIS”) and the Draft Habitat Conservation Plan (“DHCP”) for the Beech Ridge Energy Wind Project (“BRE” & “the Project”) in Greenbrier and Nicholas Counties, West Virginia. 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.

The comments below are organized as follows. We have grouped our comments into six sections reflecting main topics. Within each topic section, we provide comments on the DEIS, if applicable, and on the DHCP separately, if applicable, taking care to avoid duplication unless useful. For some topic sections, comments may refer to only the DEIS or to only the DHCP.

1

**ITP ISSUANCE CRITERIA – MINIMIZE AND MITIGATE TO THE
MAXIMUM EXTENT PRACTICABLE**

DHCP/ESA

1_01

COMMENT 1.1.

THE DHCP’S PROPOSED OPERATIONAL MEASURES DO NOT SATISFY THE “MINIMIZE TO THE MAXIMUM EXTENT PRACTICABLE” PERMIT ISSUANCE CRITERION OF THE ESA OR THE DHCP’S GOAL OF AVOIDING AND MINIMIZING POTENTIAL TAKE.

A. Background

To issue an ITP, FWS must find that the Project’s applicant “will, to the maximum extent practicable, minimize and mitigate the impacts of such taking.”¹ According to FWS, the finding that the applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking, typically requires consideration of two factors: (1) adequacy of the minimization and mitigation program, and (2) whether it is the maximum that can be practically implemented by the applicant. FWS states, with respect to mitigation in particular:

To the extent 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. However, particularly where the adequacy of the mitigation is a close call, the record must contain some basis to conclude that the proposed program is the maximum that can be reasonably required by that applicant. This may require weighing the costs of implementing additional mitigation, benefits and costs of implementing additional mitigation, the amount of mitigation provided by other applicants in similar situations, and the abilities of that particular applicant.²

FWS’s 2011 Wind Energy Projects Guidance³ provides additional guidance regarding the “minimize and mitigate to the maximum extent practicable” permit issuance criterion. In the guidance, FWS addresses the question, “What does ‘minimize and mitigate to the maximum extent practicable’ mean?” The agency response is as follows:

¹ 16 U.S.C. § 1539(a)(2)(B); 50 C.F.R. § 17.22(b); FWS, *Habitat Conservation Planning and Incidental Take Permit Processing Handbook* (Nov. 4, 1996), pp. 7-3 to 7-4 (“HCP/ITP Handbook”).

² FWS, *HCP/ITP Handbook*, pp. 7-3 to 7-4.

³ FWS, *Indiana Bat Section 7 and Section 10 Guidance for Wind Energy Projects, Revised* (Oct. 26, 2011) (“Wind Energy Project Guidance”).

This issuance criterion requires us to evaluate the effectiveness of the applicants' proposed minimization and mitigation measures. It is important to understand that in doing so, we must focus solely on measures to be undertaken to reduce the likelihood and extent of the impact of take resulting from the project as proposed, as well as appropriate compensatory measures. We interpret this section to mean that the impacts of the proposed project, including the HCP, which were not eliminated through informal negotiation must be minimized to the maximum extent practicable and those remaining impacts that cannot be further minimized must be mitigated to the maximum extent practicable. These standards are based in a biological determination of the impacts of the project as proposed, what would further minimize those impacts, and then what would biologically mitigate or compensate for those remaining biological impacts.

If applicants provide biologically based minimization measures and mitigation measures that are fully commensurate with the level of impacts, they have minimized and mitigated to the maximum extent practicable. It is only where certain constraints may preclude full minimization or full mitigation that the "practicability" issue needs to be addressed more thoroughly. In those circumstances where the applicant cannot fully achieve the minimization and mitigation standards, we must evaluate whether the applicant has still minimized and mitigated to the maximum extent practicable. Note, in issuing the ITP we must not appreciably reduce the likelihood of survival and recovery of the species in the wild. Inability to fully compensate for the impacts of the take may make this criterion difficult to satisfy. Factors to be considered in the practicability analysis may include constraints based on the site itself, availability of mitigation habitat, timing and nature of the project, the financial means of the applicant, costs and time associated with redesign and going through local and state permitting and zoning processes, etc. We must evaluate whether the applicant has provided reasonable explanations concerning constraints and independently review the record of evidence supporting the applicant's assertions. The practicability evaluation is necessarily project specific, and may properly yield different determinations in different situations.⁴

FWS addressed two further questions in the 2011 Wind Energy Projects Guidance that are relevant to the issuance criterion:

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?

⁴ FWS, *Wind Energy Project Guidance*, p. 47.

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.⁵

B. The DHCP's Proposed Operational Measures for Avoidance and Minimization.

BRE's proposed operational measures are outlined in both the DEIS⁶ and the DHCP.⁷ BRE proposes to adjust turbine cut-in speed on all Project turbines to 4.8 m/s, for the time of night commencing one half hour before sunset for a period of 5 hours, for a 12-week period from July 22 through October 13. BRE estimates that this curtailment plan will reduce potential take of Indiana and Virginia big-eared bats by 50%.⁸

According to BRE, this proposed plan translates into the following take of Indiana bats:

- up to 5 Indiana bats per year during years 1-3;
- up to 2.5 Indiana bats per year during years 4-25;
- up to an aggregate take of 70 Indiana bats during the permit term.⁹

The proposed plan translates into the following take of Virginia big-eared bats:

- up to 1 Virginia big-eared bat per year during years 1-3;
- up to 0.5 Virginia big-eared bats per year during years 4-25;
- up to an aggregate take of 14 Virginia big-eared bats during the permit term.¹⁰

⁵ FWS, *Wind Energy Project Guidance*, pp. 47–48.

⁶ DEIS, Section 3.2.2, pp. 38–63 and Table 3.1.

⁷ DHCP, Section 4.1.5, pp. 78–85.

⁸ See DHCP, p. 78; DEIS, p. 56.

⁹ DEIS, p. 54.

¹⁰ DEIS, p. 54.

The proposed curtailment plan does not kick in until year 4. During the first three years of the ITP, BRE proposes to “determine baseline bat mortality conditions at the project and identify turbine operational protocols that will reduce bat mortality during periods of high activity.”¹¹

BRE further states,

To achieve the biological goal of minimizing take of covered species over the term of the ITP (Goal 2), BRE will implement monitoring and adaptive management measures contained in the RMAMP. These measures are intended to detect take of the covered species and/or changes in bat mortality over the term of the ITP and to permit BRE to implement operational protocols to ensure that BRE does not exceed the authorized level of take of covered species provided in the ITP.¹²

Apparently, BRE intends to achieve the biological goal and permit issuance standard of minimizing take of covered species by implementing monitoring and adaptive management measures contained in the Research, Monitoring, and Adaptive Management Plan (“RMAMP”).¹³

Below we argue that BRE’s proposed curtailment plan for avoidance and minimization of take is most likely inconsistent with the ESA. In subsection C we contend that the proposed curtailment plan set forth in the DHCP is *not* the set of measures that the best available science reasonably indicates can minimize take of covered bats to the maximum extent practicable. In subsection D we argue that what appears to be the method by which the DHCP arrives at the proposed curtailment plan – e.g., by targeting “cost-effective” measures “rationally related to take” – is not likely to lead to a plan that minimizes the impact of take to the maximum extent practicable and in fact does not in this case. We also argue that the DHCP does not show that an alternative curtailment plan with 6.5 m/s cut-in speed for the entire nightly active period is impracticable, and some evidence indicates that such a plan is indeed practicable. Finally, in subsection E we contend that BRE cannot, as the DHCP proposes to do, rely on adaptive management to satisfy the “minimize to the maximum extent practicable” standard, especially since measures reasonably expected to minimize take are immediately available.

¹¹ DHCP, pp. 91, App. C at C-1.

¹² DHCP, p. 91.

¹³ DHCP, App. C.

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C. The Best Available Science Points Not to BRE's Proposal But Rather to the Curtailment Plan in the DEIS's Alternative 3 as the Plan Most Likely to Minimize Take of Indiana Bats.

The DHCP's proposed curtailment plan is not supported by the best available science for four reasons. First, FWS has found in the DEIS that Alternative 3, a more complete set of curtailment measures that includes a cut-in speed of 6.5 m/s for the entire nightly active period, will further minimize take of covered bats by 26% over the proposed plan. Second, several years of cut-in experiments at Fowler Ridge indicate that the added benefit of a cut-in speed of 6.5 m/s, when combined with feathering, may be even higher than 26% over the proposed plan of 4.8 m/s. Third, the DHCP's selection of the Arnett et al. 2010 results for cut-in experiments at the Casselman facility and rejection of the Good et al. 2011 results for the Fowler Ridge facility to justify a proposed cut-in speed of 4.8 m/s is not warranted. Fourth, the DHCP's selection of an abbreviated nightly period of curtailment for the minimization plan is unwarranted. We now discuss each of these four reasons in detail and conclude with legal implications.

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1. FWS Has Found that the DEIS's Alternative 3 Can Minimize Take of Bats by at Least 26% More Than the Proposed Curtailment Plan.

In the DEIS, FWS sets forth the Alternative 3 curtailment plan.¹⁴ Under Alternative 3, the turbine cut-in speed on all Project turbines would be set to 6.5 m/s (rather than 4.8 m/s), for the time of night commencing one half hour before sunset through 15 minutes after sunrise (rather than for a period of 5 hours), during the period from April 1 to October 15 (rather than for a 12-week period from July 22 through October 13). These daily and seasonal periods are the presumed periods during which Indiana bats are active.¹⁵ FWS estimates that this avoidance and minimization strategy may reduce potential take of Indiana bats and Virginia big-eared bats by an average of 76% relative to normally operating turbines.¹⁶ On the other hand, BRE estimates in the DHCP that the proposed curtailment plan will reduce potential take of Indiana bats and

¹⁴ DEIS, pp. 63–65.

¹⁵ DEIS, p. 64.

¹⁶ DEIS, p. 64.

Virginia big-eared bats by 50%.¹⁷ Thus, the curtailment plan in Alternative 3 is expected to reduce take of the listed bats an added 26% relative to the DHCP’s proposed plan.¹⁸

Table 3-4 of the DEIS compares the impacts expected for the Alternatives in terms of the take of bats.¹⁹ According to Table 3-4, the Project operation with the proposed curtailment plan (Alternative 2) has the potential to harm or kill 70 Indiana bats, whereas the Project operation with the more complete curtailment plan (Alternative 3) has the potential to harm or kill 30 Indiana bats.²⁰ Thus, the Alternative 3 curtailment plan is expected to cut by more than half the take expected with the DHCP’s proposed minimization plan.²¹

The different estimates of effectiveness for the proposed curtailment plan (i.e., Alternative 2 in the DEIS) versus the plan in Alternative 3 can, in part, be explained by FWS’s inclusion, and BRE’s rejection, of the results of curtailment studies at Fowler Ridge, and by the longer nightly and seasonally active period of curtailment in Alternative 3. As discussed below, a fair reading of the best available science supports the FWS’s estimate that the Alternative 3 curtailment plan is likely to be significantly more effective for minimizing take of bats than the DHCP’s proposed plan.

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2. *The Best Available Science Reasonably Indicates that the DEIS’s Alternative 3 Can Minimize Take of Bats by About 28% More Than the Proposed Curtailment Plan.*

The DEIS’s and DHCP’s assessments of the likely differential effectiveness of raising cut-in speeds to different levels rely mainly on studies at two operating wind power facilities – Casselman and Fowler Ridge.²² (The Baerwald et al. 2009 study at a wind facility in Alberta,

¹⁷ See DHCP, p. 78 (“To avoid and minimize take of covered species, BRE proposes to adjust the turbine cut-in speed on all project turbines from 7.8 mph (3.5 m/s) to 10.7 mph (4.8 m/s) for a 12-week period between mid-July and mid-October each year and for the time of night commencing one-half hour before sunset for a period of five hours (BRE’s Curtailment Plan). BRE estimates that this avoidance and minimization strategy will reduce potential take by 50%[.]”; see also DEIS, p. 56.

¹⁸ DEIS, p. 64.

¹⁹ DEIS, p. 70.

²⁰ DEIS, p. 74.

²¹ Further, the DEIS anticipates that the curtailment to 6.9m/s cut-in speed under the modified stipulation approved by the District Court will reduce mortality of all bats by at least 76%. DEIS, p. 4.

²² 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*

Canada did not investigate more than one cut-in speed above the control, and so that study does not help resolve the uncertainty raised by the Casselman and Fowler Ridge studies about differential effectiveness.)²³ These experimental studies examined the relationship between increases in cut-in speed and reductions in bat mortality due to turbines. We contend that the results of these studies must be viewed in combination to arrive at the best available science.

Casselman Study

During 2 years of study during the peak fall fatality period at the Casselman, PA, wind facility, 12 turbines were randomly assigned each night 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. The analysis showed no difference between the number of bat fatalities for the two different cut-in speeds. Thus, the authors combined the results for the two cut-in speeds and estimated that total bat fatalities at fully operational turbines were on average 5.4 times greater than at curtailed turbines in 2008, and 3.6 times greater in 2009. In other words, 82% (95% confidence interval [CI] = 52% to 93%) of all fatalities at experimental turbines in 2008 and 72% (CI = 44% to 86%) in 2009 likely occurred when the turbines were fully operational.²⁴ A 2011 paper by Arnett et al. cited in the DEIS published the results of this 2010 study at the Casselman facility to the academic community.²⁵

Fowler Ridge Study 2010

A similar study was conducted at the Fowler Ridge, IN, wind facility in 2010.²⁶ 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

Farm, Benton County, Indiana, April 1 – October 31, 2011, A report prepared for Fowler Ridge Wind Farm (Jan. 31, 2012).

²³ See, e.g., DHCP, App. C at C-9, Table 2.1.

²⁴ Arnett et al. (2010).

²⁵ DEIS, p. 64, citing Arnett et al., *Altering turbine speed reduces bat mortality at wind energy facilities*, *Frontiers in Ecology and the Environment* 9: 209–214 (2011).

²⁶ Good et al. (2011).

was found to reduce mortality by about 78%²⁷ (90% CI = 71% to 85%). This difference in effect was statistically significant, as shown by the non-overlapping confidence intervals.²⁸

Fowler Ridge Study 2011

Good et al. conducted a follow-up study of cut-in speed at Fowler Ridge in 2011.²⁹ 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. The 2010 study had not used feathering and thus the turbines with raised cut-in speeds had blade tips rotating at 50 miles per hour or faster prior to reaching cut-in speeds, albeit at a reduced rate compared to control turbines. In the 2011 follow-up study, nine turbines were randomly selected from a sample of 36 cleared plots as a “control” sample and had 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. The treatment 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. Turbines were assigned to control and treatment groups among the 168 turbines on a nightly basis.

The results of the 2011 Fowler Ridge feathering experiment show that further reductions in bat fatality rates were realized by feathering blades below cut-in speeds, compared to simply raising cut-in speeds of turbines. Bat casualty rates were decreased by about 36%, 57%, and 73% in 2011 compared to control turbines when blades were feathered at 3.5 m/s, 4.5 m/s, and 5.5 m/s, respectively. Chi-square tests of proportions showed that decreases in observed bat fatality rates between control turbines with no feathering compared to feathered turbines was statistically significant ($p < 0.05$). Chi-square tests of proportions between successive treatment levels also showed significant decreases in fatality counts ($p < 0.05$). For comparison, in the 2010 study without feathering, curtailment at 5.0 m/s was found to reduce mortality by 50% and curtailment at 6.5 m/s was found to reduce mortality by 78.6%.

²⁷ The actual result is 78.6%, but Good et al. do not round up when explaining the results. See Good et al. (2011), at 39.

²⁸ See Good et al. (2011), at 39.

²⁹ 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).

A reasonable conclusion from this 2011 follow-up study, although it did not include the same cut-in speed treatments as the 2010 study and thus is not conclusive, is that feathering may have the potential to increase the reduction in mortality for cut-in speed 6.5 m/s even further than the 78.6% found in 2010.

Best Available Science

These studies by Arnett et al. and Good et al. appear to be the best available science to date on the effects of curtailing cut-in speeds of wind turbines on bat fatalities. Together, the results of these studies reasonably indicate that a cut-in speed of 6.5 m/s may produce a significantly larger reduction in bat fatalities compared to a cut-in speed of 4.8 m/s or 5.0 m/s.³⁰

(In addition, as discussed below in subsection 4, the best available science also reasonably indicates that curtailing turbines to a cut-in speed of 6.5 m/s should be implemented over the entire nightly active period.)

3. The DHCP's Rejection of the Fowler Ridge Study Results is Unwarranted.

The DHCP justifies its choice of the proposed curtailment plan by arguing that the Arnett et al. results of cut-in experiments at Casselman facility in Pennsylvania, which found no significant difference in impact on bats between the 5.0 m/s and 6.5 m/s cut-in speeds, apply to the Beech Ridge Project, but that the Good et al. results of cut-in experiments at Fowler Ridge facility in Indiana, which found a significant difference in impact on bats between the 5.0 m/s and 6.5 m/s cut-in speeds, do not apply to Beech Ridge.³¹ The DHCP reasons that the Project's size and energy capacity is substantially less than Fowler Ridge; the Good et al. 2010 study of cut-in speed at Fowler Ridge did not feather the treatment turbines below the cut-in speed; the land use and land cover at Fowler Ridge is unlike that at Beech Ridge, which is more like the land use and land cover at Casselman; and unlike Beech Ridge, Fowler Ridge is in the "heart" of the Indiana bat's range.³² Based on this reasoning, the DHCP appears to have concluded that raising the cut-in speed any higher than 4.8–5.0 m/s would cost more but produce no further

³⁰ Moreover, it is possible that a cut-in speed higher than 6.5 m/s may not significantly reduce impact to bats any further, but this has yet to be established.

³¹ DHCP, pp. 79–84; App. C at pp. C-8 to C-9.

³² DHCP, pp. 80–81.

reduction in take of bats, which is contrary to the findings of the Fowler Ridge study. This reasoning in the DHCP is faulty and is contrary to the best available science.

No Evidence That Land Use or Cover Influences Study Results

To begin with, there is no evidence presented in the DHCP that the four reasons referenced above would likely influence the differential effectiveness of 5.0 m/s versus 6.5 m/s cut-in speeds. Within-site studies of the effects of project size, land use, land cover, and topography are difficult because true replication of these factors is not possible within a site,³³ and these factors are often conflated. Moreover, a 2005 report by the GAO on the impacts of wind energy facilities on wildlife explained some of the limitations of comparing impacts across facilities:

A second important research gap is in understanding what factors increase the chances that turbines will be hazardous to wildlife. For example, it can be difficult to discern, among other things, how the number, location, and type of turbine; the number and type of species in an area; species behavior; topography; and weather affect mortality and why. Drawing conclusions about the degree of risk posed by certain factors—such as terrain, weather, or type of turbine—is difficult because sites differ in their combination of factors. For example, according to experts, data are inadequate about what turbine types are most hazardous and to what species. This is partly because most wind power facilities use only one turbine type. Therefore, even if one facility proved more hazardous than another, it would be difficult to attribute the difference to turbine type alone because other variables, such as topography or migratory patterns, are also likely to vary among the sites. Additionally, comparisons between studies are difficult because researchers may use different study methodologies.³⁴

Until a standardized design and methodology that controls for conflated factors is developed and used for cut-in experiments across projects and sites, the best available science does not support a conclusion that Beech Ridge should follow the Casselman results to the exclusion of the Fowler Ridge results.

³³ See, e.g., Hurlbert, *Pseudoreplication and the Design of Ecological Field Experiments*, Ecological Monographs 54: 187–211 (1984).

³⁴ Government Accountability Office (GAO) Report to Congressional Requesters, *Wind Power, Impacts on Wildlife and Government Responsibilities for Regulating Development and Protecting Wildlife*, GAO-05-906, Washington D.C. (2005), pp. 16–17.

Blade Feathering Does Not Explain Differences Between Study Results

Also, the fact that in the 2010 study at Fowler Ridge the turbine blades were not feathered does not support rejection of the Fowler Ridge results. The 2011 follow-up to the 2010 Fowler Ridge study indicates that feathering could increase the effectiveness of all cut-in speed treatments. The 2011 follow-up study, as discussed above, also suggests that feathering may have the potential to increase the reduction in mortality for cut-in speed 6.5 m/s even further than the 78.6% found in 2010. 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.

There Are More Likely Reasons for the Differences between the Arnett et al. and the Good et al. Results

Perhaps most notably, the dissimilar results of the two studies – i.e., treatment differences statistically non-significant at Casselman and significant at Fowler Ridge – can be equally well or better explained by factors other than project size, region, topography, land use and cover, or Indiana bat recovery unit. For example, Arnett et al. hypothesized that the lack of differentiation in the amount of time different cut-in speed treatments were in effect may explain in part why their Casselman study found no significant difference in bat fatalities between the two treatments.³⁵ Similarly, the lack of statistical significance in the Casselman study was explained in the draft HCP for the Buckeye wind project in Ohio as follows: “A difference in mortality can only be measureable when the wind speed is between the 2 operational treatments. Wind speeds at Casselman were not within this range for a long enough period of time to show a statistical difference, if one existed (M. Huso, Oregon State University, personal communication).”³⁶

The power to detect differences among treatments is related to the experimental design, the number of experimental turbines, the number of nights a treatment is in effect at each turbine, and, as just mentioned, the number of hours that wind speeds fall within the experimental speeds. It is thus entirely likely that the different results of the Casselman and Fowler Ridge cut-in

³⁵ Arnett et al. (2011), at 214.

³⁶ Meinke et al., *Indiana Bat Collision Risk Model for the Buckeye Wind Power Project, Champaign County, Ohio* (Dec. 2010), p. 19, fn. 4, Appendix A of the *Draft Buckeye Wind Power Project Habitat Conservation Plan* (June 2012) (FWS-R3-ES-2012-0036-0002_HCP).

experiments are due to differences in statistical power, as well as to different methods of statistical analysis and, of course, uncontrolled randomness.

Conclusion

The DHCP's rejection of the Fowler Ridge study results – a rejection which then allowed the DHCP to focus exclusively on the Casselman study results – is not based on a reasonable interpretation of the best available science. The best available science reasonably indicates that the Fowler Ridge study results, as published in Good et al. (2011 and 2012), reflect one of the possible outcomes at the Beech Ridge Project.

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4. *The DHCP's Proposed Abbreviation of the Nightly Period of Curtailment is Unwarranted.*

The DHCP's proposed curtailment plan adjusts cut-in speeds for only the first portion of the nightly activity period of Indiana bats. But the best available science does not support this proposal.

The Science Presented in the DHCP Does Not Support the Proposed Timing of Curtailment

The DHCP's interpretation of the science presented in the DHCP on nightly curtailment timing is unwarranted. A fair reading of the science presented in the DHCP shows that take of bats may be significantly reduced by extending the curtailment for the entire nightly active period, as Alternative 3 in the DEIS proposes. The discussion in the DHCP bears this out:

While it has been shown that impacts to bats are greater on nights with low wind speeds (Arnett et al. 2005; Young et al. 2009a, 2010), the variation in impacts to bats during the night is less understood. Nightly activity patterns of bats are variable, but activity is typically highest in the first few hours after sunset and tapers off during the remainder of the night (Hayes 1997; Arnett et al. 2005; Kunz 2004; Kunz and Lumsden 2003). Some studies have also shown increased bat activity in the hours preceding sunrise (Arnett et al. 2005). This nightly activity pattern suggests that exposure of bats to turbines is variable over a night. Horn et al. (2008) and Arnett et al. (2005) investigated the timing of nightly bat activity in relation to impacts from turbines through the use of thermal infrared video cameras. While their results confirmed typical bat activity patterns, the actual number of detected strikes with the infrared imagery was low (5 strikes from 10 turbines during 10 nights) (Horn et al. 2008), and patterns in impacts during a night were unclear. Five of the eight documented strikes reported in Arnett et al.

(2005) occurred within approximately five hours of sunset. The results of nightly activity patterns combined with results of studies showing the influence of weather patterns and seasonal variation on wind turbine-caused bat mortality suggest that there may be identifiable periods of elevated risk for collisions. Thus, bat mortality could potentially be reduced by focusing mitigation efforts on these periods.³⁷

Even if it is true that “activity is typically highest in the first few hours after sunset and tapers off during the remainder of the night” and that “there may be identifiable periods of elevated risk for collisions,” these findings cannot justify non-curtailment for the bulk of the nightly active period. The above excerpt goes on to say that “some studies have also shown increased bat activity in the hours preceding sunrise” and that “exposure of bats to turbines is variable over a night.” The excerpt also points out that “five of the eight documented strikes reported in Arnett et al. (2005) occurred within approximately five hours of sunset.” But that means that three – about one-third – of the eight strikes occurred *after* the five-hour period ended. Reducing one-third of the strikes would be a substantial addition to minimization of take.

A Study by Young et al (2011) Does Not Support the Proposal

Young et al. studied the effect of nightly curtailment period on bat mortality at the Mount Storm wind facility in northeast West Virginia.³⁸ The effect of restricting turbine rotation up to the 4 m/s cut-in speed for the first half of the night (approximately sunset plus 5 hours) was compared to restricting turbine rotation during the second half of the night (about sunrise minus 5 hours). Both of these treatment groups of turbines were compared to turbines that were allowed to operate under normal conditions. The turbine operations study was conducted during the 12-week fall study period, July 15-October 15. Twenty-four turbines were assigned to three groups of 8 turbines each. Each turbine group was rotated weekly between the following treatments (I, II, III), such that each group received each treatment for four weeks over the duration of the fall study period: I. Turbine rotation restricted for first half of the night (approximately 5 hours after sunset); II. Turbine rotation restricted for second half of the night (approximately 5 hours prior to sunrise); III. Control group: no change to normal turbine operations.

³⁷ DHCP, App. C at C-10 to C-11.

³⁸ Young et al., *NedPower Mount Storm Wind Energy Facility Post-Construction Avian and Bat Monitoring July - October 2010*, Prepared for: NedPower Mount Storm, LLC (Feb. 10, 2011).

Two different data analyses were performed. When the data analysis *included* nights when treatments were cancelled because the weather forecast was for wind speeds greater than 4.0 m/s, the following results were obtained. A total of 256 bat casualties were found during the study period. One-hundred and eleven bat casualties were found at turbines that were not curtailed (control turbines) during the turbine operations study nights, 59 bat casualties were found at turbines with rotation restricted during the first half of the night (treatment A), and 86 bat casualties were found at turbines with rotation restricted during the second half of the night (treatment B). This resulted in observed daily casualty rates and corresponding 90% bootstrap confidence intervals of 0.151 (0.114 – 0.187), 0.080 (0.052 – 0.109) and 0.117 (0.093 – 0.141) bats/turbine/study period for control, treatment A, and treatment B conditions, respectively. Disjoint confidence intervals for observed casualty rates under treatment A and control suggest a significant difference between casualties at turbines with rotation restricted during the first part of the night versus control turbines at a 0.10 alpha level. Overlapping confidence intervals for observed casualty rates under treatment B and control and between treatments A and B suggest that there was no significant difference at a 0.10 alpha level between casualties at turbines with rotation restricted during the second part of the night versus control turbines or treatment A turbines.

When the data analysis *excluded* nights when treatments were cancelled because the weather forecast was for wind speeds greater than 4.0 m/s (i.e., analysis included only those nights when turbine rotation was restricted), the following results were obtained. A total of 104 bat casualties were found during the study period on nights when the two treatments were in place. Fifty-nine of these bat casualties were found at the normally operating turbines (control turbines) during treatment nights, 16 bat casualties were found at turbines with rotation restricted during the first half of the night (treatment A), and 29 bat casualties were found at turbines with rotation restricted during second half of the night (treatment B). This resulted in observed daily casualty rates and corresponding 90% bootstrap confidence intervals of 0.18 (0.13 – 0.22), 0.05 (0.03 – 0.07), and 0.09 (0.06 – 0.12) bats/turbine/study period for control, treatment A, and treatment B conditions, respectively. Disjoint confidence intervals for observed casualty rates under each treatment suggest a significant difference between casualties at turbines with rotation restricted versus control turbines at a 0.10 alpha level.

For both analyses, restricting turbine rotation during the first half of the night reduced bat mortality by 47% and 72% respectively, which were significantly different than the control group (normally operating turbines). For the second half of the night, the reduction in bat mortality was not as great but still resulted in 22% and 50% reduction for the two analyses, respectively. These results indicate that at a 4.0 m/s cut-in speed, blade feathering is generally less effective during the second half of the night than during the first half, but feathering during the second half still reduces bat mortality substantially compared with unfeathered blades.

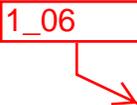
Conclusion

Considering the above available science in combination, we can reasonably conclude the following: (1) activity levels of bats from just before sundown to just after sunrise is to some extent uncertain and may exhibit a decreasing trend over the course of the night; (2) although blade feathering may be somewhat less effective during the second half of the night, blade feathering during the second half still reduces bat mortality substantially compared with unfeathered blades. Thus, the DHCP's proposal to return turbines to non-curtailed operations (i.e., not applying increased cut-in speed) after 5 hours is unwarranted by the science, and this proposal is likely to be less effective at minimizing take of bats than an alternative plan that curtails the turbines for the entire nightly active period.

5. Legal Implications

The above results and analyses reasonably indicate that a curtailment plan with a cut-in speed of 6.5 m/s over the entire nightly active period is more likely to minimize the take of Indiana bats and Virginia big-eared bats than the proposed curtailment plan with a cut-in speed of 4.8 m/s for only the first 5 hours of the night. The legal implication of this conclusion is that the proposed curtailment plan is not likely to satisfy the ESA's ITP issuance criteria. Since an applicant for an ITP must minimize the impact of take to the maximum extent practicable in order to obtain a permit, choosing a minimization plan that is reasonably likely to be less effective at reducing take than an alternative minimization plan will fail the permit issuance criteria, unless (and this is discussed below) the applicant can show that the more effective alternative is "impracticable." The DHCP is indeed proposing a minimization plan that is

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reasonably likely to be *less* effective at reducing take than an alternative minimization plan (e.g., Alternative 3 in the DEIS).

This is what happened in *Gerber v. Norton*, 294 F.3d 173 (D.C. Cir. 2002). In *Gerber*, FWS issued to a residential developer an ITP for an endangered squirrel. The agency had found that there was an alternative minimization plan (involving moving a road) that “would reduce the likelihood of take” of the squirrels, but the developer rejected this alternative for another that was not as effective in minimizing take, and FWS nonetheless issued the permit. The Court stated, “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.”³⁹ For the Beech Ridge Project, FWS’s approval of the DHCP’s proposed minimization plan would require a finding by the agency that the Alternative 3 curtailment plan and other alternatives that use a cut-in speed of 6.5 m/s and a full night of curtailment are impracticable.⁴⁰

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D. The Apparent Method By Which the DHCP Arrives at the Proposed Curtailment Plan Is Unlikely To, and Does Not, Minimize the Impact of Take to the Maximum Extent Practicable.

When the DHCP and its justifications for the proposed curtailment plan are viewed as a whole, it appears that the DHCP arrives at its proposed curtailment plan by seeking out the most “cost-effective”⁴¹ measures that target periods of peak bat activity.⁴² This method of analysis is unlikely to minimize the impact of take to the maximum extent practicable because it does not effectively identify a measure that the best available science reasonably indicates will minimize take. We now discuss the main problems with the DHCP’s apparent method for developing the proposed “minimization” plan.

³⁹ *Gerber*, 294 F.3d at 185.

⁴⁰ See also FWS, *HCP/ITP Handbook*, pp. 7-3 to 7-4.

⁴¹ See, e.g., DHCP, p. 83 (referring to plan to initially implement cut-in speed of 4.8 m/s and partial-night curtailment in effort to achieve biological goals and objectives of the HCP “in a cost-effective manner”); p. 91 (surmising that proposed curtailment plan should reduce bat fatalities “in a cost-effective manner”); p. C-9, Table 2.1 (referring to cut-in speed of 5.0 m/s as “most cost-effective way to reduce bat mortalities at a wind farm.”).

⁴² See, e.g., DHCP, App. C at C-11 (referring to targeting periods of peak bat activity in justifying an abbreviated nightly active period for curtailment).

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1. *Cost-Effectiveness is a Problematic Method for Selecting Plans Meeting ESA Requirements.*

Congress said in the ESA that to obtain an ITP the applicant has to minimize and mitigate the impact of take to the maximum extent practicable. Using cost-effectiveness as the standard for developing minimization (or mitigation) measures, which appears to be the direction the DHCP is moving in, could lead to the wrong results. Seeking a “cost-effective” plan means one of three things: (1) for a given cost, choose the most effective measure; (2) for a given level of effectiveness, choose the least-cost measure; or (3) examine the cost-effectiveness curve and choose a measure where the curve bends. The first option is impermissible in the context of the ITP issuance criteria unless the given cost is at the boundary of what is practicable, such that any significantly more effective measure is impracticable (the applicant would have to show how the boundary of practicability is determined on the cost axis). The second option is impermissible unless the given level of effectiveness is the level that is reasonably indicated by the best available science to minimize the impact of take to the maximum extent practicable. The third option – i.e. choosing the proposed measure based on inflection in the cost-effectiveness curve – is impermissible.

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2. *The DHCP’s Use of a “Rationally Related to Take” Standard is Unwarranted.*

The DHCP states that reducing estimated take of covered species by 50% after 3 years of the ITP is “rationally related” to the impact of the take that may occur under the plan: “Furthermore, the proposed level of avoidance and minimization measures are rationally related to the impact of the take (estimated to be between 0 and 70.0 Indiana bats over the 25-year term of the ITP after implementation of avoidance measures)[.]”⁴³ The DHCP seems to argue that a 50% reduction in take to an expected level of 70 Indiana bats for the permit term is enough because the overall amount of take of the listed bats expected is not so high.

Even if a court were to agree that a “rationally related to expected take” standard applies to the “minimize to the maximum extent practicable” requirement, **the DHCP does not explain why implementing a “minimization” plan expected to reduce take by 50%, and starting only in**

⁴³ DHCP, pp. 83–84; *see also* p. 91 (“Ultimately, the level of mitigation provided in an HCP must be reasonably capable of being undertaken, and both commensurate and rationally related to the level of take under the plan,” citing *National Wildlife Federation v. Norton*, 306 F.Supp.2d 920 (E.D. Cal. 2004)).

the fourth year of the ITP, is more rationally related to an expected take of 5 Indiana bats per year than would be an alternative curtailment plan that is expected to reduce take by 76% (e.g., Alternative 3). If only 1 or 2 bats were expected to be taken by the Project over its permit term, then the situation might be different; in that case the agency might determine the practicability of the alternatives by weighing that take estimate with the relative costs of the alternatives in light of BRE's resources and financial ability. But the magnitude of take contemplated for the Project is not *de minimis* and involves multiple species. Once we are beyond *de minimis* take, it becomes much more difficult to say whether a particular level of take is or is not worth minimizing further.⁴⁴ Thus, it is no wonder that the DHCP does not explain why the proposed curtailment plan is more "rationally related" to the expected take than would be an alternative curtailment plan such as Alternative 3.

The apparent source of the DHCP's use of the standard "rationally related to the level of take" – *National Wildlife Federation v. Norton*, 306 F.Supp.2d 920 (E.D. Cal. 2004)⁴⁵ is consistent with our view outlined above. In *NWF*, the plaintiffs challenged the issuance of an ITP for the proposed Metro Air Park development in part on the contention that the required *mitigation* was not the maximum practicable.⁴⁶ The plan had provided for habitat acquisition to mitigate habitat lost to development – for every acre of land developed, half an acre of habitat would be permanently protected off-site.⁴⁷ According to the court, the plaintiffs had argued incorrectly that where the development of land on-site is mitigated through the purchase and set-aside of land off-site, the mitigate to the maximum extent practicable requirement means that the plan must require the purchase of as much mitigation land as the particular developer possibly could afford while still going forward with the development. The court noted that FWS's approach to the "mitigate to the maximum extent practicable" requirement looks to whether the mitigation is "rationally related to the level of take under the plan."⁴⁸ The court thus rejected the plaintiffs' interpretation of the permit issuance criterion in the context of mitigation.

⁴⁴ The effect of the take on population viability is not a proper standard for the practicability determination – that consideration is a separate ITP issuance criterion under the ESA.

⁴⁵ Cited in DHCP, p. 91.

⁴⁶ *NWF*, 306 F.Supp.2d at 921.

⁴⁷ *NWF*, 306 F.Supp.2d at 922.

⁴⁸ *NWF*, 306 F.Supp.2d at 927–28.

The Service's view of the statutory language as requiring that the level of *mitigation* must be "rationally related to the level of take under the plan" is entirely reasonable and avoids absurd results. FN14 It also avoids unduly enmeshing the Service in developers' economic affairs and projections.

FN14. Under plaintiffs' interpretation, a permit that allows disturbance of one acre of Giant Garter Snake habitat could require the developer to create and manage one thousand acres of replacement habitat if that was the maximum the developer could afford.

Using this construction of the statute, the Service made a finding that "the level of *mitigation* provided for in the [Plan] more than *compensates* for the impacts of take that will occur under the plan." (AR 7140.) Based on such a finding, the Service was under no obligation to inquire whether additional mitigation was financially possible. All that was reasonably required to mitigate had been included in the Plan.⁴⁹

It is important that the *NWF* court's ruling and approval of a "rationally related to the level of take" standard was directed at and applied to compensatory mitigation, not to minimization. The *NWF* court's approach to what is practicable mitigation makes sense in the context of mitigation. Since the task of mitigation is to compensate for the level of "unavoidable" take that could not be minimized, the mitigation required should be commensurate with that level of "unavoidable" take and the permittee should not be asked to compensate for more than that level.

The *NWF* court's approach to what is practicable *mitigation* does not, however, make sense in the context of *minimization*, which must come before mitigation. Mitigation, in a sense, cleans up what remains after minimization. FWS has stated that an "applicant must first minimize to the maximum extent practicable" before he or she mitigates.⁵⁰ FWS guidance also states,

[T]he impacts of the proposed project, including the HCP, which were not eliminated through informal negotiation *must be minimized to the maximum extent practicable and those remaining impacts that cannot be further minimized must be mitigated to the maximum extent practicable*. These standards are based in a biological determination of the impacts of the project as proposed, *what would*

⁴⁹ *NWF*, 306 F.Supp.2d at 928–29 (emphasis added).

⁵⁰ FWS, *Wind Energy Project Guidance*, p. 47 (emphasis added).

*further minimize those impacts, and then what would biologically mitigate or compensate for those remaining biological impacts.*⁵¹

With respect to the Beech Ridge Project specifically, FWS has stated,

The HCP's proposed conservation strategy is designed to avoid, minimize, and mitigate the impacts of covered activities on the covered species. The biological goals and objectives are to (1) significantly minimize mortality of all bat species consistent with the best available scientific information; (2) *avoid and minimize take* of covered species by implementing turbine operational protocols learned through a research and adaptive management strategy; and (3) *mitigate unavoidable impacts* to covered species by implementing habitat protection or restoration measures in key habitats for both species.⁵²

Whereas a particular amount of mitigation can be deemed adequate if it compensates for remaining "unavoidable" impact, the amount of minimization needed has no such natural cap. Ideally, take of listed bats would be minimized to a *de minimis* level if that could be reasonably accomplished. For minimization alternatives, the important factors for determining the practicability of an alternative include the existing technology and the costs of the alternative in relation to the resources and financial ability of the applicant.⁵³ When take is above *de minimis*, the "rational relationship" between minimization measures and expected take is not one of those factors.

3. *The DHCP Has Not Shown That Further Curtailment is Impracticable.*

Notably, the DHCP has not shown that the Alternative 3 curtailment plan, or any other alternative that uses a cut-in speed of 6.5 m/s over the full night, is impracticable. Data on the costs of measures are not alone sufficient to determine practicability; costs must be viewed in relation to the resources and financial ability of the applicant. Some evidence suggests that alternatives with 6.5 m/s cut-in speed are 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 treatment, "[l]ost power production resulting from [their] experimental treatments was markedly low when considering

⁵¹ FWS, *Wind Energy Project Guidance*, p. 47 (emphasis added).

⁵² 77 Fed. Reg. 51554, 51555 (August 24, 2012) (emphasis added).

⁵³ This view is supported by *Gerber v. Norton*, 294 F.3d 173 (D.C. Cir. 2002) (ruling that "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.").

total annual productivity[.]”⁵⁴ In addition, Table 3-1 in the DEIS compared the estimated energy capacity with curtailment for the proposed plan in Alternative 2 and the more complete plan in Alternative 3: estimated capacity is up to 1,542,000 MWh/year for Alternative 2 versus up to 1,184,000 MWh/year for Alternative 3.⁵⁵ Whether or not these latter data indicate that alternatives other than the proposed curtailment plan are impracticable has not yet been properly analyzed and presented by BRE.

4. Conclusion

A sequence of considerations that would be more likely than the method used in the DHCP to lead to an operational plan that minimizes the impacts of take to the maximum extent practicable is as follows:

- 1_12 • Determine the set of measures that the best available science reasonably indicates can avoid and minimize take to the maximum extent (for this Project the set of measures that satisfy this step are a cut-in speed of 6.5 m/s with turbine feathering below that wind speed, from 30 minutes before sunset through 15 minutes after sunrise, during the period from April 1 through October 15);
- 1_13 • Determine whether those measures are practicable, and justify the decision based on FWS’s guidance;
- 1_14 • If and only if that set of measures is shown to be impracticable, select and analyze another alternative that is most likely to produce similar reductions in take but that is practicable (e.g., cut-in speed of 6.5 m/s with feathering for the summer and fall seasons only).

1_15 **E. BRE Cannot Rely on Adaptive Management to Satisfy the “Minimize to the Maximum Extent Practicable” Standard, Especially Since Practicable Measures Reasonably Expected to Minimize Take are Immediately Available.**

1. The Role of Adaptive Management in an HCP

Adaptive management may be implemented as part of an HCP for several reasons: (1) to determine whether implemented minimization and mitigation measures are as effective as

⁵⁴ Arnett et al. (2011), at 213–214.

⁵⁵ DEIS, p. 37.

predicted and to modify the measures if not; (2) to resolve a specific uncertainty about the effectiveness of planned minimization and mitigation measures; (3) to determine the potential effects of the activity on the species covered in the HCP/ITP; and (4) to test hypotheses about the relative effectiveness or feasibility of measures that are not planned but which may be as effective as planned measures. Especially for the third and fourth uses of adaptive management, experiments must not pose too much risk to the covered species.⁵⁶

Every adaptive management plan should begin with identifying the key uncertainties and the questions that need to be addressed to resolve the uncertainties. “Identifying the uncertainty to be addressed is the foundation of the adaptive management strategy.”⁵⁷ A second 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.⁵⁸ Specifically, adaptive management cannot use uncertainty as a justification for holding back measures that are reasonably indicated by the best available science to minimize and mitigate the impact of take to the maximum extent practicable. This view is supported by *Greater Yellowstone Coalition, Inc. v. Servheen*. In *Greater Yellowstone* the court addressed the agency’s plan to remove the grizzly bear population from the threatened species list in the face of substantial uncertainties about the impact of whitebark pine declines. The agency decided to rely on monitoring and adaptive management rather than ensure that the applicable ESA standards were satisfied. The court stated, “Just as it is not enough simply to invoke ‘scientific uncertainty’ to justify an agency action, it is not enough to invoke ‘adaptive management’ as an answer to scientific uncertainty.”⁵⁹

1_16



2. The Legal Deficiency of the DHCP Research and Adaptive Management Plan

The research and adaptive management plan in the DHCP violates the above principles. The plan misidentifies the key uncertainty that needs to be addressed, and it attempts to substitute for a showing of reasonable certainty that the substantive criteria will be met. For

⁵⁶ 65 Fed. Reg. 35242, 35252, *Final Addendum to the Handbook for Habitat Conservation Planning and Incidental Take Permitting Process* (June 1, 2000) (“HCP/ITP Handbook Addendum”).

⁵⁷ FWS, *HCP/ITP Handbook Addendum*, 65 Fed. Reg. at 35252.

⁵⁸ Ruhl & Fischman, *Adaptive Management in the Courts*, 95 Minn. L.Rev. 424, 472 (2010).

⁵⁹ *Greater Yellowstone Coalition, Inc. v. Servheen*, 665 F.3d 1015, 1028–29 (9th Cir. 2011).

these reasons the research and adaptive management plan is fatally flawed as it is currently proposed.

The DHCP's Proposed Research and Adaptive Management Plan

The research and adaptive management plan presented in the DHCP has the following major components.

1. The Curtailment Plan:

- a. For non-experimental turbines set the cut-in speed to 4.8 m/s instead of the 5.0 m/s used in Arnett et al. 2010 “to determine if similar reductions in bat fatalities can be achieved at the Project site while allowing the generation of more wind-generated electricity,” from 30 minutes before sunset to 4.5 hours after sunset, from July 22 to October 13.⁶⁰ This Plan is the baseline proposed to satisfy the “minimize to the maximum extent practicable” standard. Sixty-seven wind turbines have been constructed and are operational. BRE proposes to construct and operate up to additional 33 turbines. The Project will thus run 100 turbines at full capacity.

2. The Research Plan:

- a. “All of BRE’s research turbines (control and treatment) will be fully feathered below cut-in speed.”⁶¹
- b. Year 1: “To verify the minimization benefits of the Curtailment Plan, during Year 1 of the ITP, BRE will implement an experimental design under which ten turbines will operate at full capacity year-round, ten turbines will be curtailed for the whole night for 12 weeks from mid-July to mid-October, and remaining turbines will be operating at 10.8 mph (4.8 m/s) cut in speed beginning 0.5 hour before sunset for a period of five hours (i.e., under BRE’s Curtailment Plan—see the RMAMP for details).”⁶² “Thirty turbines [out of 67 operational turbines] will be included in the Year 1 research study. For each night, these 30 turbines will be randomly assigned to one of the following: I. Cut-in speed increased to 4.8 m/s from 0.5 hour before sunset to 0.25 hour after sunrise) (entire night). II. Cut-in speed increased to 4.8 m/s from 0.5 hour before sunset for a period of five hours. III. Cut-in speed of 3.5 m/s 24 hours per day.”⁶³
- c. Years 2–3: “Protocols to be tested during Years 2 and 3 of the ITP will be determined in consultation with FWS and WVDNR after consideration of results from Years 1 and 2 of the ITP, respectively.”⁶⁴ “In Years 2-3 of the ITP, BRE will refine and implement turbine operational protocols that achieve or exceed the predicted minimization targets and meet the biological goals and objectives

⁶⁰ DHCP, p. 78; App. C at C-11.

⁶¹ DHCP, App. C at C-11.

⁶² DHCP, p. 83.

⁶³ DHCP, App. C at C-12.

⁶⁴ DHCP, App. C at C-11.

described in Section 5.0. Under this approach, by Year 4 of the ITP and for the remainder of the ITP, the estimated annual take should be reduced to 2.5 or fewer Indiana bats per year.⁶⁵

- d. Thus, during the first year of operation under the ITP at least, 37 non-experimental turbines and 10 experimental turbines will be run with the Curtailment Plan specifications, and 10 experimental turbines will be run with no curtailment (i.e., 3.5 m/s cut-in speed 24 hours per day).

3. The Adaptive Management Plan

- a. Monitoring for Take: “Under intensive and annual monitoring, if take of covered species is detected, an adjusted fatality estimate will be developed using the fatality estimator(s) described above and compared against authorized take to determine if the permitted take limit has been exceeded and/or if changed circumstances exist. If, after Year 3, significant increases (i.e., greater than the 90% confidence interval determined during baseline monitoring; see thresholds presented below) in overall bat mortality are observed when compared to the first three years, then BRE will conduct intensive monitoring in the subsequent year to determine if take of covered species may be exceeded and if changes in mitigation strategies may be warranted.”⁶⁶
- b. Take of Indiana Bat: “BRE is requesting authorized take of an aggregate of 70.0 Indiana bats over the permit term, in which case BRE will not be out of compliance with the permit unless 70 Indiana bats are taken based on adjusted fatality estimates. However, given that bat mortality will undoubtedly vary during the permit term, two thresholds will trigger a meet and confer with FWS: 1) if, in any given year, Indiana bat fatality estimates exceed 5.0 or 2) if, for three consecutive years, all bat fatality estimates exceed baseline all bat fatalities by more than the 90% confidence interval. Through this process, BRE will intensively evaluate geographic areas of the site containing the fatalities, including seasonal and temporal presence of the fatalities, and *it will develop turbine-specific operational protocols to reduce take in these areas.*”⁶⁷
- c. Take of Virginia Big-eared Bat: “BRE estimates that up to 1.0 Virginia big-eared bat may be taken on an annual basis by the Project without implementation of operational protocols contained in the HCP. BRE believes that take of Virginia big-eared bats may be reduced to 0.5 individual per year, for a total estimated take of up to 14.0 Virginia big-eared bats over the 25-year term of the ITP (1 x 3 years + 0.5 x 22 years = 14). BRE is requesting authorized take of an aggregate of 14.0 Virginia big-eared bats over the permit term, in which case BRE will not be out of compliance with the permit unless 14 Virginia big-eared bats are taken. However, given that bat mortality will undoubtedly vary during the permit term, two thresholds will trigger a meet and confer with FWS: 1) if, in any

⁶⁵ DHCP, p. 83.

⁶⁶ DHCP, App. C at C-34.

⁶⁷ DHCP, App. C at C-34.

- given year, Virginia big-eared bat fatality estimates exceed 1.0 or 2) if, for three consecutive years, all bat fatality estimates exceed baseline all bat fatalities by more than the 90% confidence interval. Through this process, BRE will intensively evaluate geographic areas of the site containing the fatalities, including seasonal and temporal presence of the fatalities, and it *will develop turbine-specific operational protocols to reduce take in these areas.*"⁶⁸
- d. If Take Below Expected: "If, as a result of the turbine cut-in speed adjustments, *the actual amount of take is estimated to be at or below 2.5 Indiana bats and 0.5 Virginia big-eared bat at the end of Year 1 of the ITP and BRE has developed successful operational protocols to reduce the overall bat mortality at the Project by 50% or more relative to baseline levels, then operational protocols established by BRE through research and monitoring in Year 1 of the ITP will continue for a second year to verify their effectiveness. Thereafter, if established operational protocols established remain effective during Years 2 and 3 of the ITP, then those protocols will remain in place for the term of the ITP except as either modified below or as modified with the agreement of both FWS and BRE. In no case will such modified operational protocols result in less protection for covered species than those set forth in Section 5.0 of the HCP (i.e., if BRE's Curtailment Plan successfully reduces bat mortality to levels that exceed expectations, BRE agrees to maintain the 10.7 mph (4.8 m/s) cut-in speed and partial-night curtailment for the duration of the ITP).*"⁶⁹
- e. If Take Above Expected: "In the event that the amount of take (adjusted fatalities) *exceeds 2.5 Indiana bats or 0.5 Virginia big-eared bat at the end of Years 1 or 2 of the ITP or the overall bat mortality has not been reduced by 50% relative to baseline levels, then information gained from research will be used to develop new or adjusted turbine operational protocols in Years 2 or 3 of the ITP to achieve biological goals and objectives. Such new or adjusted turbine operational protocols be the same as or will exceed BRE's Curtailment Plan.*"⁷⁰

The DHCP's Proposed Research Plan and Adaptive Management Plan Locks In a Curtailment Regime That the Best Available Science Indicates Is Sub-Par and Does Not Minimize the Impact of Take to the Maximum Extent Practicable.

The DHCP's proposed Research, Monitoring, and Adaptive Management Plan ("RMAMP") runs afoul of the ESA because it begins with the following faulty assumptions – (1) that the best science on the benefits of raising cut-in speed relevant to the Project is the Arnett et

⁶⁸ DHCP, App. C at C-35.

⁶⁹ DHCP, App. C at C-35 to C-36.

⁷⁰ DHCP, App. C at C-36.

al. Casselman study alone (which did not find a significant difference between the effects of 5.0 m/s and 6.5 m/s); (2) that 5.0 m/s cut-in speed minimizes the take of bats and that higher cut-in speeds add nothing of significance; and (3) that curtailment during the second half of the night does not minimize take further than curtailment for the first 5 hours. These assumptions are the basis of the proposed curtailment plan as well as the RMAMP. We have challenged these assumptions above in the context of the proposed curtailment plan and contend that these assumptions do not comport with the best available science and, as a result, the DHCP plans do not minimize the impact of take to the maximum extent practicable. The effect of the proposed RMAMP is to lock in these faulty assumptions about the Fowler Ridge studies and the effects of cut-in speed for the entire term of the permit.

Even if the proposed take of 70 Indiana bats and 14 Virginia big-eared bats is not exceeded, the proposed RMAMP ensures that the turbines would be operated over the permit term according to specifications that the best science reasonably indicates *do not* minimize take. Under that condition, the anticipated take is not the minimized take. Moreover, the research plan does not identify or seek to resolve the key uncertainties posed by the studies of the effect of cut-in speed on bat mortality. A key uncertainty here is whether the Fowler Ridge results (significant difference in effectiveness of 5.0 and 6.5 m/s cut-in speed) or the Casselman results (no significant difference in effectiveness of 5.0 and 6.5 m/s cut-in speed) better predict the outcomes that can be achieved at Beech Ridge. But the proposed RMAMP cannot reduce that uncertainty. The only potential bright spot in the research plan is the proposed experiment in Year 1 to determine whether a full night of curtailment is more effective than the proposed 5 hours per night, but even in that proposal 57 of the 67 operating turbines would be on the 5-hour regime, which the best science says does not minimize take of bats. The Year 1 research plan may thus pose unnecessary risk to the covered species and be incompatible with the ITP issuance criteria.

The solution is three-fold. First, the HCP should recognize and acknowledge that the best available science points to a baseline curtailment regime for all 100 turbines of 6.5 m/s cut-in speed with blade feathering, from 30 minutes before sunset through 15 minutes after sunrise,

during the entire active seasons. This scheme is essentially the curtailment plan in the DEIS's Alternative 3.⁷¹

1_17

Second, this baseline operational regime would be the starting point for the research and adaptive management plan. The triggers and processes of the RMAMP would be based on this baseline operational regime. If monitoring over the first 3 years of the ITP shows that the anticipated result of this curtailment regime – i.e., 76% to 78.6% reduction in bat fatalities – is satisfied, then BRE may experiment with *incrementally* lower cut-in speeds and shorter nightly and seasonal curtailment periods using a subset of the turbines. Such experiments can help determine if the same effectiveness can be achieved at lower cost. Care must be taken, however, that the experimentation is not likely to unduly compromise the reductions produced by the initial baseline measures. This research scheme is similar to the research plan called for in the DEIS's Alternative 3.

1_18

Third, the adaptive management plan should contain triggers and specific modifications to the curtailment regime if roosting or maternity sites are newly identified. The Indiana bat draft recovery plan notes that “[b]ecause maternity colonies are widely dispersed during the summer and difficult to locate, all the combined summer survey efforts have found only a fraction of the maternity colonies presumed to exist based on the rangewide population estimates derived from winter hibernacula surveys. . . . Regardless of reasonable disagreements regarding the average colony size, the geographic locations of the majority of Indiana bat maternity colonies remain unknown.”⁷² Thus, the adaptive management plan and the changed

1_18

circumstances provisions should provide for locating previously unobserved roosting sites and maternity colonies within commuting distance of the Project and provide for specific modifications over and above the baseline minimization and mitigation plans if any are found.

An important role of adaptive management is to resolve key uncertainties while satisfying statutory and regulatory standards. Uncertainty and adaptive management may not be used as a justification for holding back measures that are reasonably indicated by the best available science to minimize take until less-effective measures prove to be “insufficient.” The DHCP does the latter. Our suggested scheme would do the former.

⁷¹ See DEIS, pp. 63–64.

⁷² FWS, *Indiana Bat Draft Recovery Plan, First Revision* (April 2007), p. 27.

2
ALTERNATIVES

DEIS/NEPA

1_19
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COMMENT 2.1.

THE ALTERNATIVES STUDIED IN THE DEIS DO NOT CONSTITUTE A REASONABLE RANGE OF ALTERNATIVES.

A Background

An EIS must “[r]igorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.”⁷³ Consideration of alternatives is “the heart of the environmental impact statement.”⁷⁴ The stated goal of a project dictates the range of “reasonable” alternatives. Courts begin their evaluation of the alternatives by determining whether or not the Purpose and Need Statement is reasonable and then evaluating whether the range of alternatives based on the purposes and needs is reasonable.⁷⁵

Courts use a “rule of reason” in reviewing an EIS’s range of alternatives. Under the rule of reason, an EIS need not consider an infinite range of alternatives. The agency is not required to undertake a separate analysis of alternatives which are not significantly distinguishable from alternatives actually considered, have substantially similar consequences, or constitute remote and speculative alternatives. That said, an EIS must consider reasonable or feasible and non-duplicative alternatives. The existence of a viable but unexamined alternative renders an EIS inadequate.⁷⁶ Indeed, the agency has a duty to study all alternatives that appear reasonable and appropriate for study, as well as significant alternatives suggested by other agencies or the public during the comment period.⁷⁷ The touchstone for the inquiry into the range of alternatives is whether an EIS’s selection and discussion of alternatives fosters informed decision-making and informed public participation.⁷⁸ Although the number of options the agency must consider is

⁷³ 40 C.F.R. § 1502.14(a).

⁷⁴ 40 C.F.R. § 1502.14.

⁷⁵ *Westlands Water Dist. v. U.S. Dept. of Interior*, 376 F.3d 853, 865 (9th Cir. 2004); *Simmons v. U.S. Army Corps of Engineers*, 120 F.3d 664, 666, 670 (7th Cir. 1997).

⁷⁶ *Westlands Water Dist.*, 376 F.3d at 868; *Dubois v. U.S. Dept. of Agriculture*, 102 F.3d 1273, 1287 (1st Cir. 1996).

⁷⁷ *Dubois*, 102 F.3d at 1287.

⁷⁸ *Westlands Water Dist.*, 376 F. 3d 868.

“bounded by some notion of feasibility,”⁷⁹ it “may not limit itself to only one end of the spectrum of possibilities.”⁸⁰ Courts have held that “the evaluation of alternatives is to be an evaluation of alternative means to accomplish the general goal of an action.”⁸¹

The implications of granting BRE an ITP for Indiana bats and Virginia big-eared bats are significant for future wind project development. This HCP could potentially set the standard for avoidance, mitigation, and monitoring techniques as well as provide an opportunity to improve research and data collection on interactions of bats and birds with wind turbines.

B. The DEIS’s Set of Alternatives Does Not Allow for Informed Decision Making.

Under NEPA, an agency’s statement of purpose and needs is important both for context and “to provide the framework in which ‘reasonable alternatives’ to the proposed action will be identified.”⁸² FWS’s guidelines define purpose as “a goal or end to be obtained” and needs as “a lack of something required, desirable, or useful.”⁸³ The definition of needs further elaborates that “[n]eeds help define and design alternatives.”⁸⁴

In the context of BRE’s permit application, the DEIS’s goal is to “conserve the Indiana bat and Virginia big-eared bat and their habitats in the Project area and region for the continuing benefit of the people of the United States.”⁸⁵ This broad statement of purpose and need allows for the consideration of a wide range of alternative project designs, siting, operations, mitigation schemes, and adaptive management programs.

The considered set of alternatives in the DEIS omits reasonable and feasible alternatives that the best available science shows can better meet the DEIS’s purposes and needs of protecting Indiana bats, Virginia big-eared bats, and their habitats. The differences between the

⁷⁹ Vermont Yankee Nuclear Power Corp. v. NRDC, 435 U.S. 519, 551 (1978).

⁸⁰ Oceana, Inc. v. Evans, 384 F. Supp. 2d 203, 240 (D.D.C. 2005); *see also* Sierra Club v. Watkins, 808 F. Supp. 852, 872 (D.D.C. 1991); 46 Fed. Reg. 18026 (1981) (Forty Most Asked Questions Concerning CEQ’s National Environmental Policy Act Regulations).

⁸¹ Simmons v. U.S. Army Corps of Engineers, 120 F.3d 664, 669 (7th Cir. 1997) (quoting Van Abbema v. Fornell, 807 F.3d 633, 638 (7th Cir. 1986)).

⁸² CEQ, *Exchange of Letters with Secretary of Transportation: Purpose and Need*, May 2003, Part 2, available at <http://ceq.hss.doe.gov/nepa/regs/CEQPurpose2.pdf>.

⁸³ USFWS, *Draft Fish and Wildlife Service Manual*, 550 FW 2.4(A)(1), available at <http://www.fws.gov/r9esnepa/550FW/550-final.fwn.pdf>.

⁸⁴ *Id.* at 550 FW 2.4(A)(2).

⁸⁵ DEIS, p. 31.

1_20

DEIS's alternatives are rooted in several categories of operational variables: seasonal period (spring/summer/fall), nightly period (curtailment at night versus day, and at various times during the night), mechanical changes (cut-in speed, blade feathering), and turbine number (67 versus 100 turbines). While we agree with the incorporation and analysis of each of these categories, the DEIS evaluates a set of alternatives with such different combinations of operational variables that the comparison is rendered non-useful. Because each alternative incorporates different seasonal, nightly, mechanical, and numerical modifications, it is difficult to assess the impact of each alternative relative to the others and does not provide a full range of reasonable alternatives that can lead to a reasoned decision. What is needed are other alternatives that vary one category of variable at a time.

To illustrate, the only two alternatives that are the same in every category of operational variables except one are Alternative 2 and Alternative 4. The key variable that is different is the number of turbines. All other variables are the same: turbines are feathered at 2 rpm, cut-in speeds are set at 4.8 m/s, cut-in speeds apply from 30 minutes before sunset for 5 hours, and restrictions apply from July 22 to October 13. The comparison between the two alternatives is thus informative. We can assess how an additional 33 turbines, with all other variables being equal, affects the environmental impact. But a comparison of either of these alternatives with Alternatives 1 or 3 is rendered uninformative as a result of the variation across multiple categories of variables. Between Alternative 2 and Alternative 3, for example, the number of turbines is the same but the number of covered species is different, the cut-in speed increases to 6.5 m/s, the length of time that restrictions are in effect increases to April 1 through October 15, and nighttime operational restrictions last for the full night rather than only for 4.5 hours after sunset. It is already difficult to understand the additional risk bat species face if nighttime operations last for only 4.5 hours after sunset versus if restrictions last until just after sunrise. Add to that 3 months of unrestricted operations (April to July) and we lose even more of the value of the comparison. With so many variables varying at the same time, it is impossible to appreciate the difference between the two alternative scenarios and, thus, how the comparison will further informed decision making.

We recommend that the EIS include alternatives that reflect differences in one category of variable at a time. This method would not produce duplicative alternatives, given that each

category of variable has significant effects on risk of take. Where a variable that presents a certain risk is modified by itself, it yields an understanding for how to best minimize take and destructive impact.

At a minimum, the following two reasonable and feasible alternatives should be added to the EIS as they represent scenarios that better fit the best available science for minimizing impacts to Indiana bats and Virginia big-eared bats.

1_21

1. ***The EIS Should Study an Alternative that Reflects the Terms of the Modified Stipulation Agreement.***

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First, the EIS should assess the seasonal and operational alternative in place under the Modified Stipulation Agreement – that is, a cut-in speed of 6.9 m/s from 30 minutes before sunset to 15 minutes after sunrise, from April 1 through November 15. It is especially lacking given that FWS agreed to the Modified Stipulation after determining that this operational schedule would not result in any adverse impact to Indiana bats and Virginia big-eared bats. It would be useful to complete this analysis on both a 67-turbine scenario and a 100-turbine scenario, thereby providing two baseline measures.

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2. ***The EIS Should Incorporate an Alternative that Mirrors Alternative 3 But Only for Indiana Bats and Virginia Big-eared Bats.***

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Second, the alternatives should incorporate at least one alternative between the maximally restrictive scenario (Alternative 1) and the proposed action (Alternative 2) that is specific to the Indiana bat and Virginia big-eared bat. The key operational elements of the proposed curtailment plan (Alternative 2) are as follows: (1) 100 operational turbines, (2) a mid-July to mid-October restriction, (3) a 4.8 m/s cut-in speed, and (4) limited night-time restrictions (from 30 minutes before sunset for 5 hours). The DEIS's Alternative 3 contains a more restrictive operational regime but it also incorporates additional covered species – species that BRE declined to list on the permit. The DEIS does not explain why the inclusion of three additional species – and this factor alone – triggers a more restrictive curtailment regime. As discussed above, the curtailment regime in Alternative 3 is more in line with the best available science and the ITP issuance criteria than is the proposed plan (Alternative 2), and the curtailment regime in Alternative 3 does not require the addition of three covered species to

justify its selection. In other words, the connection between including the three additional bat species and the purpose of the DEIS in protecting and conserving the Indiana and Virginia big-eared bats is too attenuated. To require that three additional species be included under the ITP as a precondition to these more restrictive curtailment measures signals that yet another alternative needs to be analyzed: i.e., the more restrictive curtailment regime without the three additional species.

To summarize, the EIS should explore an operations alternative specific to the Indiana bat and the Virginia big-eared bat that incorporates (1) 100 operational turbines, (2) an April to October/November restriction, (3) a 6.5 m/s cut-in speed, and (4) complete overnight duration (from 30 minutes before sunset to 15 minutes after sunrise). Adding this alternative would provide a stronger basis for decision making.

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C. The DEIS Should Have Analyzed a Shorter ITP Term as It is Not Duplicative of the Other Alternatives.

The EIS should explore the alternative of a shorter ITP term. The agency eliminated this alternative from detailed study because it appears to the agency to have impacts similar to the proposed action but with increased administrative costs. We disagree with this analysis. An ITP renewal offers the agency a much stronger platform from which to require avoidance measures compared to the “system of checks and balances” outlined in the RMAMP.⁸⁶

The key difference between a 10 year permit and a 25 year permit rests in the “No Surprises” policy. In its explanation of the policy, the HCP Handbook states that “[i]f additional mitigation measures are subsequently deemed necessary to provide for the conservation of a species that was otherwise adequately covered under the terms of a properly functioning HCP, the obligation for such measures shall not rest with the HCP permittee.”⁸⁷ If the status of a species worsens, then, the responsibility for implementing additional conservation measures falls on the federal government and all other entities except the HCP permittee – the entity taking the species – unless the specific measures deemed necessary to respond to changed circumstances are “provided for” in the HCP. Changed circumstances, as opposed to unforeseen circumstances,

⁸⁶ DEIS, p. 68.

⁸⁷ FWS, *HCP/ITP Handbook*, p. 3-29.

“can reasonably be anticipated and planned for.”⁸⁸ The regulations provide as follows with respect to changed circumstances:

(i) Changed circumstances provided for in the plan. If additional conservation and mitigation measures are deemed necessary to respond to changed circumstances and were provided for in the plan’s operating conservation program, the permittee will implement the measures specified in the plan.

(ii) Changed circumstances not provided for in the plan. If additional conservation and mitigation measures are deemed necessary to respond to changed circumstances and such measures were not provided for in the plan’s operating conservation program, the Director will not require any conservation and mitigation measures in addition to those provided for in the plan without the consent of the permittee, provided the plan is being properly implemented.⁸⁹

Thus, if operational or mitigation measures are not “provided for” in the Beech Ridge HCP, those measures cannot be required of BRE for the term of the ITP. The longer the ITP term, the longer FWS is locked into those measures provided for in the HCP.

The DEIS did not study the alternative of a shorter ITP term because, according to the agency, a short-term and long-term ITP will have the same impacts to the covered species. As FWS’s Five-Point Policy describes, however, permit duration is related to several factors.⁹⁰ The Five-Point Policy touches upon how contingency planning for changed circumstances, and adaptive management, relate to permit duration.⁹¹ Issuance of a long-term ITP assumes that provisions for adaptive management and changed circumstances in the HCP can and will ensure that the appropriate level of minimization and mitigation will be maintained over the term of the permit. For example, a shorter duration permit may be appropriate if the HCP does not properly “provide for” and commit to adequate modification of conservation measures under changed circumstances, or if an adaptive management strategy that significantly reduces the risk of the HCP to covered species cannot be devised and implemented.⁹² The DHCP contains such shortcomings and so it is appropriate for FWS to study the benefits of a shorter-term ITP.

⁸⁸ FWS, *HCP/ITP Handbook*, p. 3-28.

⁸⁹ 50 C.F.R. § 17.22(b)(5)(i)-(ii).

⁹⁰ FWS, *HCP/ITP Handbook Addendum*, 65 Fed. Reg. at 35255–56.

⁹¹ FWS, *HCP/ITP Handbook Addendum*, 65 Fed. Reg. at 35255–56.

⁹² See FWS, *HCP/ITP Handbook Addendum*, 65 Fed. Reg. at 35255–56.

FWS may have failed to study a short-term ITP alternative because the agency is assuming that it will have an opportunity to mitigate the effects of any changed circumstances by imposing additional conservation measures in the context of changed circumstances and adaptive management plans. But the proposed changed circumstances and adaptive management plans set forth in the DHCP will be unlikely to provide this opportunity, for two reasons.

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First, as stated in the ESA regulations, to expect BRE to implement measures specified in the changed circumstances plan, “additional conservation and mitigation measures [that] are deemed necessary to respond to changed circumstances [must be] provided for in the plan’s operating conservation program.”⁹³ However, the majority of the DHCP’s changed circumstances plan, with the exception of the Maternity Take Event scenario, does not commit to any specific measures intended to respond to the changed circumstances scenarios presented. For example, if White-Nose Syndrome were to reduce the bat population such that the changed circumstances plan is triggered, BRE commits to the following:

If this reduction is realized, USFWS will notify BRE of this circumstance, and the parties would meet and confer over potential changes to the HCP to address this changed circumstance. . . . Depending on the circumstances at the time, the parties may discuss the need for additional operational restrictions to avoid, minimize, or mitigate potential take. . . . Additional conservation strategies that could be implemented include bat deterrent technology, additional turbine operation measures, or prioritizing conservation funding to projects designed to address population change in bats. Due to the uncertainties around impacts and solutions to WNS, the outcome and need for additional action on the part of BRE is difficult to predict. If Indiana bat and Virginia big-eared bat take from the project has been negligible or the estimated take as determined by evaluation of impacts to other species is negligible, it is possible that no additional actions will be needed. In the event of catastrophic decline in the Indiana bat and/or Virginia big-eared bat populations, the potential for take of either species at the Project may further decline; however, the impact of even small amounts of take would become more significant to the species as their numbers decline. Under this scenario, BRE will confer with USFWS over potential changes to the HCP that recognize these factors and potential declining risks of take.⁹⁴

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Therefore, all that BRE actually commits to is “conferring” with FWS about potential changes to the HCP. In light of the ESA regulations on No Surprises, we do not see how FWS can require BRE to implement any change in minimization or mitigation measures in response to population

⁹³ 50 C.F.R. § 17.22(b)(5)(i)-(ii).

⁹⁴ DHCP, pp. 111–112 (emphasis added).

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 reductions caused by White-Nose Syndrome unless, at the very least, BRE commits to implementing whatever measures result from its “conferring” with FWS. Of course, the HCP should specify adjustments to the initial measures that are on the table for implementation. This deficiency in the DHCP would create a problem for FWS even with a short-term ITP, but this deficiency severely ties FWS’s hands if the ITP term is lengthy.⁹⁵ Under the proposed HCP, a shorter ITP term would give the FWS needed flexibility to address such changed circumstances, especially those related to White-Nose Syndrome, climate change, and habitat loss.

Second, it may be that BRE intends to rely on a commitment to research and adaptive management as a basis of its changed circumstances plan. In other words, BRE may be proposing to wait and see the results of its research plan before it commits to a specific set of responses to the changed circumstances scenarios. FWS has stated that No Surprises and the use of adaptive management strategies are compatible because “[a]daptive management strategies, if used, are part of [the HCP] provisions, and their implementation becomes part of a properly implemented conservation plan.”⁹⁶ However, “[a]daptive management should not be a catchall for every uncertainty or a means to address issues that could not be resolved during negotiations

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 of the HCP.”⁹⁷ Adaptive management is compatible with a changed circumstances plan only if the HCP, ITP, and Implementing Agreement “clearly state the range of possible operating conservation program adjustments due to significant new information, risk, or uncertainty” and this range delineates “the limits of what resource commitments may be required of the permittee.”⁹⁸ But the DHCP does not do this. Considering again the White-Nose Syndrome scenario, the DHCP states,

Additional conservation strategies that could be implemented include bat deterrent technology, additional turbine operation measures, or prioritizing conservation funding to projects designed to address population change in bats.

⁹⁵ Should any of these changed circumstances occur, therefore, FWS will *not* be able to “require any conservation or mitigation measures in addition to those provided for in the plan without the consent of the permittee” so long as BRE is properly implementing its conservation plan.

⁹⁶ FWS, *HCP/ITP Handbook Addendum*, 65 Fed. Reg. at 35253.

⁹⁷ FWS, *HCP/ITP Handbook Addendum*, 65 Fed. Reg. at 35252.

⁹⁸ FWS, *HCP/ITP Handbook Addendum*, 65 Fed. Reg. at 35253 (stating also with respect to changed circumstances, “[t]he HCP, incidental take permit, and IA, if any, must describe the agreed upon range of management and/or mitigation actions and the process by which the management and funding decisions are made and implemented.”).

Due to the uncertainties around impacts and solutions to WNS, the outcome and need for additional action on the part of BRE is difficult to predict.⁹⁹

1_26 → This statement does not “clearly state the range of possible operating conservation program adjustments” such that this range delineates “the limits of what resource commitments may be required of the permittee.” For instance, the DHCP fails to state any range of possible “adjustments” to its proposed curtailment plan in light of White-Nose Syndrome, such as what additional turbine operation measures are possible. Without such specificity, neither the HCP nor the agency can delineate “the limits of what resource commitments may be required of the permittee.”¹⁰⁰ This deficiency is accentuated, moreover, by the deficiencies in the DHCP’s proposed research and adaptive management plan, which, as discussed above in Section 1, fails to address a key uncertainty regarding the relative effectiveness of raised cut-in speeds. In addition, the changed circumstances plan does not even commit to implementing the results of the research plan. Again, these deficiencies create a problem for FWS even with a short-term ITP, but these deficiencies severely tie FWS’s hands if the ITP term is lengthy.

For the above reasons, and contrary to FWS’s claim in the DEIS, the consequences for the protection of Indiana bats and Virginia big-eared bats and their habitats may be substantially different under a short ITP term versus a long ITP term. The DEIS should have analyzed the potential for these differential consequences.

1_27 → **COMMENT 2.2. OF THE THREE ACTION ALTERNATIVES PRESENTED IN THE DEIS, ALTERNATIVE 3 SHOULD BE THE AGENCY’S PREFERRED ENVIRONMENTAL ALTERNATIVE.**

Of the three action alternatives presented in the DEIS, FWS’s Preferred Alternative should be Alternative 3. Not only does it provide the best protection for the Indiana bat and Virginia big-eared bat, but Alternative 3 also covers three bat species likely to become federally listed over the course of the permit and incorporates operational restrictions that will benefit *all* bat species. Moreover, the operational restrictions in Alternative 3, unlike those in Alternative 2, can probably meet the “minimize to the maximum extent practicable” standard. As the DEIS’s

⁹⁹ DHCP, pp. 111–112.

¹⁰⁰ FWS, *HCP/ITP Handbook Addendum*, 65 Fed. Reg. at 35253 (stating also, with respect to changed circumstances, “[t]he HCP, incidental take permit, and IA, if any, must describe the agreed upon range of management and/or mitigation actions and the process by which the management and funding decisions are made and implemented.”).

Table 5-22 makes clear, life-of-Project bat mortality estimates across all bat species, including the listed bat species, are the lowest under Alternative 3. Given the DEIS’s purpose to protect Indiana bat and Virginia big-eared bats, Alternative 3 best meets the agency’s needs.

DHCP/ESA

COMMENT 2.3.

THE DHCP OMITTS CUT-IN SPEED ALTERNATIVES IN ITS DISCUSSION OF ALTERNATIVE ACTIONS TO THE PROPOSED TAKINGS.

A. Background

An ITP applicant must specify in its conservation plan the “alternative actions to such taking the applicant considered and the reasons why such alternatives are not proposed to be utilized.”¹⁰¹ The HCP Handbook clarifies that the phrase “alternative actions to such taking” means alternatives “that would reduce take below levels anticipated for the project proposal.”¹⁰² Thus, a description of an alternative approach that would increase rather than decrease the levels of take of covered species is unnecessary in this section of the HCP. ESA regulations provide a means through which FWS can assess and analyze how adverse environmental effects to a proposed action can be minimized. An alternative that has no bearing on this analysis, because it maximizes rather than minimizes take, is not useful. For example, the “Reduced Conservation Measures” alternative in section 7.2 is unnecessary as it offers FWS little in the way of an assessment of whether BRE is minimizing take to the maximum extent practicable.

B. The DHCP Omits Discussion of Cut-In Speed Alternatives.

Although BRE evidently analyzed alternative cut-in speeds, no such alternative is presented in section 7 of the DHCP as having been eliminated. It is obvious that more restrictive operational measures were in fact considered during the HCP planning process. Much of the discussion in section 4 on impacts to the Indiana bat and Virginia big-eared bat focuses on the selection of a cut-in speed of 4.8 m/s as compared to a cut-in speed of 5.0 m/s to 6.5 m/s. Section 7 of the DHCP should therefore provide a description of a more restrictive operational

¹⁰¹ 50 C.F.R. § 17.22(b)(1).

¹⁰² FWS, *HCP/ITP Handbook*, p. 3-35.

alternative (e.g., 6.5 m/s) and offer an explanation for why it was not adopted for the conservation plan. Given that the facility is already currently operating on a restricted operations schedule, it is only logical that this be an alternative for minimizing take. This is especially lacking considering that FWS agreed to the Modified Stipulation and a cut-in speed of 6.9 m/s because the best available scientific information suggested that the “operational modifications during this short time period will produce effects that are not likely to adversely affect listed bat species.”¹⁰³ It follows, then, that FWS understands the best available science on cut-in speeds as showing that more restrictive cut-in speeds reduce the threat to bats relative to the proposed cut-in speed. The DHCP should describe this alternative in section 7 with an accompanying description explaining the reasons why the alternative was not selected.

3 SECTION 7 CONSULTATION

DHCP/ESA

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COMMENT 3.1. THE DHCP DOES NOT FULLY ADDRESS ESA SECTION 7 CRITERIA.

A. Background

The ESA seeks to ensure by way of the Section 7 consultation requirement that “any action authorized, funded or carried out by such agency is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification” of critical habitat.¹⁰⁴ While consultation is the federal agency’s responsibility rather than the applicant’s, the HCP Handbook urges ITP applicants to “ensure that those considerations required of the Services by section 7 have been addressed in the HCP.”¹⁰⁵ If the applicant chooses not to assist the Services in this regard or the applicant inadequately considers Section 7 issues in its HCP, the consultation could result in a jeopardy or adverse modification finding. To avoid such a result, the HCP development process under section 10 of the ESA and the consultation process under section 7 are deemed to be concurrent and related rather than

¹⁰³ DEIS, at p. 4 (emphasis added); *see also* DEIS, Appendix L.

¹⁰⁴ ESA section 7(a)(2); HCP Handbook, p. 3-15.

¹⁰⁵ FWS, *HCP/ITP Handbook*, p. 3-15.

independent and sequential.¹⁰⁶ Thus, if this is to be the case here, the HCP must adequately meet section 10 issuance criteria as well as section 7 standards.

Section 7 requires the agency to demonstrate that the authorized action (i.e., issuance of the ITP) “is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of critical habitat.”¹⁰⁷ In doing so, FWS must “[e]valuate the effects of the action and cumulative effects on the listed species or critical habitat.”¹⁰⁸ “Effects of the action” means “the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action, that will be added to the environmental baseline.”¹⁰⁹ Cumulative effects refers to “those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area.”¹¹⁰ Action area, in turn, constitutes “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action.”¹¹¹

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B. The DHCP Should, But Currently Does Not, Delineate an Action Area.

The DHCP does not currently meet section 7 standards. To start, the consultation requirements include analysis of the proposed action’s direct and indirect effects, effects on critical habitat, and cumulative effects on covered species. In determining direct, indirect, and cumulative effects, the agency must delineate the action area. ESA regulations define the term “action area” as “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action.”¹¹²

To be consistent with Section 7 requirements, the DHCP should incorporate a new, separate section titled “Action Area.” This area is not limited to the footprint of the action nor is it limited by the Federal agency’s authority. Rather, it is a biological determination of the reach of the proposed action on listed species. The action area is the entire area within which project-

¹⁰⁶ FWS, *HCP/ITP Handbook*, p. 3-16.

¹⁰⁷ 16 U.S.C. § 1536(a)(2).

¹⁰⁸ 50 C.F.R. § 402.14(g)(3).

¹⁰⁹ 50 C.F.R. § 402.02.

¹¹⁰ 50 C.F.R. § 402.02.

¹¹¹ 50 C.F.R. § 402.02.

¹¹² 50 C.F.R. § 402.02. Section 7 of the ESA applies to the USFWS issuance of an ITP. See USFWS, *Habitat Conservation Planning and Incidental Take Permit Processing Handbook* (Nov. 4, 1996), pp. 6-12 to 6-14.

associated environmental effects are anticipated to occur; for instance, earth disturbance, habitat alterations, noise, flight path disruption, and physical harm. Careful delineation and explanation of the chosen action area is important because the determination of the environmental baseline and cumulative effects are tied to the action area.¹¹³ Here, the action area should be delineated based on potential impacts to the Indiana bat and the Virginia big-eared bat (and possibly other species of concern).

C. The DHCP Should, But Currently Does Not, Assess Cumulative Effects.

The DHCP also fails to assess cumulative effects. Absent a cumulative effects analysis, the Service cannot reach a biological opinion. Section 7 specifically notes that the Service’s responsibility is to “[f]ormulate its biological opinion as to whether the action, *taken together with cumulative effects*, is likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat.”¹¹⁴ The DHCP does not currently assess the cumulative effects of other future non-federal activities within the action area on the covered species. Once BRE has delineated an action area, the applicant should incorporate a section identifying cumulative effects in order to assist the FWS with its section 7 consultation requirements.

**4
CHANGED CIRCUMSTANCES**

DHCP/ESA

COMMENT 4.1. THE DHCP DOES NOT ADEQUATELY DESCRIBE HOW FEDERAL LISTING OF SPECIES WILL BE TREATED AS A CHANGED CIRCUMSTANCE.

A. Background

It is the applicant’s decision whether to cover unlisted species in an HCP, but a permittee will benefit from FWS’s No Surprises policy if it chooses to cover proposed, candidate, or other unlisted species in its conservation plan. This means that if an unlisted species becomes listed after the permit is administered no additional mitigation would be required if the conservation

¹¹³ Defenders of Wildlife v. Babbitt, 130 F. Supp. 2d 121, 129 (D.D.C. 2001).

¹¹⁴ 50 C.F.R. § 402.14(g)(4) (emphasis added).

plan already covers the species. For purposes of No Surprises assurances, however, the unlisted species must be “adequately covered” in the HCP.¹¹⁵ “Adequately covered” in the context of unlisted species means “that a proposed conservation plan has satisfied the permit issuance criteria under section 10(a)(2)(B) of the ESA that would otherwise apply if the unlisted species covered by the plan were actually listed.”¹¹⁶ This means that the HCP applicant must, among other things, “to the maximum extent practicable, minimize and mitigate the impacts of such taking” for those unlisted species.¹¹⁷

If an applicant chooses to cover unlisted species, he or she may choose either to include those species on the permit but with a delayed effective date (i.e., the date of future listing) or may seek a minor permit amendment (rather than an HCP amendment) to include the species at the time of listing.¹¹⁸

B. The EIS and HCP Must Clearly Specify How BRE Will Seek to Comply With the ESA if Other Bat Species Become Federally Listed as Threatened or Endangered.

In the DHCP, it remains unclear how unlisted species are to be treated and, specifically, how the northern long-eared bat, the eastern small-footed bat, and the little brown bat will be treated if they become federally listed.

The DHCP identifies the listing of new species – and specifically highlights the northern long-eared bat, the eastern small-footed bat, and the little brown bat – as changed circumstances.¹¹⁹ The DEIS notes that should any species become listed, “BRE will confer with the Service over the need to amend the ITP as described in Section 8.4.2 of the Project HCP.”¹²⁰ Section 8.4.2 of the DHCP discusses “Minor Amendments.” The DEIS’s cross-reference to this specific section suggests, therefore, that the listing of a new species would not trigger a major

¹¹⁵ 50 C.F.R. § 17.22(b)(5).

¹¹⁶ 50 C.F.R. § 17.3; FWS, *HCP/ITP Handbook*, p. 3-30 (“Adequately covered” for listed species refers to any species addressed in an HCP which has satisfied the permit issuance criteria under section 10(a)(2)(B) of the ESA. For unlisted species, the term refers to any species which is addressed in an HCP as if it were listed pursuant to section 4 of the ESA, and in which HCP conditions for that species would satisfy permit issuance criteria under section 10(a)(2)(B) of the ESA if the species were listed. “No Surprises” assurances apply only to species that are adequately covered in the HCP.”). See also 65 Fed. Reg. at 35251 (“However, according to 50 CFR 17.22, 17.32, 222.102, and 222.307, each covered species must be addressed as if it were listed and named on the permit.”).

¹¹⁷ 16 U.S.C. 1539(a)(2)(B)(ii).

¹¹⁸ See FWS, *HCP/ITP Handbook*, pp. 4-1 to 4-3.

¹¹⁹ DHCP, p. 112–113.

¹²⁰ DEIS, p. 61.

1_33

amendment to the ITP. This is a significant difference, given that a major amendment (in contrast to a minor amendment) typically requires “submittal of a revised HCP, a revised IA, and preparation of an environmental review document in accordance with NEPA.”¹²¹

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Taking this analysis one step further, the DEIS’s reference to section 8.4.2 of the DHCP appears to suggest that FWS considers the DHCP to “adequately cover” non-listed species, specifically the northern long-eared bat, the eastern small-footed bat, and the little brown bat. If this is indeed the case – the DEIS and DHCP are unclear on this point – we note that such a conclusion is contrary to ESA implementing regulations. In its current form, the DHCP does not satisfy, or even attempt to show that it satisfies, the permit issuance criteria under section 10(a)(2)(B) of the ESA for any of these unlisted bat species. For example, the only discussion about the impacts of taking these three species appears in an Appendix to the DHCP. The Appendix offers only brief descriptions about the bat species and contains no quantification of take. The DHCP does not show that taking of those species will be minimized and mitigated to the maximum extent practicable and that adequate funding will be provided for those species. Also, the DHCP does not delineate the action area or analyze cumulative impacts in relation to those species. If BRE and FWS are assuming that any conservation plan that satisfies the permit issuance criteria for the listed species will also satisfy the criteria for the unlisted but covered species, that case has not been made.

Adding to the confusion, it is unclear how the potential future listing of the three bat species active in the Project area will be determined. Based on the DEIS, it will be treated as a minor amendment to the HCP, but based on the DHCP, FWS will determine the process at a later time “in coordination with BRE.” Both the EIS and the HCP must make clear how the potential future listing of the northern long-eared bat, the eastern small-footed bat, and the little brown bat will be treated.

¹²¹ DHCP, p. 119.

COMMENT 4.2.

THE DEIS AND DHCP DO NOT ADEQUATELY EXPLAIN HOW THE CHANGED CIRCUMSTANCE OF WHITE-NOSE SYNDROME WILL AFFECT BRE'S RESPONSIBILITIES UNDER THE TERMS OF ITS ITP/HCP.

ESA implementing regulations give certain assurances to a permittee in the case of changed or unforeseen circumstances. Changed circumstances, as opposed to unforeseen circumstances, “can reasonably be anticipated and planned for.”¹²² The HCP Handbook states that “HCP planners should identify potential problems in advance and identify *specific strategies or protocols* in the HCP for dealing with them, so that adjustments can be made as necessary without having to amend the HCP.”¹²³ With respect to changed circumstances, the ESA regulations provide as follows:

- (i) Changed circumstances provided for in the plan. If additional conservation and mitigation measures are deemed necessary to respond to changed circumstances and were provided for in the plan's operating conservation program, the permittee will implement the measures specified in the plan.
- (ii) Changed circumstances not provided for in the plan. If additional conservation and mitigation measures are deemed necessary to respond to changed circumstances and such measures were not provided for in the plan's operating conservation program, the Director will not require any conservation and mitigation measures in addition to those provided for in the plan without the consent of the permittee, provided the plan is being properly implemented.¹²⁴

The DHCP discusses the occurrence of White-Nose Syndrome and declining Indiana bat and Virginia big-eared bat populations as a foreseeable changed circumstance. Adaptive management would be triggered by a specified reduction in the Appalachian Mountain Recovery Unit of Indiana bat and in the rangewide population of Virginia big-eared bat. Because the population models are still under development and will be finalized only at the time of FWS's Biological Opinion, neither the DEIS nor the DHCP detail with greater specificity what the trigger threshold will be. The agency must provide opportunity for public comment on the population models and reduction triggers at some point in this decision-making process prior to FWS's decision as to whether to grant or deny the ITP.

¹²² FWS, *HCP/ITP Handbook*, p. 3-28.

¹²³ FWS, *HCP/ITP Handbook*, p. 3-28 (emphasis added).

¹²⁴ 50 C.F.R. § 17.22(b)(5)(i)-(ii).

The DEIS states that if the bat populations decline by an agreed amount below the population levels identified in the Biological Opinion, then consultation between the Service and BRE will occur:

. . . [T]he Service will notify BRE of this circumstance and the parties will meet and confer over potential changes to the HCP to address this changed circumstance. In the event take has not occurred or is unlikely to occur, no changes to the HCP will be required. However, if take has occurred and is reasonably certain to occur in the future, the parties will discuss the need for, and implement as appropriate, additional operational restrictions to avoid and/or minimize potential take.¹²⁵

The DHCP explains that if the chosen threshold is crossed, BRE’s plan is to “meet and confer over potential changes to the HCP . . . [by] assess[ing] the *amount of actual take* based on adjusted fatality estimates of covered species that has occurred and that is likely to occur in the future.”¹²⁶ This means that, in BRE’s view, the necessity of additional minimization and mitigation measures, such as operational restraints, will depend entirely on the actual amount of take, without regard to biological factors such as population viability. The DHCP continues:

Additional conservation strategies that could be implemented include bat deterrent technology, additional turbine operation measures, or prioritizing conservation funding to projects designed to address population change in bats. Due to the uncertainties around impacts and solutions to WNS, the outcome and need for additional action on the part of BRE is difficult to predict. *If Indiana bat and Virginia big-eared bat take from the project has been negligible or the estimated take as determined by evaluation of impacts to other species is negligible, it is possible that no additional actions will be needed.* In the event of catastrophic decline in the Indiana bat and/or Virginia big-eared bat populations, the potential for take of either species at the Project may further decline; however, the impact of even small amounts of take would become more significant to the species as their numbers decline. Under this scenario, BRE will confer with USFWS over potential changes to the HCP that recognize these factors and *potential declining risks of take.*¹²⁷

The DHCP’s explanation and treatment of the changed circumstance of White-Nose

1_35 Syndrome suffers from four problems. First, the DHCP shortsightedly discounts the possibility that the Project could jeopardize the Indiana bat – that is, reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild – in the dire circumstances of a

¹²⁵ DEIS, p. 61.

¹²⁶ DHCP, p. 111 (emphasis added).

¹²⁷ DHCP, p. 112 (emphasis added).

rapid decline toward extinction caused by an outbreak of White-Nose Syndrome. When the population modeling is completed, it may show (as the Leslie Matrix modeling used for the Buckeye DHCP has shown) that the combined impacts to the RU population of the Project and White-Nose Syndrome together drive the population to near extinction within a few decades. The DHCP’s implicit logic seems to be that the incremental effect of the Project on the species’ decline would be relatively small compared to the large effect of White-Nose Syndrome, so the Project could not possibly jeopardize the population. According to this logic, FWS would and should authorize take of an endangered species by a project no matter what the status of the species – no matter how dire its circumstances – so long as the project’s take is small relative to other causes of decline. This logic is inconsistent with ESA regulations and guidance on jeopardy. This logic is also inconsistent with the DHCP’s recognition that the significance of take increases as the status of the species becomes increasingly dire. When a species is spiraling toward extinction, the loss of even a single individual may be highly significant. The application of the word “appreciably” in the regulatory definition of jeopardy depends on the status of the species or population. It might be more reasonable to conclude that under such dire circumstances FWS would find that the level of take proposed in the DHCP, and the resulting downward trajectory of the RU, would indeed “appreciably” reduce the likelihood of both the survival and recovery of the Indiana bat. At a minimum, the DHCP should make a reasoned assessment rather than blithely assume that the status of the Appalachian RU would have no effect on the jeopardy analysis for the Project.

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 Second, the DHCP also should propose a plan to reduce the requested take of covered bats in response to White-Nose Syndrome that accounts for the increased significance of take as the status of the species becomes increasingly dire. The DHCP underspecifies the measures it will take should White-Nose Syndrome continue to infect bat populations. As an example, the Buckeye Wind Project in Champaign County, OH, has committed to a 50% reduction in take if a corresponding 50% rangewide population decline occurs as a result of White-Nose Syndrome. We do not claim to agree with a 50% reduction threshold (this reduction does not account for the increased significance of take); however, we do agree (and believe that it is required) with the specificity and advance planning of Buckeye’s HCP in this respect.

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Third, the excerpt from the DHCP quoted above states that “[i]f Indiana bat and Virginia big-eared bat take from the project has been *negligible* or the estimated take as determined by evaluation of impacts to other species is *negligible*, it is possible that no additional actions will be needed.” The DHCP does not explain the meaning of “negligible” take and how many bats this would entail. There must be some quantification of “negligible take” for this statement to have any meaning.

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Fourth, the excerpt from the DHCP quoted above also states with respect to White-Nose Syndrome, “Under this scenario, BRE will confer with USFWS over potential changes to the HCP that recognize these factors and *potential declining risks of take*.” A catastrophic decline in a population does not necessarily correlate well to “declining risks of take.” As the DEIS notes, “A linear relationship between average mortality rates and population estimates may be a logical and best guess scenario; however, it discounts smaller regional population fluctuations or reduction of population levels to a point that risk is minimal. The total number of bats killed goes down as populations decrease, but risk remains unless the population is zero.”¹²⁸ More importantly, the risk of take does not reflect other important risks, such as the risk of population decline and the risk of extinction. Because of their long life-spans and low reproductive rates, the take of Indiana bats and Virginia big-eared bats becomes far more significant as their rangewide population declines. If those populations are unable to compensate for taking, they will be unable to maintain population numbers and thus risk a rapid decline.

5

CUMULATIVE IMPACTS

DEIS/NEPA

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COMMENT 5.1. THE DEIS DOES NOT, BUT SHOULD, TAKE A HARD LOOK AT THE BIOLOGICAL IMPLICATIONS OF CUMULATIVE IMPACTS BY USING A LESLIE MATRIX MODEL.

The DEIS should take a hard look at the cumulative impacts to bat (and bird) species by using a Leslie Matrix model or an equivalent population model with formalized uncertainty analysis. The Leslie model can assess the trajectories and viability of bat colonies and

¹²⁸ DEIS, p. 336.

populations in the face of mortality over the ITP term. This model offers a simple method to compare population size with and without Project-associated take, and, thus, provides insight on how the Project could influence population dynamics. This model should be run both on a local scale (Action Area) as well as on a wider geographic scale (Appalachian Mountains RU).

The Leslie model should be applied to the following scenarios of White-Nose Syndrome in particular: (1) WNS impacts with no Project-related take; (2) expected impacts from Project-related take; (3) worst-case impacts from Project-related take; (4) WNS impacts with expected impacts from Project-related take; (5) WNS impacts with worst-case impacts from Project-related take; and (6) WNS impacts with potential reductions in take. The model results will guide FWS in determining whether populations will be able to compensate for Project-related take under predicted scenarios.

In general, the Leslie Matrix or other population model also should be used to examine the expected trajectories of the Indiana bat population, the Virginia big-eared bat population, and other bat populations given the existing and reasonably foreseeable future wind projects in the Appalachian Mountain RU. This analysis was not but could have easily been completed to show the biological implications of the cumulative impacts in the Appalachian Mountain RU. Moreover, the models should be run to examine the population trajectories predicted if that cumulative impact were added to possible impacts of White-Nose Syndrome. Such analyses would assist the agency in making the necessary determinations in this HCP/ITP process, and its absence reflects the failure of the DEIS to look hard at the cumulative impacts relevant to this proposed ITP, HCP, and EIS.

6
BIOLOGICAL GOALS AND OBJECTIVES

DHCP/ESA

1_40

COMMENT 6.1.

THE PROPOSED BIOLOGICAL GOALS IMPROPERLY INCLUDE THE PROPOSED CONSERVATION PLAN.

A. Background

The DHCP states the biological goals as follows:

1. Significantly minimize bat mortality consistent with the best available scientific information.
2. Avoid/minimize potential take of covered species over the term of the ITP by implementing wind project turbine operational protocols learned through the RMAMP in consultation with USFWS.
3. Mitigate unavoidable impacts to covered species by implementing habitat restoration or protection measures in key Indiana bat habitats within the Appalachian Mountain Recovery Unit.¹²⁹

FWS’s Five-Point Policy states, “Explicit biological goals and objectives clarify the purpose and direction of an HCP’s operating conservation program. They create parameters and benchmarks for developing conservation measures, provide the rationale behind the HCP’s terms and conditions, promote an effective monitoring program, and where appropriate, help determine the focus of an adaptive management strategy.”¹³⁰ Where biological goals are the “the broad, guiding principles,” the biological objectives are “the different components needed to achieve the biological goal such as preserving sufficient habitat, managing the habitat to meet certain criteria, or ensuring the persistence of a specific minimum number of individuals.”¹³¹ Finally, the provisions of the conservation program are “the actions anticipated to obtain the biological objectives.”¹³² While each of these layers informs the others, the goals, objectives, and conservation program serve different functions.

¹²⁹ DHCP, p. 91.

¹³⁰ FWS, *HCP/ITP Handbook Addendum*, 65 Fed. Reg. at 35250–51.

¹³¹ FWS, *HCP/ITP Handbook Addendum*, 65 Fed. Reg. at 35251.

¹³² FWS, *HCP/ITP Handbook Addendum*, 65 Fed. Reg. at 35251.

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B. The DHCP's Second and Third Biological Goals Merely Summarize the General Features of the Proposed Conservation Plan.

The DHCP's second goal in particular is better characterized as a management proposal rather than a biological goal. The second goal's reference to "operational protocols learned through the RMAMP in consultation with USFWS" is the means by which BRE seeks to achieve minimization of take and, as such, is neither a biological objective nor a biological goal. For example, if the RMAMP is not adequate, as we have argued above, then this characterization of the goal will fall short. The third goal also has similar shortcomings.

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The proposed biological goals and objectives are not sufficiently differentiated from the alternatives and management measures proposed as means by which to meet those biological goals and objectives. The goals should be based on the biological and ecological needs of the Indiana bat and the Virginia big-eared bat and any other covered species.

Thank you for considering our comments.

Sincerely,

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October 23, 2012

BY ELECTRONIC (via www.regulations.gov) AND REGULAR MAIL

Attn: Public Comments Processing
Attn: FWS-R5-ES-2012-0059
Division of Policy and Directives Management
U.S. Fish and Wildlife Service
4401 N. Fairfax Drive
MS 2042-PDM
Arlington, VA 22203

RE: Application for an Incidental Take Permit (ITP) and associated Habitat Conservation Plan (HCP) from Beech Ridge Energy, LLC; Service's associated draft Environmental Impact Statement (EIS)

To Whom It May Concern:

On behalf of the Animal Welfare Institute (AWI), please accept the following comments on the Draft Environmental Impact Statement (DEIS), Habitat Conservation Plan (HCP or draft HCP), and Application for Incidental Take Permit (hereafter ITP application) for Beech Ridge Energy, LLC (BRE). This comment letter focuses on the HCP and DEIS but is also based on evidence obtained from a variety of other sources including scientific studies, case law, Federal Register notices, and legal briefs and affidavits submitted in past litigation on this subject.

This HCP, ITP, and DEIS are of significant importance to the endangered Indiana bat and Virginia big-eared bat (VBEB), as well as other sensitive species such as the northern bat and eastern small footed bat, and species covered under the Migratory Bird Treaty Act (MBTA) and Bald and Golden Eagle Protection Act (BGEPA). As federally protected endangered species, the Endangered Species Act (ESA) requires that these species be afforded the highest of priorities, that their protection and recovery be paramount for all with management responsibility, and that their take be prohibited unless allowed by the U.S. Fish and Wildlife Service (FWS) through, for example, an ITP. The protections afforded to species under the ESA are mandatory and not subject to agency discretion, concern about convenience or inconvenience to user groups, or to inherent biases in support of or opposition to wind energy.

AWI notes that the FWS did not identify a particular alternative as its proposed action. Alternative 2 is currently identified as the proposed action as that is the alternative preferred by BRE. AWI supports the development of renewable energy projects, including wind energy, though it believes that such facilities must be sited and operated in a manner that minimizes

2_02 → impacts to wildlife, including protected species, and humans. Consequently, AWI's preference in regard to the alternatives subject to serious consideration in the DEIS would be, in order, Alternative 4, Alternative 1, Alternative 3, and Alternative 2.¹

Prior to addressing the analysis in the DEIS, there are several substantive concerns and comments in regard to the content and analysis contained in the HCP. They are:

- 2_03 → • **Presence of Bald and Golden Eagles:** In discussing the presence of bald or golden eagles on the project site on page 7, the draft HCP concludes that “potential to take a bald or golden eagle at the site is low to none, and thus, eagles are not included as covered species in this HCP.” It is unclear what evidence is available to substantiate this conclusion. Though the project area may not be ideal habitat for bald and/or golden eagles it is very near a major raptor migration corridor and, therefore, given the protections afforded by the MBTA and BGEPA, it should be assumed that one or both eagle species may use or transit the project area and that, therefore, the HCP should include them as covered species. Indeed, the FWS has determined that an EIS is an appropriate level of review for this Project given the potential for significant cumulative effects to bats and birds (see DEIS, 14 (emphasis added)) and that “the Service assumes that Golden eagles winter and migrate through the project area.”²

2_04 → Furthermore, there is considerable evidence in the scientific literature indicating that birds, and particularly eagles and other raptors, are killed and otherwise harmed by wind turbines. If surveys or historical FWS or West Virginia Division of Natural Resources (WVDNR) records indicate presence of such bird species on this project site, the species should be covered by the HCP and the direct and indirect impacts implicated by the project must be analyzed in the Service's NEPA documentation. In addition, though the existing avian surveys likely underestimated the number of eagles in the project area, the Avian Protection Plan still reports 16 sightings of golden eagles in the project area. Given this information, the FWS must reassess the potential impacts of the project on eagles and must reevaluate such impacts within the DEIS. Furthermore, considering that no take of a bald or golden eagle is allowed without an eagle take permit, the FWS must either direct BRE to apply for said permit or must explain why a permit is not necessary in this case. If it elects to do the former, it won't be able to issue a permit since the 2009 eagle take permit rules indicates that permits for the take of golden eagles will not be issued east of the 100th meridian except under emergency circumstances. If the FWS expects to allow golden eagles take to be permitted under a multi-species HCP, this was not evaluated in the 2007 eagle take rule and, therefore, would need to be evaluated in a separate NEPA process before the current planning process could be completed.

Considering that only an estimated 1,000 to 2,500 individual golden eagles are believed to survive,³ this is not an issue that can be ignored.

¹ However, the specifics of Alternative 3 are used for the sake of example below.

² DEIS, p. 107.

³ Todd Katschner, et al. 2012. Status, Biology, and Conservation Priorities for North America's Eastern Golden Eagle Population. *The Auk*, 129(1):168-176.

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- **Impact to Critical Habitat:** Not only should direct impacts to all bat (and bird) species residing in this area be considered and analyzed in a DEIS, but so too should the impacts to their habitat that is critical to proper ecosystem functioning and species survival by avoiding disruption of essential biological behaviors. Within the project footprint, for example, many acres of forested habitat were cleared to make way for the project's turbines, roads, and related infrastructure – activities that likely impacted (and still impact) bats and birds in the area through adverse modification and fragmentation. For example, page 36 of the draft HCP states that:

“[T]he construction of the 33 additional turbines could result in take of Indiana bat or Virginia big-eared bat if such construction involves destruction of a tree with roosting Indiana bats or Virginia big-eared bats. Conversion of 124 acres of forested lands to grass/shrublands could also reduce available Indiana bat and Virginia big-eared bat foraging habitat. Available information indicates that neither of these actions is likely to result in take of covered species (analysis provided in Section 4.0).”

These two statements are contradictory. Either the construction of the turbines and associated activities will result in a take of these species or it won't. While conducting such clearing during the hibernation season may reduce or eliminate direct take, the permittees has inexplicably requested permission to clear 15 acres of land outside of the hibernation season in order to have the flexibility needed in case clearing activities are disrupted by inclement weather during the hibernation season. **the permittee must be required to inspect the tree for any evidence of bat use prior to clearing/cutting.**

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- **Night-Time Turbine Operation:** The permittee has proposed an experimental process intended to assess the impact of variable turbine operational parameters on Indiana and other bats and birds. Yet, instead of designing the experiment to maximize protections and then, if the data permits, reducing such protective restrictions the permittee is assuming that take will be low and will only impose additional restrictions on turbine operations depending on the amount of take detected. Notwithstanding the fact that detecting take of birds and bats, particularly smaller species, is imprecise, this proposed experimental strategy ignores the mandate to minimize take to the extent practicable as the first step toward potentially obtaining an ITP. **Higher cut-in speeds and limits on night-time operations should be the standard for turbine operations with the potential to reduce such restrictions only if documented take is sufficiently low to justify such alterations.**

2_07

- **2010 Mist Net Survey:** Because Indiana bats are virtually certain to be on this site, the surveying/mist netting approach taken here in 2010 makes little scientific sense. As in 2005-2006, the 2010 survey appears to be trying to answer *whether* Indiana bats and Virginia Big-eared Bats (VBEBs) are on and/or fly through this site. Since we know definitively that they are and do, the 2010 survey should have instead answered a different question – *where* and in *what numbers* will these species occur. The best methods for this would be radiotracking from nearby hibernacula, employing acoustic

monitor, or alternatively starting at the site where Indiana bat calls came from in 2005 and conducting intensive mist netting on and around that site to look for relative abundance of the species in that general area, and then fan outward utilizing netting and acoustic detection. At bare minimum, a highly targeted mist netting and acoustic detection survey could have pinpointed the locations on the site that bats generally, and Indiana bats specifically, use more frequently as compared to other locations on the project site. Since those types of targeted surveys were not conducted, we and the FWS are left with a survey that has at best limited value to the important questions that exist *now*. The placement of acoustic detectors is also difficult to understand; most field researchers with expertise place acoustic detectors at *every* mist net site during the mist netting period. That was not done in the 2010 survey; in that case, acoustic detectors were placed in locations different from the mist nets and often during different times. This makes little sense because the two methods are meant to *supplement* each other to reduce the uncertainties inherent in each method, not to be used in isolation.

Furthermore, though the 2010 survey was conducted and, again, based on the analysis of an independent bat expert, revealed the presence of Indiana bats within the project area, it still is only a single year worth of research. **More research must be conducted – by independent biologists – to adequately determine Indiana and VBEB use of the project area.**

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- **Selective Use of Data to Reach Unfounded Conclusions:** In discussing presence of Indiana bats on the project site: **The draft HCP concludes that “the occurrence . . . of Indiana bats in the Project area is probably quite low.” See HCP at 49 and 61. However, this conclusion is in direct contradiction of exhaustive trial testimony provided by several of the nation’s leading bat biologists that Indiana bats are present on the project site in spring, summer, and fall – not to mention that the conclusion flies in the face of a federal judge’s factual determination that Indiana bats will be on the project site in spring, summer, and fall. See *Beech Ridge Energy*, 675 F. Supp. 2d at 575 (“conclud[ing] by a preponderance of the evidence that there is a virtual certainty that Indiana bats are present at the Beech Ridge Project site during the spring, summer, and fall”). In addition, the conclusion is scientifically baseless in light of confirmed Indiana bat presence on the site as a result of previous, albeit very limited, acoustic surveying conducted in summer 2005.⁴**

There is selective use of data in order to reach unfounded conclusions in numerous instances in the draft HCP. For example, on page 61, the draft HCP uses the fact that

⁴ The draft HCP also fails to account for the expected increase in Indiana bats and other bats that will be attracted to the project site during spring, summer, and fall once the full turbine array is erected. As explained in extensive trial testimony by leading bat ecologist Tom Kunz, the best available scientific evidence indicates that the clearing of turbine corridors (which creates forest edge), in conjunction with large wind turbines that tower over trees in the vicinity (which leads to curiosity particularly during the fall mating season), results in an increased presence of bats on wind project sites known as a “sink effect.” *Beech Ridge Energy*, 675 F. Supp. 2d at 569. Therefore, because Beech Ridge Energy’s activities can be expected to attract more bats to the project site – particularly during migratory stopovers when high mortality rates are known to occur – that evidence should be incorporated into the discussion of presence and the take estimate should be adjusted accordingly.

“[o]nly three Indiana bats have been documented as wind turbine fatalities despite over 3,000 bat fatalities reported by wind project monitoring studies in Indiana bat range” to somehow purportedly justify the conclusion that “the likelihood of Indiana bat take at the Project is low.” The fact that three members of an extremely rare species have been confirmed dead *is* relevant because it refutes any notion that Indiana bats are less susceptible to turbine collisions and/or barotrauma than other myotis species, and further 3 out of 3,000 is significant considering the rarity of the Indiana bat compared to other bat species.

Moreover, FWS has explained that the Fowler Ridge site (where two of the confirmed Indiana bat deaths occurred) was a site with a *very low likelihood* of Indiana bat take – far lower than Beech Ridge – because the Fowler Ridge site is more than 100 miles from the nearest known hibernacula or maternity colony. As such, the available evidence indicates that the risk here is *higher* than at a site like Fowler Ridge, and that comparison should be accounted for in reaching conclusions (if BRE intends for those conclusions to be biologically defensible). Also relevant on this point is the fact that very few operating wind facilities have in fact conducted sound post-construction monitoring, and even those that have done so have poor identification measures in place (as seen at the trial where a fork lift operator was in charge of identifying bats at one facility). Thus, we know that 3 Indiana bat deaths have occurred, but it is widely expected in the independent scientific community and within the FWS that far more Indiana bats have been killed and either not observed by the extremely limited monitoring occurring or mislabeled by untrained identifiers.

- **Presence of Indiana Bats:** Although the draft HCP attempts to minimize the import of the “very low number of potential recorded calls relative to the overall number of recorded calls (6 out of 12,431, or 0.04%; *see* HCP at 51), plaintiffs’ experts – and particularly Dr. Lynn Robbins who is widely considered one of the world’s leading researchers using the AnaBat acoustic monitoring system – testified that the existence of approximately eight calls in such a limited temporal and geographical scope of the project site indicated a very significant presence of Indiana bats on the project site that would have likely been confirmed had acoustic monitoring been properly undertaken and analyzed across the project site. Thus, the acoustic data collected to date supports the scientific conclusion that Indiana bats will be present in significant numbers on the project site in summer, as well as during spring and fall.⁵

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Dr. Robbins’ extensive analysis not only confirms what West’s acoustic analysis found – that Indiana bats were present on the project site yet again in 2010 – but also identifies certain turbine locations and mist netting locations as receiving particularly high concentrations of Indiana bat calls, suggesting that these locations might be unsuitable for wind energy production on a micro-siting level. Moreover, in light of the fact that the 2010 acoustic calls reinforce that Indiana bats have used the project site in both 2005 and 2010, and will continue to do so, we believe that additional mist netting and acoustic

⁵ We would also request that the AnaBat data be analyzed by one of the leading experts recognized in that field by the Service as capable of identifying species by calls (*e.g.*, Dr. Lynn Robbins or Dr. Eric Britzke).

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monitoring is needed under the circumstances to identify other locations of heavy Indiana bat use on the project site in order to better inform micro-siting decision-making before any additional turbines are constructed. Especially considering that plaintiffs have recently agreed to limited nighttime operation in 2012, the 2012 season (spring, summer, and fall) would have provided a seemingly perfect window of opportunity for such surveys but it is unclear if this was done.

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- **Presence of Female and Juvenile Indiana Bats:** On page 53, the draft HCP dismisses the possibility of female and juvenile Indiana bats being present on the project site, despite the many female and juvenile little brown bats – which is used in the analysis as a surrogate species for Indiana bats – caught in mist nets on the project site. This discrepancy needs to be accounted for in the HCP. If the little brown bat is to be used as a surrogate for the Indiana bat then the documented presence of female and juvenile little brown bats in the project area must be assumed to suggest that female and juvenile Indiana bats are also in the project area. On page 54 of the draft HCP, in the third paragraph on that page, the last sentence should be modified since presence of male Indiana bats is not only “possible,” but is in fact likely since Indiana bat presence has now been documented by acoustic testing on the project site in 2005 and 2010. This is not a discussion about male Indiana bat mortality, which might aptly be described as “possible,” but rather is about presence which is certain, or at bare minimum, highly likely.

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- **Likelihood of Take:** In addition to the deficiencies identified above that apply both to presence evaluation as well as impact/take assessment, there is no sound basis for concluding that the “likelihood of Indiana bat take is low.” See draft HCP at 62. Additionally, on page 92, the draft HCP indicates that Indiana bats may “infrequently” occur on the project site. However, two separate years of acoustic data confirms that Indiana bats are present on the site in different years, indicating that there is a high likelihood, if not certainty, that Indiana bats are routinely present on the site.

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Even well before the Fowler Ridge Indiana bat fatality in fall 2009, the consensus in the independent scientific community, and the view of the Service, resoundingly rejected any notion that Indiana bats are in some way less susceptible to turbine collision and/or barotrauma affecting other *Myotis* species – a proposition wholly adopted by Judge Titus in the federal trial. See *Beech Ridge Energy*, 675 F. Supp. 2d at 577-79. Rather, as rare species and as a result of various factors (lack of post-construction monitoring at most wind facilities, poor searcher efficiency even where monitoring does occur, and scavenger removal), the Fowler Ridge mortality finally put to rest any notion that Indiana are not impacted by wind turbines, and supported the conclusion that many other Indiana bat mortalities have likely gone undocumented. Indeed, at the Beech Ridge trial, evidence was provided concerning Indiana bat mortality at another West Virginia wind project. Judge Titus did not rely on that evidence of such a limited take to discount the potential impact of wind facilities on Indiana bats since, at that facility, as at many operating wind power plants, there is no reliable system in place for determining how many, or which, species of bats have been killed or injured by turbines. Accordingly, under the

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circumstances, reliance on the dearth of more confirmed deaths of Indiana bats (or other listed bats) makes no sense.

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Another erroneous use of data in the HCP concerns the analysis of only two caves – Snedegars’ Cave and Martha’s Cave – in evaluating Indiana bat presence (and consequent risk) during spring and fall migration. *See* draft HCP at 51-52. However, in light of well-documented Indiana bat migration distances, in addition to a federal judge’s recognition of the migration risk at Beech Ridge from caves such as Hellhole Cave, (*See Beech Ridge Energy*, 675 F. Supp. 2d at 568), there is no objective rationale for limiting a species presence inquiry to caves within 12.6 miles of the project site. Therefore, based on the best available science, all potential migration risks – including impacts to bats migrating to/from Hellhole and other caves distributed throughout the region – must be considered in assessing the level of presence, as well as the level of expected take.

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There is a serious scientific disconnect between the purported conclusion that the likelihood of Indiana bat take is “low” and the conclusion that the project will take 125 Indiana bats in the absence of minimization measures (see page 78, for example). Given the rarity of the Indiana bats and the cumulative threats the species faces, 125 bats is not commensurate with the description of a “low” amount of take. Either the low likelihood language should be eliminated or a lesser take number should be sought, because the two cannot be reconciled as currently written.

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- **Monitoring Take:** There are some additional issues with how BRE intends to accurately measure take of listed species. For example, on page 12 of Appendix C of the draft HCP, if only 30 of 100 turbines are being searched on a daily basis, it is not clear how BRE intends to accurately measure take of listed species. For example, if two Indiana bats are found in Year 1, but only 30 turbines are searched daily, will BRE consider it to be only 2 takes or 6.67 takes of Indiana bats (# of confirmed take (2) divided by # turbines searched (30) * total # turbines (100))? The latter is the only approach that would make scientific sense under the monitoring framework, but it is not clearly articulated if that is actually how BRE intends to calculate take. In addition, on page 5 of Appendix C, the use of only 30 turbines (10 of each treatment) is unlikely to result in a strong sample size. Experts consulted by AWI believe that the use of at least 45 turbines (with treatments of 15/15/15) would be more appropriate.

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- **Surveying Take:** On pages 23 and 25 of Appendix C, the draft HCP indicates that BRE employees will be trained to search for bat and bird carcasses. AWI is opposed to this option. Instead, it insists that any searchers utilized by BRE be entirely independent (*i.e.*, not employed by BRE or a hired consultant) to avoid any concerns with conflicts of interest. We believe that state biologists and/or equivalent personnel have the requisite training and skill to independently perform such searches and identifications, and are preferable to BRE employees for the reasons previously identified. We would also encourage BRE to engage in additional carcass survey studies utilizing trained dogs to compare and contrast the ability of dogs to find carcasses compared to human searches, given the particular search difficulties (terrain, etc.) at this project site.

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- **Minimizing Take:** On page 79, 81, and 91, the draft HCP concludes that it is consistent with the ESA to minimize takes by 44% from baseline (assuming that 70 Indiana bats will be killed, as opposed to 125 that would be killed without minimization measures).

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There should be some discussion concerning why minimization measures are only legally required to reduce mortality by 44%, as opposed to a more restrictive, and thus more species-protective, threshold when dealing with an endangered species, and particularly one with facing additional serious threats (e.g., White Nose Syndrome or WNS) to which turbine-related mortality is additive. Indeed, if BRE were to utilize a 6.5 m/s cut in speed as the trigger for turbine operations, the available evidence suggests that this would reduce potential bat mortality by 76 percent – a far more protective amount compared to the 44 percent level offered by BRE.

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- **Long-Term Mortality Loss:** On page 88, we are particularly concerned with the summary dismissal of the impacts of losing up to 70 Indiana bats. Contrary to Beech Ridge's attempts to downplay the significance of such a long-term mortality loss, the loss of 70 bats over time could entirely devastate a hibernaculum or local population, especially considering that each loss of a female *also* constitutes the loss of an additional pup each year for what would otherwise have constituted the remainder of the female's reproductive lifespan. This loss of replacement bats linked to adult female mortality is an impact that was required to have been addressed – but wasn't -- in the draft HCP or in the DEIS. Furthermore, considering the various threats to Indiana bats throughout their range – including other wind facilities – at some point the cumulative loss of Indiana bats must be deleterious to the species. There is no question that the take of 70 Indiana bats alone may have a critical impact on local populations. In combination with existing and future threats, including the possibility of significant mortality linked to WNS, such cumulative take may devastate the species. The draft HCP and DEIS should address such a 'worst case' scenario.

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- **Background Mortality:** In chapter 3 and on page 89, additional information is needed on background mortality. Without explanation, this section assumes that the bats killed by wind turbines are the same bats that would naturally die anyway from WNS or some other threat. But that assumption is not clearly articulated or explained in any meaningful way. Indeed, it is very possible that the bats being killed by turbines are the healthiest bats that might have survived for many years absent turbine related mortality. Therefore, in such a scenario, what would the effects be if all mortality was additive to the background rate? The background mortality discussed needs more detail to be scientifically defensible.

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- **Maternity Colonies:** There has been little to no surveying for maternity colonies in the project area, and we know from past studies that maternity colonies in the Appalachian corridor are being found in higher altitude locations than previously expected. Further, juveniles of *every* species caught in the fall 2010 mist netting survey – including of myotis species – were captured, meaning that juveniles (and likely adult females) of all species are very active on this site. Thus, it is scientifically indefensible to make the substantial leap to which kinds of bats (male, female, or juvenile) are likely to be on the site on the basis of the available science (in fact, the best available science compels the

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opposite conclusion that juveniles and females are likely to be present in light of the active juvenile bat populations on site of similar species) – indeed, doing so fails to afford the species the benefit of the doubt under the ESA, which requires an “institutionalization of caution . . . that affords endangered species the highest of priorities.”

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Indeed, the draft HCP also concludes that Indiana bat maternity colonies are not likely on or near the project site (*see* HCP at 113). However, while there is no definitive proof of a maternity colony in the vicinity of the project, the sole reason is because adequate surveys have not been conducted to determine the presence or absence of nearby maternity colonies. According to bat experts in the region including Craig Stihler, most of the ridgetops near Beech Ridge have never been surveyed for Indiana bat presence, much less maternity colony presence, which is highlighted by the fact that more and more maternity colonies in West Virginia and the Appalachian region are being discovered each year. For example, it is now virtually certain that an Indiana bat maternity colony exists on Shaffer Mountain in Pennsylvania, which is not significantly different from the Beech Ridge project site in terms of physiogeography, elevation, and habitat. Thus, until a nearby maternity colony is conclusively ruled out as a result of sufficient survey effort, there is no valid scientific basis for concluding that no such colony exists.

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In light of the draft HCP’s acknowledgment that other bat species are being considered for listing, and in light of the fact that BRE’s survey data suggests that maternity colonies of various species that are candidates for listing occur on or near the project site (*see* Appendix B), the HCP should address what measures will be taken if any of these species are listed to ensure that the project does not inflict significant adverse impacts on any of those species or their sensitive maternity colonies. Most importantly, since the draft HCP wrongly concludes that no Indiana bat maternity colonies will be impacted, much more restrictive adaptive management measures are required for Indiana bat maternity colonies and for maternity colonies of any other listed species (or species that may be listed in the future) if found in the project area. For example, at the Shaffer Mountain site in Pennsylvania – where a maternity colony for a listed species does exist – the FWS is requiring that, at minimum, the turbines closest to the maternity colony entirely shut down during critical periods, and it could also require significant microsite changes depending on the maternity colony locations. These types of concerns – particularly in light of the heavy concentration of juveniles and females of candidate species captured in BRE’s 2010 mist net survey – compels the need for these issues to be thoroughly analyzed in the HCP.

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- **Post-Construction Monitoring Effort:** In chapter 4 of the HCP, it would be helpful to briefly describe the difference in the first three years and the following years of monitoring in more detail than simply saying years 4-25 will be less intensive. How will they be less intensive? This is described in an appendix (at C-6 to C-7), but it would be useful here where it is mentioned to explain to FWS and the public what the major differences will be. Does less intensive mean every other day searching, or once a week, or fewer searchers, etc.? Also, how will this change the way take is approached or exceeded? Will there be extrapolations since less searching will likely be employed?

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- **Species Comparisons:** The draft HCP and DEIS specify that the little brown bat will be used as a surrogate for the Indiana bat (*see* HCP starting at 67), yet, as the Draft HCP concedes (citing pers. comm. with Dr. Kurta) there may be differences between little brown bats and Indiana bats that may not make the former a good surrogate for the latter. This is a significant issue that deserves more careful review and consideration in the draft HCP and DEIS. Indeed, as described by Dr. Kurta, Indiana bats may be more likely to be exposed to turbines than little brown bats. Nevertheless, BRE, FWS, and the WVDNR have approved using little brown bats as a surrogate for the Indiana bat. Therefore, other approaches should be considered and evaluated to determine if a more impartial system can be adopted whereby characteristic Indiana bat habitat within the state (*i.e.*, prime habitat for the species) is not automatically excluded from the equation, resulting in a more unbiased and accurate take calculation.⁶

Dr. Kurta's observation that "Indiana bats are more likely exposed to turbines than little brown bats"⁷ comports with literature on the topic which indicates that Indiana bats fly closer to the rotor-swept area than little brown bats. However, despite the draft HCP's acknowledgment of such differences, the draft reaches the opposite conclusion that should flow from that important distinction by determining that using little brown bats as a surrogate would lead to a more conservative take estimate for Indiana bats. If the take estimate was indeed conservative, it would over-estimate the amount of predicted take.

However, here, by basing the take estimate on a species likely to have less interactions with turbines (little brown bats) than Indiana bats – but *not* factoring that crucial physiological difference into the surrogacy comparison and take estimate adjustment – the HCP has effectively underestimated the expected level of Indiana bat take by basing it on little brown bat take numbers. Because of this key distinction between the two species which will almost invariably lead to a higher proportional amount of take of Indiana bats as compared to little brown bats, the surrogacy ratio must consider and address this difference in calculating the take estimate for Indiana bats – something which it does not do in the current draft.

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- **Ridgetops Geography:** On page 62 of the HCP, there is focus on deciduous forests and the level of risk to bats from wind turbines. The most statistically significant mortality of bats, however, occurs on forested mountain ridgetops in the east so that should be emphasized since Beech Ridge is situated in such an area. Also to this point, searcher efficiency is almost always lower on ridgetop sites because of the features involved, therefore this should be explicitly discussed and accounted for in the HCP. Therefore, there is a need for more information on ridgetops geography.

⁶ It is not clear to what geographical extent the ratio of little brown bats to Indiana bats is being explored. However, because it is well-documented that Indiana bats from other regional locations (*e.g.*, Maryland, Pennsylvania, and Virginia) have been captured routinely in West Virginia (and thus are potentially subject to harm from the Beech Ridge project), the ratios in those locations should also be considered as part of the equation.

⁷ DHCP, p. 68.

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- **Surrogacy Ratio Data:** On page 74 of the draft HCP, it would be very helpful for independent reviews, the FWS, and the public if BRE explained more about the protocol and methodologies used for the netting survey to determine the little brown bat to Indiana bat ratio. For example, understanding where those locations are relative to hibernacula and maternity colonies would be helpful for comparison since we know that *this* site is frequented by Indiana bats (confirmed in 2005) and there are many nearby hibernacula. Said differently, if the surveys for ratio purposes weren't conducted in areas similar enough to this project to draw viable comparisons, the ratio found elsewhere might be of extremely limited value *here*.

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- **Cut-In Speeds:** On page 78, the draft HCP proposes a 4.8 m/s cut-in speed from mid-July to mid-October. We very much support having cut-in speed limitations in place during migratory periods. However, there are several questions – (1) is this also being considered for spring migration (when mortality is less than in fall but still significant) as should be the case? (2) how was 4.8 m/s arrived at considering that the best available science indicates that 5.0 m/s and above is the most effective for eliminating mortality (and your own appendix – page C-9 - states that 5.0 m/s is the “most cost-effective way to reduce bat mortalities”)? (3) why cut-in speed restrictions are not initiated immediately upon hibernacula emergence by bats in the spring instead of mid-July? (4) why cut-in speeds are not extended into November to ensure that Indiana and VBEB are hibernating before reducing such restrictions? and (5) why the 6.5 m/s cut-in speed which has been identified as more protective of bats than other tested speeds is not the cut-in speed being used?

The draft HCP notes that for the term of the ITP, BRE will adjust the turbine cut-in speed from 7.8 mph (3.5 m/s) to 10.7 mph (4.8 m/s) for a 12-week period from mid-July to mid-October and for the time of night from 0.5 hour before sunset for a period of five hours (*see* BRE's Curtailment Plan). If BRE's research and monitoring results (*see* RMAMP, Appendix C) demonstrate that more restrictive operational protocols are needed to achieve Biological Goals 1 and 2, the Curtailment Plan/turbine operational protocols will be modified per the project's adaptive management plan. On the other hand, if BRE's Curtailment Plan successfully reduces bat mortality to levels that exceed expectations, BRE agrees to maintain the 10.7 mph (4.8 m/s) cut-in speed and partial-night curtailment for the duration of the ITP. *See* draft HCP at 93. Such cut-in speeds, however, ignore available scientific evidence that documents that higher cut-in speeds further minimize impacts to bats compared to lower cut-in speeds. Indeed, even the use of a 5.0 m/s cut-in speed ignores the best available scientific evidence which indicates that a 6.5 m/s cut-in speed reduced bat mortality by 76 percent compared to only 50 percent using a 5.0 m/s cut-in speed. Again, considering the requirements of an ITP, not utilizing the most protective cut-in speed would violate the “minimization” mandate of the ITP process and, if not changed, would warrant rejection of the ITP application.

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- **Monitoring and Mitigation Measures:** The HCP needs more robust monitoring and mitigation measures. To comply with the requirements of an ITP, all efforts must first be made to minimize impacts to listed species and then, if impacts remain, they must be subject to mitigation. This responsibility falls on both BRE and the FWS and the FWS

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↘ has a legal duty to not issue the ITP unless the applicant has minimized impacts to the extent practicable, explained what prevents further minimization of impacts, and then offered sufficient mitigation measures. BRE believes that its HCP minimizes such impacts to the extent practicable. This is not the case. Not only can it do more by, for example, increasing the cut-in speed to 6.5 m/s year-round as, at a minimum, the initial starting point but it could limit or restrict night-time turbine operations during the non-hibernation season. If such restrictions – which would enhance protections for the Indiana bat – are not acceptable to BRE, it must justify its decision.

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↘ As part of the minimization package, BRE is proposing to alter operational procedures for select turbines for years 1-3 post ITP to ostensibly collect baseline data which will inform operational guidelines for the remainder of the ITP term. Not only are the procedures backwards – starting with less restrictive parameters and only imposing more restrictions if necessary – but the monitoring effort to be made both during the 1-3 years post ITP issuance and in subsequent years is not entirely clear. While monitoring turbines for bat and bird mortalities will occur, the intensity of the effort will apparently vary. This needs to be better explained in the HCP so that the efficacy of the monitoring effort can be adequately evaluated.

Furthermore, since it has been proven that trained dogs can better detect bat and bird carcasses compared to humans, the use of such dogs as part of the monitoring effort should have been discussed or considered in the draft HCP.

- **Cumulative Effects:** In the cumulative effects section, the draft HCP makes an illogical leap to a conclusion not supported by the emerging data concerning WNS and its impact on Indiana bats. While the HCP correctly states that “with impacts such as WNS occurring, this trend (referring to an increase in the Indiana bat population) is likely to change over time to a population decrease,” *see* HCP at 88, it then states “triggers have been developed for the HCP that will allow appropriate response in the event of substantial population declines that would ensure that the authorized level of take does not appreciably reduce the likelihood of recovery and survival of the species in the wild and that the proper type and amount of mitigation is being provided.” It is unclear what population triggers are being referenced or how population size will be appropriately monitored.

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↘ What’s critical here is that actions taken if such triggers are met must be immediate and substantive to avoid significant damage to the surviving population of Indiana bats. This is because the impact of WNS will make each and every additive take from wind power or other non-WNS sources – including from the Beech Ridge project – more acute in regard to the impact on the species’ continued existence and recovery. Therefore, it is extremely important that each source of additive mortality be carefully analyzed against a declining baseline to ensure that extirpation of local, regional, and overall populations will not result from the combination of WNS (over which we have little control) and other, mortality sources such a wind projects that are under human control.

- **WNS Effects:** WNS and its devastating effects must be thoroughly considered in evaluating the level of acceptable take for any listed bat species affected by the disease to ensure that species jeopardy is not likely to occur under the emergency WNS circumstances. This is of particular concern because WNS-affected bats are much more susceptible to turbine collisions and barotrauma due to compromised flying ability and increased fatigue. **The effects of WNS, in conjunction with an array of wind turbines throughout the region, could have devastating effects on local and regional bat populations, and thus effective mitigation of these impacts is crucial. The confounding effects of WNS must be considered when analyzing and interpreting bat mortality attributable to wind turbines.**

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In addition, special emphasis should be placed on the Beech Ridge project's effects on cave-dwelling species, including Indiana bats and little brown bats, because of the precipitous decline in their population numbers due to WNS.⁸ It should also be noted that a petition has been submitted to list the Eastern small-footed bat and the Northern long-eared bat under the ESA, which might have some impact on the Service's analysis of bat impacts here.⁹

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On page 112 of the draft HCP, there is discussion of declining Indiana bat and VBEB populations due to WNS and exacerbating factors such as wind energy proliferation. However, **there should be significantly more discussion about how BRE will re-analyze the data in the event that WNS begins to decimate local VBEB and Indiana bat colonies to account for the fact that each take will then become more acute as a result of local, regional and perhaps national decline in the afflicted species.** Said differently, while the death of one Indiana bat in 2011 might be "negligible" to the overall population's survival – the word used by the HCP – that same death might have population-wide impacts (i.e., jeopardy) in 2014 after WNS has ravaged populations. Effort must be taken to provide specific strategies that will be taken to revisit this when certain trigger levels of Indiana bat and VBEB population sizes are reached.

- **Larger Turbine Blades:** As discussed on page 1, BRE is now proposing to construct up to 33 turbines with much larger turbine blades in order to obtain the same 186MW output that it originally sought to obtain through 124 1.5MW turbines. However, when the parties entered into their January 2010 Stipulation, the understanding was that Beech Ridge could build no more than 100 turbines (total capacity of 150MW at 1.5MW apiece). This is the first time that Beech Ridge has ever proposed constructing larger turbines to obtain the same level of energy output sought *before* the Stipulation was entered, which is problematic from a biological standpoint because of scientific literature

⁸ See, e.g., Frick, et al., *An Emerging Disease Causes Regional Population Collapse of a Common North American Bat Species*, SCIENCE, Vol. 329, pp. 679-82 (Aug. 6, 2010).

⁹ See Center for Biological Diversity (Jan. 21, 2010),

http://www.biologicaldiversity.org/campaigns/bat_crisis_white-nose_syndrome/pdfs/petition-Myotisleibii-Myotisseptentrionalis.pdf. Even a conservative estimate by the developer's own environmental consultant projected approximately 6,746 annual bat deaths from the Beech Ridge wind project, and leading bat biologists expect the actual bat mortality rate to be approximately double that amount (assuming no effective adaptive management and other mitigation measures are in place). 675 F. Supp. 2d at 550 n.12.

2_39 → indicating that a larger turbine rotorswept area correlates with significantly increased bat mortality. Accordingly, from both a legal and scientific standpoint, AWI does not believe that the use of larger turbine blades is appropriate under the circumstances as a backdoor attempt to obtain what Beech Ridge bargained away in exchange for other benefits in settling the ESA lawsuit.

2_40 → **Discussions with the FWS:** On page 84, the draft HCP identifies two situations in which further discussions with the Service will be triggered. AWI believes that a third important situation that should trigger discussions with the Service is if the number of little brown bat mortalities equivalent to five Indiana bat mortalities occur in one year, per the ratio established by the company as the appropriate little brown bat to Indiana bat ratio. This accounts for scenarios in which rare Indiana bats are not all accounted for in carcass searches, but where the more common little brown bat, as a surrogate to the Indiana bat, would serve to identify the concern despite the missing Indiana bat data.

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- **Changed Circumstances:** On page 111 of the draft HCP, there is discussion about changed circumstances triggering certain actions, but it is not clear how BRE intends to measure the effects of WNS in order to assess what actions must be taken. Will it depend on local hibernacula impacts, regional impacts, or some other metric? This needs to be more clearly articulated and a sound basis provided for that reasoning.

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- **Climate Change:** On page 111, the draft HCP discusses climate change and emphasizes that the project will not contribute to climate change. It is not clear whether this is being mentioned solely for baseline purposes, or whether the project's limited contribution to climate change (GHGs only from construction and maintenance activities, but not from operation) is being advanced to lessen the mitigation requirement of section 10. In either case, we believe it is inappropriate under section 10 for any project, including renewable energy projects, to receive mitigation or conservation credit because one aspect of the project, by its nature, might have a smaller impact on GHG emissions than another project. There is simply no basis in the ESA to hold this project to any different standard than that which would be applied to any other activity that will take a listed species.

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- **Acoustic Monitoring:** It is imperative that additional acoustic monitoring be done within the project area. This should be a large-scale effort with acoustic detectors established at or near as many of the turbine locations as possible. In addition, prior to any new construction of the 33 additional turbines, more acoustic monitoring should be done to further assess the potential presence of Indiana and VBE bats. The analysis of such data should be done by experts in acoustical analysis of bat calls like Dr. Robbins and Dr. Gannon – both of whom were deemed by a federal judge as leading experts in the field of acoustic monitoring and identification. While Dr. Kurta is a skilled and experienced scientist, his expertise is not in acoustic monitoring. Consequently, Dr. Robbins and Dr. Gannon are in a much better position to assist BRE and West, Inc. in determining the accuracy and scope of acoustic monitoring necessary within the project area. Studies relevant to this issue that should have been cited in the draft HCP include:

- Murray, K. L., E. R. Britzke, B. M. Hadley, and L. W. Robbins. 1999. Surveying Bat Communities: A Comparison between Mist Nets and the Anabat II Detector System. *Acta Chiropterologica*. 1(1):105-112.
- Britzke, E. R., K. L. Murray, J. E. Heywood, and L. W. Robbins. 2002. Acoustic Identification. In *The Indiana Bat: Biology and Management of an Endangered Species* (A. Kurta and J. Kennedy, eds.) Bat Conservation International, Austin, TX.
- Britzke, E.R., J. Duchamp, R.S. Swihart, K.M. Murray, and L.W. Robbins. In Press (2011). Acoustic identification of bats in the eastern United States: A comparison of parametric and nonparametric methods. *J. Wildlife Management*.

Indeed, as explained at trial in 2009, it is precisely because of the expertise that Dr. Robbins and Dr. Gannon possess with respect to acoustic monitoring and species identification that federal agencies (FWS, USFS, and USGS) and state agencies have hired them to conduct bat surveys, which *always* include extensive acoustic monitoring and species identification – including for multiple HCPs for wind projects in the Midwest that are nearing issuance.

HCP and DEIS Deficiencies, ITP Issuance Criteria & Suggestions

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I. The HCP's proposed operational measures do not satisfy the "minimize to the maximum extent practicable" permit issuance criterion of the ESA.

A. Issuance Criteria:

FWS's 2011 Wind Energy Projects Guidance provides guidance regarding what it means to minimize and mitigate to the maximum extent practicable. Issuance criterion requires the FWS to focus solely on measures to be undertaken to reduce the likelihood and extent of the impact of take resulting from the project and appropriate compensatory measures.¹⁰ FWS interprets this to mean that the impacts of the proposed project, including the HCP, must be minimized to the maximum extent practicable and those remaining impacts that cannot be further minimized must be mitigated to the maximum extent practicable.¹¹ These standards are based on a biological determination of the impacts of the project as proposed; if applicants provide biologically based minimization and mitigation measures that are fully commensurate with the level of impacts, they are considered to have minimized and mitigated to the maximum extent practicable.¹²

Consequently, in order to obtain an ITP, an applicant must first minimize to the maximum extent practicable the impacts of the action on the listed species. Factors to be considered in the practicability analysis may include constraints based on the site itself, availability of mitigation habitat, timing and nature of the project, the financial means of the applicant, costs and time associated with redesign and going through local and state permitting and zoning processes, etc.¹³ In this case, **the FWS must determine if the proposed siting of some or all of the turbines will cause**

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¹⁰ FWS, *Wind Energy Project Guidance*, p. 47.

¹¹ *Id.*

¹² *Id.*

¹³ *Id.*

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impacts to the species and, if so, has the applicant minimized 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.¹⁴

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B. The HCP's proposed operational measures for avoidance and minimization are not sufficient:

BRE proposes to adjust turbine cut-in speed to 4.8 m/s one half hour before sunset, for a period of 5 hours, from July 22 through October 13. BRE estimates that this curtailment plan will reduce potential take of Indiana and VBEB's by 50%.¹⁵ According to the BRE, this proposed plan translates to take of up to 5 Indiana bats per year during years 1-3, 2.5 Indiana bats per year during years 4-25, and up to 70 Indiana bats during the permit term. The plan also translates into up to 1 VBEB per year during years 1-3, up to .5 VBEBs per year during years 4-25, and up to 14 VBEBs during the permit term.¹⁶

In addition, BRE's proposed curtailment plan for avoidance and minimization of take is most likely inconsistent with the ESA because the plan does not employ the set of measures that the best available science reasonably indicates can minimize take of covered bats to the maximum extent practicable. The draft HCP, in particular, does not show that an alternative curtailment plan with 6.5 m/s cut-in speed for the entire nightly active period is impracticable despite evidence that such a plan is indeed practicable. In addition, BRE cannot rely on adaptive management to satisfy the "minimize to the maximum extent practicable" standard, particularly since measures reasonably expected to minimize take are immediately available. Each of these claims is further discussed below.

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Minimizing take:

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The HCP's proposed curtailment plan is not supported by the best available science, as demonstrated by the DEIS. FWS has found that a more complete set of curtailment measures, which includes a cut-in speed of 6.5 m/s for the entire nightly active period, especially when combined with feathering, will further minimize take of covered bats by 26% over the proposed plan.¹⁷ Under the DEIS' Alternative 3, the turbine cut-in speed on all project turbines would be set to 6.5 m/s, one half hour before sunset through 15 minutes after sunrise from April 1 to October 15.¹⁸ FWS estimates that this strategy may reduce potential take of Indiana bats and VBEB by an average of 76%.¹⁹ On the contrary, the draft HCP predicts a reduction in potential take of Indiana and VBE bats by 50%, thus the curtailment plan in Alternative 3 provides for a more effective minimization strategy.²⁰

¹⁴ FWS, *Wind Energy Project Guidance*, pp. 47–48.

¹⁵ See DHCP, p. 78; DEIS, p. 56.

¹⁶ DEIS, p. 54.

¹⁷ *Id.* at 244.

¹⁸ These periods are the presumed periods during which Indiana bats are active. DEIS, p. 64.

¹⁹ Relative to normally operating turbines. *Id.*

²⁰ See DHCP, p. 78 ("To avoid and minimize take of covered species, BRE proposes to adjust the turbine cut-in speed on all project turbines from 7.8 mph (3.5 m/s) to 10.7 mph (4.8 m/s) for a 12-week period between mid-July and mid-October each year and for the time of night commencing one-half hour before sunset for a period of five hours (BRE's Curtailment Plan). BRE estimates that this avoidance and minimization strategy will reduce potential take by 50%[.]"; see also DEIS, p. 56; see also DEIS, p. 64.

In addition, the project operation with the proposed curtailment plan has the potential to harm or kill 70 Indiana bats over the span of the permit, whereas the project operation with the more complete curtailment plan, as described in Alternative 3, has the potential to harm or kill 30 Indiana bats. Thus, the Alternative 3 curtailment plan is predicted to cut take by more than half the level expected in the HCP's proposed minimization plan.²¹ These differences can be explained, in part, due to FWS's inclusion of the results of the curtailment studies at Fowler Ridge and the longer nightly and seasonally active period of curtailment in Alternative 3. Best available science supports the FWS' estimate that the Alternative 3 curtailment plan is likely to be significantly more effective for minimizing take of bats than the HCP's plan.

The draft HCP also concludes that raising cut-in speed any higher than 4.8-5.0 m/s would cost more without producing further reduction in take of bats, which is contrary to the Fowler Ridge study conclusions.²² The draft HCP's rejection of the Fowler Ridge study results, which describe a possible outcome for Beech Ridge, and exclusive focus on the Casselman study results, is not based on a reasonable interpretation of the best available science. A curtailment plan with a cut-in speed of 6.5 m/s over the entire nightly active period is more likely to minimize the take of Indiana bats and VBEs than a cut-in speed of 4.8 m/s for only the first 5 hours of the night. Therefore, the proposed curtailment plan is not likely to satisfy the ESA's ITP issuance criteria; **The draft HCP is clearly proposing a minimization plan that is likely to be less effective at reducing take than Alternative 3, as described in the DEIS. This is not legally permissible (unless FWS finds that the Alternative 3 curtailment plan the implementation of a cut-in speed of 6.5 m/s and are impracticable).**²³

Yet the draft HCP has not shown that further curtailment, the Alternative 3 plan, or a cut-in speed 6.5 m/s over the full night is impracticable.²⁴

BRE also attempts to justify its curtailment plan in the HCP by claiming that it is the most "cost-effective" measures that target periods of peak bat activity.²⁵ However, this analysis is unlikely to

²¹ Further, the DEIS anticipates that the curtailment to 6.9m/s cut-in speed under the modified stipulation approved by the District Court will reduce mortality of all bats by at least 76%. *See* DEIS, p. 4.

²² As described in the CLC comments, the fact that in the 2010 study at Fowler Ridge the turbine blades were not feathered does not support rejection of the Fowler Ridge results. The 2011 follow-up to the 2010 Fowler Ridge study indicates that feathering could increase the effectiveness of all cut-in speed treatments. The 2011 follow-up study, as discussed above, also suggests that feathering may have the potential to increase the reduction in mortality for cut-in speed 6.5 m/s even further than the 78.6% found in 2010. 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.

²³ *See* FWS, *HCP/ITP Handbook*, pp. 7-3 to 7-4.

²⁴ As described by CLC, a sequence of considerations that would be more likely than the method used in the draft HCP to lead to an operational plan that minimizes the impacts of take to the maximum extent practicable is as follows: (1) Determine the set of measures that the best available science reasonably indicates can avoid and minimize take to the maximum extent (for this Project the set of measures that satisfy this step are a cut-in speed of 6.5 m/s with turbine feathering below that wind speed, from 30 minutes before sunset through 15 minutes after sunrise, during the period from April 1 through October 15); (2) Determine whether those measures are practicable, and justify the decision based on FWS's guidance; and (3) If and only if that set of measures is shown to be impracticable, select and analyze another alternative that is most likely to produce similar reductions in take but that is practicable (e.g., cut-in speed of 6.5 m/s with feathering for the summer and fall seasons only).

²⁵ *See, e.g.*, DHCP, App. C at C-11 (referring to targeting periods of peak bat activity in justifying an abbreviated nightly active period for curtailment).

minimize the impact of take to the maximum extent practicable because it does not rely on best available science. FWS has clearly stated that an applicant must first minimize to the maximum extent practicable prior to mitigation.²⁶

E. Adaptive management:

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Although adaptive management may be implemented as part of an HCP to determine the effectiveness of minimization and mitigation measures to resolve uncertainty, determine the potential effects of an activity on a species, and test hypotheses concerning the effectiveness of measures that are not planned, it cannot serve as a substitute for reasonable certainty that substantive criteria will be met or for withholding measures that are reasonably indicated by the best available science to minimize and mitigate the impact of take to the maximum extent practicable.²⁷

The RMAMP in the draft HCP, by relying on the Arnett et al. Casselman study alone, relies on assumptions that do not comport with the best available science and minimize the impact of take to the maximum extent practicable. The solution is implementation of the curtailment plan described in the DEIS's Alternative 3: a 6.5 m/s cut-in speed with blade feathering, from 30 minutes before sunset through 15 minutes after sunrise, during the entire active seasons. In addition, the adaptive management plan should contain specific modifications to the curtailment regime if roosting or maternity sites are newly identified.

Alternatives Studied in the DEIS

A. The DEIS's alternatives do not allow for informed decision making:

The DEIS arguably omits reasonable and feasible alternatives that best available science indicates can better protect Indiana bats, VBEs, migratory birds and their habitats. Because each alternative incorporates different seasonal, nightly, mechanical, and numerical modifications, it is difficult to assess the impact of each alternative relative to the others and thus provide a full range of reasonable alternatives that can lead to a reasoned decision.

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At a minimum, as described by the CLC, there are two alternatives that should be added to the EIS because they comport with best available science for minimizing impacts to Indiana bats and VBEs. , the EIS should incorporate an alternative that mirrors Alternative 3, but only for Indiana bats and VBEs. As discussed above, the curtailment regime in Alternative 3 is more in line with the best available science and the ITP issuance criteria than is the proposed plan (Alternative 2), and the curtailment regime in Alternative 3 does not require the addition of three covered species to justify its selection.

²⁶ FWS, *Wind Energy Project Guidance*, p. 47 (emphasis added): [T]he impacts of the proposed project, including the HCP, which were not eliminated through informal negotiation *must be minimized to the maximum extent practicable and those remaining impacts that cannot be further minimized must be mitigated to the maximum extent practicable*. These standards are based in a biological determination of the impacts of the project as proposed, *what would further minimize those impacts, and then what would biologically mitigate or compensate for those remaining biological impacts*.

²⁷ 65 Fed. Reg. 35242, 35252, *Final Addendum to the Handbook for Habitat Conservation Planning and Incidental Take Permitting Process* (June 1, 2000) ("*HCP/ITP Handbook Addendum*"); see also Ruhl & Fischman, *Adaptive Management in the Courts*, 95 Minn. L.Rev. 424, 472 (2010); see also *Greater Yellowstone Coalition, Inc. v. Servheen*, 665 F.3d 1015, 1028–29 (9th Cir. 2011).

D. The HCP omits cut-in speed alternatives:

2_52 Alternative cut-in speeds are not presented in section 7 of the draft HCP as having been eliminated even though more restrictive operational measures were considered during the HCP planning process. Best available science on cut-in speeds indicates that more restrictive speeds reduce the threat to bats. The draft HCP should describe this alternative in section 7 with an explanation of why the alternative was not selected.

Section 7 Consultation

A. The HCP should delineate an action area:

2_53 ESA regulations define the term “action area” as “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action.”²⁸ The draft HCP is noticeably missing a separate section titled “Action Area” that is based on potential impacts to Indiana bats and VBEs. Given that section 7 standards include an analysis of direct and indirect effects, effects on critical habitat, and cumulative effects on species, the draft HCP is not in compliance with section 7 consultation requirements.

C. The HCP must assess cumulative effects & impacts:

2_54 The draft HCP fails to assess cumulative effects of future non-federal activities within the action area on the covered species. Without this analysis, the Service cannot reach a biological opinion and engage in appropriate section 7 consultation.

2_55 Changed Circumstances – Other Federally Listed Species & WNS

A. Other species that could be listed under the ESA in the future must be discussed:

The draft HCP is unclear re: how unlisted species will be affected. Species that are of concern the northern long-eared bat, the eastern small-footed bat, and the little brown bat. The DEIS notes that BRE will simply confer with FWS over the need to amend the ITP should additional species become listed, which does not satisfy section 10(a)(2)(B) of the ESA.²⁹

²⁸ 50 C.F.R. § 402.02. Section 7 of the ESA applies to the USFWS issuance of an ITP. See USFWS, *Habitat Conservation Planning and Incidental Take Permit Processing Handbook* (Nov. 4, 1996), pp. 6-12 to 6-14.

²⁹ DEIS, p. 61. As described by CLC, the only discussion about the impacts of taking these three species appears in an Appendix to the HCP. The Appendix offers only brief descriptions about the bat species and contains no quantification of take. The HCP does not show that taking of those species will be minimized and mitigated to the maximum extent practicable and that adequate funding will be provided for those species. Also, the HCP does not delineate the action area or analyze cumulative impacts in relation to those species. If BRE and FWS are assuming that any conservation plan that satisfies the permit issuance criteria for the listed species will also satisfy the criteria for the unlisted but covered species, that case has not been made. Adding to the confusion, it is unclear how the potential future listing of the three bat species active in the Project area will be determined. Based on the DEIS, it will be treated as a minor amendment to the HCP, but based on the DHCP, FWS will determine the process at a later time “in coordination with BRE.”

2_56 →

C. The DEIS and HCP do not adequately address WNS as a changed circumstance:

Neither the DEIS or draft HCP address what the trigger threshold and specific protocols will be in the case of changed or unforeseen circumstances. In particular, re: WNS, the draft HCP shortsightedly discounts the possibility that the Project could jeopardize and/or reduce appreciably the likelihood of the survival and recovery of Indiana bats. This logic is inconsistent with ESA regulations.

Impacts on Migratory Birds

2_57 →

Although the DEIS predicts moderate to high take of birds over the lifetime of the permit, the project does not possess a permit under the MBTA, nor does it provide for mitigation for take, thus effectively authorizing take without a permit.

2_58 →

AWI is also concerned about the potential impacts of the project on eagles. Under BGEPA, it is a violation to kill an eagle with the appropriate permit, which has not been addressed here. If eagles are

2_59 →

killed in any quantities, regardless of whether the quantities are “significant,” the project will be violating BGEPA unless it has an eagle take permit. AWI also supports FWS’ recommendation that bird diverters be used in adherence with voluntary wind guidelines.

While difficult to summarize documents of this length and detail, the bottom line is that BRE has failed to meet its legal mandate under the ESA. In addition, the DEIS is inadequate and not compliant with NEPA. Admittedly, the deficiencies in the DEIS are, in part, due to the inadequacies inherent to the ITP application/draft HCP, but BRE’s failings do not obviate the responsibility of the FWS to comply with NEPA.

AWI appreciates the opportunity to submit this comment letter and to participate in this decision-making process. Should you have any questions, please contact Tara Zuardo at tara@awionline.org or, via telephone, at 202-446-2148. In addition, if there is any future correspondence on this matter, please send to Ms. Zuardo electronically or by mail to 900 Pennsylvania Ave SE, Washington, DC 20003.

Sincerely,

Tara Zuardo
Wildlife Legal Associate
Animal Welfare Institute
900 Pennsylvania Ave SE
Washington, DC 20003
tara@awionline.org
(202) 446-2148

And on behalf of:

Judith Holyoke Schoyer Rodd
Friends of Blackwater
501 Elizabeth St.

Charleston, WV 25311
roddj@hotmail.com
(304) 345-7663



Shaping the future for birds

October 23, 2012

Public Comments Processing
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Division of Policy and Directives Management
U.S. Fish and Wildlife Service
4401 N. Fairfax Drive, MS2042-PDM
Arlington, VA 22203.

Sent via regulatory portal

Subject: Comments on FWS-R5-ES-2012-0059, Environmental Impact Statement for Beech Ridge Energy's Habitat Conservation Plan

Dear Sir or Madam:

Thank you for the opportunity to provide comments on the Environmental Impact Statement (EIS) for Beech Ridge Energy's Habitat Conservation Plan (HCP). American Bird Conservancy (ABC) is a 501(c)(3) non-profit organization dedicated to the conservation of native birds and their habitats throughout the Americas.

Although wind power could be an important part of the solution to global climate change, wind development can impact birds -- including eagles, songbirds, rare and endangered species -- through collisions with turbines and associated power lines, and through loss of habitat. By 2030, there are expected to be more than 100,000 wind turbines in the United States, and these are expected to kill at least one million birds each year -- possibly significantly more. Terrestrial wind farms are also expected to impact almost 20,000 square miles of bird habitat, some of it critical to threatened species.

ABC believes that birds and wind power can co-exist if wind projects conform to bird-smart principles. Bird-smart wind power employs careful siting, operation and construction mitigation, bird monitoring, and compensation to reduce and redress any unavoidable bird mortality and habitat loss.

Regarding the EIS for Beech Ridge Energy's HCP, ABC offers the following comments and questions:

Migratory Bird Comments:

3_01 The EIS predicts that the project will kill between 10,000 and 26,281 birds over its lifetime, yet the project will have no permit under the Migratory Bird Treaty Act (MBTA). 3_02 By not requiring project mitigation that will prevent the deaths of those 10,000 - 26,281 birds, FWS is essentially authorizing their take without an MBTA take permit. The EIS implies that there is no MBTA take permit that U.S. Fish and Wildlife Service (FWS) can grant (page 18). That is true only because FWS has chosen not to use its delegated authority to promulgate regulations that would create MBTA take permits for wind, most recently when it rejected ABC's rulemaking petition earlier this year, on the same day that it issued the voluntary wind energy guidelines.¹ 3_01 This issue is further explained in a recent letter to FWS regarding the proposed Incidental Take Permit for the Criterion Wind project in Maryland.² (See Attachment 1. The Criterion letter's explanations regarding MBTA and the Bald and Golden Eagle Protection Act also apply to the Beech Ridge project.)

3_03a In addition, several of the birds that the EIS states are present at the project site are FWS-designated Birds of Conservation Concern, as well as birds that are listed in the North American Landbird Conservation Plan as needing conservation action to increase their numbers. FWS 3_03b participates in Partners in Flight, which produced the Conservation Plan.³ ABC is particularly concerned about the Golden-winged Warbler (a candidate for listing under the Endangered Species Act and on the ABC-National Audubon Society U.S. Red WatchList) and the Cerulean Warbler (on the Yellow Watchlist). The Conservation Plan states that the goal for both of these species is to increase their populations by 100% percent. The EIS, however, states that the Beech Ridge project would be expected to contribute to their population decline (page 192). What steps will FWS take to ensure that this project contributes to that 100% population increase conservation goal instead of contributing to species decline? Will the habitat mitigation being undertaken by the project for endangered bats meet the habitat and habitat management needs of these two species?

3_04a Likewise, ABC is also concerned about other vulnerable species named in the EIS as present at the project site. The Bay-breasted Warbler, Blue-winged Warbler, Kentucky Warbler, Wood Thrush, Prairie Warbler, and Canada Warbler are all FWS-designated Birds of Conservation Concern and on the Yellow Watchlist. The North American Landbird Conservation Plan

¹ ABC's rulemaking petition, co-authored with attorneys at Meyer Glitzenstein & Crystal, is available at http://www.abcbirds.org/abcprograms/policy/collisions/pdf/wind_rulemaking_petition.pdf.

² Meyer Glitzenstein & Crystal to FWS on behalf of Save Western Maryland, American Bird Conservancy, et al. October 1, 2012. Public Comments Concerning The Draft Environmental Assessment, Habitat Conservation Plan, And Application For An Incidental Take Permit By Criterion Power Partners, LLC (FWS-R5-ES-2012-0032).

³ Rich, T. D. et al. 2004. Partners in Flight North American Landbird Conservation Plan. Cornell Lab of Ornithology. Ithaca, NY. Available at http://www.partnersinflight.org/cont_plan/PIF2_Part1WEB.pdf. See Volume I, pages 18-19 for the population increases recommended for each species.

3_04a recommends a 50% population increase for each of these species. But the EIS states that the Beech Ridge project would be expected to contribute to population decline for them (page 192). What steps will FWS take to ensure that this project contributes to that 50% population increase conservation goal instead of contributing to species decline? Will the habitat mitigation being undertaken by the project for endangered bats meet the habitat and habitat management needs of these species?

3_04b

Furthermore, the EIS likely underestimates the population decline that will result from this project and its expansion, for two reasons. First, FWS's take estimates are based on regional averages that do not include mortality from western Maryland's Criterion Wind Power project, which is described as 16.01 birds per wind turbine (adjusted estimate) in FWS's Environmental Analysis for the project's HCP for endangered bats.⁴ The regional estimator used in the Beech Ridge EIS should be revised to include Criterion and the various estimates of take based on the revised regional estimator should also be revisited. After all, Criterion Wind is closer to the Beech Ridge project than the Maple Ridge project in New York, which is included in the regional estimator. Second, the population figures FWS uses in the Beech Ridge EIS for the Birds of Conservation Concern detailed above are based on data representing 1995, with no adjustment for population decline since then, even though some species, such as Golden-winged Warbler, are believed to be declining 8 to 9% annually (EIS page 210). The EIS states that adjusting the 1995 population estimates for population decline would likely be inaccurate (footnote 39 on page 210), but the decision not to adjust the 1995 population estimates has already introduced error in the EIS by relying on old data. ABC recommends revising the EIS to show possible population ranges for these species that address the annual decline. This will also require adjusting FWS's predictions of how much the species will decline as a result of the project, again producing a range.

3_05

3_06

The strength of the mortality predictions in the EIS could also be improved through the use of mortality estimate ranges for rare species. Manuela Huso and David Dail of U.S. Geological Survey have developed an approach to predicting mortality ranges for rare species at wind projects, which Huso described in a presentation she gave in October 2012 in Portland, Oregon at The Wildlife Society's annual meeting.⁵ ABC recommends that FWS consult with Huso about using the new estimator in the Beech Ridge EIS for the rare species present at the site.

3_07

⁴ See page 4-19 in FWS and Ecology and Environment, Inc. July 2012. Draft Environmental Assessment for Proposed Issuance of an Incidental Take Permit for the Indiana Bat Under Section 10(a)(1)(B) of the Endangered Species Act for the Criterion Habitat Conservation Plan, Garrett County, Maryland. Available at <http://www.fws.gov/chesapeakebay/EndSppWeb/Criterion%20docs/Draft%20Criterion%20Wind%20Environmental%20Assessment.pdf>.

⁵ Manuela Huso and David Dail. October 2012. Absence of Evidence or Evidence of Absence? Presentation at the 2012 Annual Conference of The Wildlife Society, Portland, OR. Huso can be reached at mhuso@usgs.gov.

Eagle Comments:

ABC is concerned about the potential impacts of this project and its expansion on eagles, especially Golden Eagles. The EIS states, “[t]he Service assumes that Golden Eagles migrate through and winter in the Project area” (page 107). The project is also very near a major raptor migration corridor. (See state of West Virginia in ABC’s Wind Development Bird-Risk Map).⁶ Under the Bald and Golden Eagle Protection Act (BGEPA), it is a violation to kill a single eagle without the appropriate permit. This fact needs to be better explained in the EIS. It is contradicted by statements such as “However, if during monitoring operational restrictions are not effective at avoiding and minimizing and *significant impacts* to eagles and other migratory birds occur, then BRE will consider the potential for off-site mitigation to offset documented impacts including possible off-site habitat preservation and/or restoration” (EIS page 53, emphasis added). **If eagles are killed in any quantities, regardless of whether the quantities are “significant,” the project will be violating BGEPA unless it has an eagle take permit.**

This raises an issue that FWS needs to address. The Federal Register notice for the 2009 eagle take permit rule says that FWS will not issue Golden Eagle take permits east of the 100th meridian except for immediate safety emergencies.⁷ Nevertheless, the 2007 eagle take permit rule allows Golden Eagles to be added as a covered species to Multi-Species HCPs. **However, because neither the 2007 or 2009 eagle take permit rules analyzed the environmental impacts of allowing take of eastern Golden Eagles, FWS should analyze those impacts under the National Environmental Policy Act (NEPA) before allowing take of eastern Golden Eagles to occur.** After all, eastern Golden Eagles are only believed to number between 1,000 and 2,500 individual birds.⁸ ABC strongly recommends that FWS address this lack of NEPA analysis before *any* take of Golden Eagles occurs at wind projects in the eastern United States.

ABC is also concerned that the EIS underestimates the potential risk to Golden Eagles at the project site. The EIS identifies major problems with the avian surveys: they did not include winter (Golden Eagles are known to winter throughout the general area), and they missed the peak of Bald and Golden Eagle migration (page 99). Nonetheless, the project’s Avian Protection Plan records 16 sightings of Golden Eagles at the project (APP page 24). ABC therefore recommends that FWS re-run its eagle take prediction model once the project’s additional eagle surveys are complete and ask the project owner to adjust the project’s eagle take permit acquisition plans and mitigation accordingly.

⁶ American Bird Conservancy. 2012. Wind Development Bird-Risk Map. Available at http://www.abcbirds.org/extra/index_wind.html.

⁷ See page 46840 of Federal Register, Vol. 74, No. 175, September 11, 2009.

⁸ See Todd Katzner, et al. (January 2012) Status, Biology, and Conservation Priorities for North America’s Eastern Golden Eagle (*Aquila Chrysaetos*) Population. *The Auk*, 129(1):168–176.

Proposed Mitigation Comments:

3_11

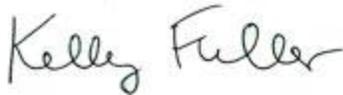
The EIS should be revised to clarify whether FWS believes the cut-in speed mitigation proposed for Indiana bats will be helpful to birds and if so, upon what basis. There are contradictory statements in the text. For example, “For the Proposed Action and each action alternative, the turbine blades would be feathered (pitched) to rotate at <2 revolutions/minute when wind speeds are below the cut-in speed, thus minimizing bat and bird mortality” (EIS page 36). But also, “The Service is aware of no evidence to date that supports an assumption that curtailment strategies for bats also reduce mortality of birds” (EIS page 107).

3_12

In addition, the EIS states that FWS has recommended the project owner add bird diverters or high-visibility markers to the guy wires of permanent meteorological towers on the site, but the project owner has refused (footnote 18 on page 51). ABC agrees with this recommendation and thinks it is a very small thing to ask of a project that the EIS predicts will kill between 10,000 and 26,281 birds over its lifetime, especially given how inexpensive bird diverters and markers are in comparison to the cost of a single wind turbine. Furthermore, if the project does not have these bird diverters or markers, the project is not in adherence with the voluntary wind guidelines, which state, “Avoid guyed communication towers and permanent met towers at wind energy project sites. If guy wires are necessary, bird flight diverters or high visibility marking devices should be used” (FWS Land-based Wind Energy Guidelines, pages 49-50).

In closing, thank you for this opportunity to comment. Please add ABC to the notification list for this project, using the name and address below.

Sincerely yours,



Kelly Fuller

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October 23, 2012

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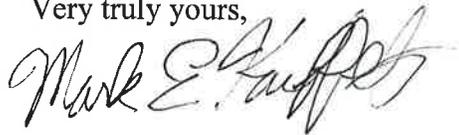
Re: *FWS-R5-ES-2012-0059*
Draft Environmental Impact Statement
And Habitat Conservation Plan
Application for Incidental Take Permit of
Beech Ridge Energy

Dear Sir/Madam: '

Enclosed are public comments to the Draft Environmental Impact Statement and Habitat Conservation Plan for Beech Ridge Energy.

Thank you for your consideration in this matter.

Very truly yours,



Mark E. Kauffelt

MEK/mmw

Comments

The Indiana bat is a brownish-gray creature that weighs about as much as three pennies and, wings outstretched, measures about eight inches. A 2005 estimate concluded that there were 457,000 Indiana bats, half as many as in 1967, when they were first listed as endangered. (Court Halts West Virginia Wind Farm to Guard Endangered Bat, *Washingtonpost.com*, December 10, 2009).

The Laurel Mountain Wind Power Facility

On July 8, 2012, an endangered Indiana bat was found dead at the 61-turbine Laurel Mountain Wind Power facility near Elkins, W.Va. (*Official Web page of the U. S. Fish and Wildlife Service*). Dr. Tom Kunz of Boston University, an expert who analyzes dead bat numbers, estimates that finding one dead bat means that actually twenty-three bats had been killed. That's because the carcasses are scavenged by foxes, crows and other predators. (Wind Turbines Take Steep Toll On Birds And Bats, *Voice of America*, October 10, 2012). Assuming that Indiana bats are no more or less tasty to predators than other bats, the bat at Laurel Mountain Wind Power represents at least twenty-two additional dead Indiana bats killed by the project.

The discovery of the dead Indiana bat directly refutes representations made to the Public Service Commission of West Virginia by Laurel Mountain during the case in which it received siting approval. *AES Laurel Mountain, LLC*, Case No. 08-0109-E-CS. Laurel Mountain advised the Commission that it was possible that a Threatened and Endangered Species might occasionally pass through the Project site, but Laurel Mountain did not believe that a federal taking of a protected species that could require an incidental take permit was likely to occur or

that an incidental take permit was warranted. AES Laurel Mountain, LLC, Case No. 08-0109-E-CS, November 26, 2008 Order, p. 33.

Mist netting surveys were conducted at thirteen different sites on Laurel Mountain between May 3 and 17; between June 13 and 26; and between September 3 and 14, 2007; equating to 228 nights of mist-netting. In order to maximize the likelihood of capturing endangered Indiana bats, mist sites were located not only on the ridgeline near proposed turbine locations but also at lower elevations and near water sources and other habitats not represented along the ridgeline. No Threatened and Endangered species were captured through the mist-netting surveys. AES Laurel Mountain, LLC, Case No. 08-0109-E-CS, November 26, 2008 Order, p. 33.

Based upon this evidence, the Public Service Commission issued the following Conclusion of Law:

48. The evidence submitted by Laurel Mountain concerning Threatened and Endangered species is credible because the studies undertaken were complete, reasonable and conducted in consultation and cooperation with the USFWS and WVDNR. No Threatened or Endangered species were detected through the mist-netting surveys, and as confirmed by WVDNR, the Project area is not located in the immediate vicinity of hibernacula containing Threatened or Endangered bat species. **There is no evidence that a wind power project has resulted in the death of a Threatened or Endangered bat in the United States.** No Federally Threatened or Endangered species are expected to breed, reside in, or use the Project area as primary habitat or breeding area.

AES Laurel Mountain, LLC, Case No. 08-0109-E-CS, November 26, 2008 Order, pp. 66-67 (emphasis added).

The Laurel Mountain project began operations in late July, 2011. (*Official Web page of the U. S. Fish and Wildlife Service*) Within a year, Laurel Mountain provided indisputable

evidence that a wind power project had resulted in the death of a Threatened or Endangered bat in the United States.

The Beech Ridge Energy Project

The purpose of this discussion of the Laurel Mountain project is not to take Laurel Mountain to task for its errors, but to demonstrate that the current survey methods do not reliably measure the potential threat to the Indiana bat. That project didn't obtain an incidental take permit because its mist netting surveys hadn't revealed the bat's presence. Yet the Indiana bat was there and was killed.

4_01

Now, Beech Ridge is requesting a take permit based upon the same faulty methodology that Laurel Mountain used and estimates that between 0 and 5 Indiana bats would be killed annually. If Dr. Tom Kunz of Boston University is correct, the actual number of Indiana bats killed could be as high as 115. Dozens could be killed before one carcass is even found. This is accepting the accuracy of the project's survey results, based on methods which proved to be so woefully inadequate at Laurel Mountain. Logic dictates that the total number of deaths of Indiana bats at Beech Ridge will be far higher.

Beech Ridge Wind Energy Project Habitat Conservation Plan acknowledges the uncertainties surrounding its own estimate:

1. Little is known about the historic summer range of Indiana bat. P. 45.
2. Little is known about behavior of Indiana bats during migration. P. 46.
3. Less is known about the summer habitat of male Indiana bats. P. 54.
4. Little is known about annual survival rates for Indiana bats, either in adults or juveniles, and little is known about background mortality of Indiana bats. P. 43.

5. As with mortality, little is known about recruitment rates in Indiana bat populations. P. 43.
6. Little information is available regarding the circumstances under which Indiana bats may be at risk of collision or barotrauma (damage to respiratory tissue due to rapid changes in air pressure near rotating turbine blades) with wind turbines. In view of the uncertainties associated with Indiana bat fatalities at the project and the inability to directly quantify take of Indiana bats at the project, Beech Ridge used the little brown bat as a surrogate for estimating potential take of Indiana bats. Yet factors suggest that Indiana bats are more likely exposed to turbines than little brown bats. Pp. 67-68.
7. Given the potential availability of suitable summer roosting and foraging habitat surrounding the project site, it can be reasonably anticipated that a maternity colony could develop within the project area over the term of the permit. If such a maternity colony develops, it is possible that the amount of take of Indiana bats contemplated in the permit could increase. P. 114.
8. Given the amount and diversity of habitat surrounding the project, it will be difficult to detect if an Indiana bat maternity colony develops in the project area over the life of the permit that may be affected by project operations. P. 114.

There are other questions raised by the HRC:

1. Beech Ridge claims that due to the elevation, Indiana bats are unlikely to be present during the summer. P. 53. According to the December 8, 2009 Memorandum of Opinion in *Animal Welfare Institute, et al., v. Beech Ridge Energy, LLC, et al.*, Case

No. RWT 09cv1519 (December 8, 2009), Indiana bats will be present in the spring, summer and fall. Pp. 62-63, 66-67.

2. Beech Ridge reports that the only three killings of Indiana bats at a wind farm project occurred in September. P. 67. The Laurel Mountain killing occurred in early July, a further demonstration of the lack of adequate information on the habits and habitat of the Indiana bat.

4_02



3. Beech Ridge states that impacts to bats are unequal across various turbine heights and rotor sizes. Taller turbines may have higher impacts. P. 66. There is no indication that Beech Ridge developed its estimate of taking using turbines the size of those in the Beech Ridge project. In fact, it appears that there was no consideration of turbine size at all in the evaluation of the project's impact on Indiana bats. Since the HRC ignores a factor that could significantly impact the number of Indiana bats that will be killed at the Beech Ridge project, the study may create an estimate for Indiana bat takings at wind farms generally, but is woefully inadequate for developing a precise estimate for the Beech Ridge project.

4_03



Because of these uncertainties and questionable methodology, Beech Ridge's projection of the number of Indiana bats killed at the project is highly suspect and cannot be the basis for granting a take permit. Such a permit needs to be based upon sound scientific information, of which there is a very little in regard to this species. Given the decline of the Indiana bat population since it was placed on the endangered species list, it would be irresponsible to grant Beech Ridge a permit to operate its wind turbines under terms other than those currently in effect until further studies are completed.

4_04

Beech Ridge has proposed a mitigation/avoidance plan. The proposal is to increase the cut-in speed for the turbines during certain times of the day for a twelve week period, which Beech Ridge speculates could reduce the taking by 50%. There does not seem to be any scientific evidence supporting that conjecture, and Beech Ridge rightly proposes to conduct a study to see whether an increase in the cut-in speed will have a beneficial effect. Beech Ridge states that its initial three-year study is designed to detect fatalities of Indiana bats, and to allow estimation of exact Indiana bat take to evaluate the success of meeting HCP goals. P. C-17. After three years of study, if the minimization efforts reduce the taking to at or below 2.5 Indiana bats per year, the minimization efforts will be implemented for all of the turbines. P. C-15.

4_04

There is no reason to alter current operations until that study is completed. There certainly is no reason to permit Beech Ridge to construct an additional 33 turbines while serious questions exist about the current turbines' impact on Indiana bats. In most cases, studies and estimates are used because there is no way of making a real-world determination on the impact of wind turbines at a particular location. In this case, 67 turbines are already in place. Studies can be conducted with those before it is necessary to permit an additional 33 to be built. Cut-in speeds can be altered and carcasses collected and analyzed for some or all of the 67 wind turbines. An expansion of this project in number of turbines or hours of operation would be unwise until that is done.

The Additional Thirty Three Turbines

Beech Ridge has proposed the construction of an additional thirty three turbines. Those turbines, however, are substantially larger than the existing turbines. The existing 67 wind

turbines use a maximum 252-ft rotor diameter with a rotor-swept area of approximately 50,095 square feet. The 67 turbines are mounted on towers with a hub height of 262 feet. The total height of the 67 wind turbines with a blade extending straight up is 388 feet. P. 16

The 33 additional wind turbines would use a maximum 328-ft rotor diameter with a maximum rotor-swept area of approximately 84,454 square feet. P.16. The 33 additional turbines would be mounted on towers with a maximum hub height of 328 feet. The maximum height of the 33 Phase II wind turbines with a blade extending straight up is 492 feet. P.18. The additional turbines will be 30% taller and have a rotor sweep area that is 69% larger than the existing turbines.

4_05

There are three problems with this dramatic increase in size. First, there is no indication that Beech Ridge has determined how the increase in size would impact the level of risk to the Indiana bat. Beech Ridge itself admits that impacts to bats are unequal across various turbine heights and rotor sizes, that taller turbines may have higher impacts based on a review of monitoring study results at wind projects, and that the 33-turbine expansion will likely include turbines heights and rotors sizes that exceed the range included in the available existing studies from this region. P. 66. According to Beech Ridge, differing results from studies suggest that the relationship of turbine size characters with bat mortality is inconclusive and potentially variable depending on site-specific or other conditions. P. 66. So nothing is really known about the larger wind turbines impact on Indiana bats at this location. Until a study of the existing turbines impact on Indiana bats has been completed, and a study of the larger turbines has been undertaken, building the larger ones seems reckless.

4_06

Second, the increase in size seems to violate, at the very least, the spirit of the settlement that Beech Ridge entered into in the Federal litigation. That settlement reduced the number of wind turbines from 124 to 100. One hundred twenty-four turbines of the existing size would have a total rotor-sweep area of 6,211,780 square feet. The total rotor-sweep area for the two-size turbine project Beech Ridge is now proposing would be 6,143,347 square feet, only slightly less than the square footage of the original 124 wind turbine project. Beech Ridge seems to be trying to recover what it agreed to give away in the settlement.

4_07

Third, Beech Ridge doesn't have Public Service Commission approval for the larger turbines. The Commission granted a siting certificate to construct 124 wind turbines mounted on 262-foot tubular steel towers. *See Beech Ridge Energy, LLC*, Case No. 05-1590-E-CS (August 28, 2006). There does not appear to be any consideration of a larger size.

Conclusion

Beech Ridge has failed to develop sufficient reliable information to be granted an Incidental Take Permit. Further study of the Indiana bat and the Beech Ridge site needs to be undertaken before anything resembling a scientific determination can be made on the effect this project will have on the Indiana bat population. When the unknowns that exist regarding the larger turbines that Beech Ridge is now proposing are included, the HRC looks like nothing more than conjecture.

October 23, 2012

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Attn: FWS-R5-ES-2012-0059
Division of Policy and Directives Management
U.S. Fish and Wildlife Service
4401 N. Fairfax Drive, MS 2042-PDM
Arlington, VA 2203

Electronic submission: receipt verification requested

Re: Comments on the Draft EIS and HCP for the Beech Ridge Energy Wind Facility

These comments concern the Draft Environmental Impact Statement (DEIS) and the Draft Habitat Conservation Plan (DHCP) for the Beech Ridge Wind Energy Project (BRE) in Greenbrier and Nicholas Counties, West Virginia. I am submitting these comments due to concern about the environmental impacts of utility-scale wind energy development in the central Appalachian mountain region.

Because of flaws and insufficiencies in the information and analysis provided in both the DHCP and the DEIS, I recommend that the U.S. Fish and Wildlife Service (FWS) adopt Alternative 1, the "No Action" alternative presented in the DEIS. The specific reasons for this recommendation follow.

(1) Failure to evaluate project benefits.

The DEIS provides estimates and comparisons of potential electricity generation benefits associated with each of the four described alternatives (see DEIS Section 3 and Table 3-1). These estimates are apparently provided to help satisfy National Environmental Policy Act (NEPA) requirements for objective evaluation of the range of project alternatives. Both the DEIS and the DHCP, however, fail to provide any actual evaluation of project benefits other than those related to reducing adverse effects of the project.

5_01

The DHCP states that the project is designed to address climate change through production of non-polluting electrical energy for consumer use (see DHCP, Section 8.2.1). The DHCP, however, provides no analysis or quantification of this benefit. This is an omission, given published findings that wind energy projects may provide only minimal benefits with respect to offsetting carbon emissions.¹

5_02

The DEIS provides no cost benefit analysis for the project or for the alternatives considered. An objective evaluation of project benefits versus costs should, at a minimum, quantify the benefits that are commonly cited for wind energy projects, including electricity generation, net reduction in greenhouse gases and other air pollutants, and net displacement of fossil fuel use. These purported benefits should be quantified for each alternative considered.

The inclusion of electricity generation estimates with the listing of alternatives suggests that the FWS does recognize that project benefits should be considered in the context of alternative evaluation (see

¹ National Research Council. 2007. Environmental Impacts of Wind-Energy Projects. National Academies Press, Washington, DC.

DEIS Table 3-1). The generation estimates, however, are simply listed. They are not examined critically, and they are not weighed against project costs or adverse impacts. **Moreover, the estimated generation values are misleading.**

In Section 3 of the DEIS, the estimates of electricity generation are characterized as maximum annual generation potential, given the operating restrictions associated with the alternatives. The same estimates listed in Table 3-1 are characterized as energy capacity with curtailment. The estimates provided in both cases are substantially greater than can be expected based on actual performance of wind projects in the region.

The annual generation estimates presented in the DEIS are based on nameplate capacity times the hours of unrestricted operation per year, which both vary among the alternatives depending on the number of turbines and amount of curtailment to avoid bat mortality. These generation estimates, however, ignore the demonstrated low-performance level for wind turbines in the Appalachian Mountain region. Wind turbines in this region rarely attain a capacity factor exceeding 30%, and during peak-demand periods it is commonly much less.² The regional grid management organization has assigned a capacity credit of only 13% to wind generation projects.³ Thus, a more realistic, but still overly optimistic estimate of electricity generation at the BRE facility would be calculated as nameplate capacity times hours per year times 30%, less whatever additional reduction is associated with curtailment to avoid bat mortality. This results in a much lower estimate of generation.

The following table provides a comparison of estimated generation for BRE given the alternatives presented in the DEIS versus more-realistic estimates based on observed wind project performance in the Appalachian Mountain region. As indicated, the DEIS estimates of potential electricity generation exceed performance-based estimates by 2.4 - 3.2 times. After taking curtailment into account the ratio would be even greater.

Table 1- Comparison of the DEIS and performance-based estimates of electricity generation.

Alternative	DEIA Estimates MWh/year	PerformanceBased Estimates MWh/year ^{1,2}	Estimate Ratio DEIA / Performance Based
1	639,000	264,224	2.4
2	1,542,000	488,808	3.2
3	1,184,000	488,808	2.4
4	832,000	264,224	3.2

¹ The Performance Based Estimates are based on an annual capacity factor of 30%

² The Performance Based Estimates do not take curtailment to avoid bat mortality into account. Thus actual electricity generation will be less than estimated.

² National Research Council. 2007. Environmental Impacts of Wind-Energy Projects. National Academies Press, Washington, DC.

³ PJM. 2010. Manual 21: Rules and Procedures for Determination of Generating Capacity. System Planning Department, PJM (<http://www.pjm.com/~media/documents/manuals/m21.ashx>).

The evaluation of alternatives presented in the DEIS does not include explicit evaluation of project benefits versus project costs, and it does not include any determination that project benefits offset project costs. The only benefit cited in the DEIS is electricity generation, and the estimates provided are strikingly unrealistic.

(2) Failure to account for the effects of White Nose Syndrome

The DHCP and DEIS characterize the occurrence of White Nose Syndrome (WNS) as a “foreseeable changed circumstance” and suggests that BRE will confer with the FWS over potential changes to the HCP should the WNS actually result in a changed circumstance. Both the DHCP and the DEIS indicate that the criterion for a changed circumstance for WNS will be a specified percentage reduction in the populations of the Indiana bat or the Virginia big-eared bat, although no percentage reduction can now be specified. The DEIS further indicates that while WNS has been identified in nearby bat populations, it is difficult to predict at this time what the long-term effects will be on ESA listed bats or other cave dwelling bats.

At this juncture it can be concluded that the WNS is very likely to have an extreme impact on rangewide and local populations of cave dwelling bats, including the Indiana bat. The following excerpts are taken verbatim from a five-year status review for the Indiana bat.⁴

White-Nose Syndrome is a devastating disease of hibernating bats that has caused the most precipitous decline of North American wildlife in recorded history.

If current trends of mortality at affected sites and spread to additional sites continue, WNS threatens to drastically reduce the abundance of most species of hibernating bats in major regions of North America in a remarkably short period of time.

WNS has infected six bat species including Indiana bat (*Myotis sodalis*), little brown bat (*M. lucifugus*), northern long-eared bat (*M. septentrionalis*), small-footed bat (*M. leibii*), tri-colored bat (formerly Eastern pipistrelle) (*Perimyotis subflavus*), and big brown bat (*Eptesicus fuscus*).

WNS has quickly and significantly raised the degree of threat against the Indiana bat and has lowered the species overall recovery potential.

WNS poses a significant new threat to the species’ [Indiana bat] status and may quickly reverse recent population gains.

More recent findings are equally or even more dire.

A five-year assessment of bat mortality due to WNS at 42 sites in five eastern U.S. states revealed a decrease in the number of hibernating bats of 88% overall, and 87% in West Virginia. The investigators

⁴ U.S. Fish and Wildlife Service. Indiana Bat (*Myotis sodalis*) 5-Year Review: Summary and Evaluation. Bloomington Ecological Services Field Office, Bloomington, IN.

further found that Indiana bats decreased by 72%, little brown bats decreased by 91%, tricolored bats decreased by 73%, big brown bats decreased by 41%, northern long-eared bats decreased by 98% and small-footed bats decreased by 12%.⁵

The little brown bat is one of the most common bats in North America. An analysis based on observed rates of decline, indicates that the probability of regional extinction (eastern North America) due to WNS for the little brown bat within the next 16 years is 99%, and further, that annual declines from WNS would have to ameliorate to less than 5% per year to significantly reduce the chance of extinction over 100 years.⁶

It should now be clear to both BRE and the FWS that the effect of WNS is a current and deepening crisis for populations of many bat species in the eastern U.S. and in the more-immediate BRE project area. It should also be clear that this crisis extends to ESA listed species (the Indiana bat), to species currently considered for ESA listing (the little brown bat, the northern long-eared bat, and the eastern small-footed bat), and to a number of other bat species.

5_05

The DHCP and the DEIS both tie consideration of WNS to an as-yet-undetermined percentage reduction in the population of currently listed endangered bats (Indiana bats and Virginia big-eared bats). This approach ignores the effect of WNS on other bat species and precludes effective consideration of WNS on both listed and unlisted bat species in the NEPA review process, including the identification and evaluation of alternatives in the DEIS.

5_06

WNS is not a potential "changed circumstance" that can appropriately be addressed in a context of conference and discussion at some later date after an HCP has been adopted and an ITP has been issued. The WNS is a significant current circumstance that should be addressed in the context of the NEPA review and prior to the adoption of an HCP and issuance of an ITP.

(3) Uncertainty associated with estimates of mortality and population impacts.

BRE proposes that mortality of both the Indiana and Virginia big-eared bats can be estimated through use of a surrogate approach based on the ratio of these rare bats to other bat species. This may be the best available approach given the limited available knowledge concerning both the occurrence of these species and susceptibility to collision with turbines. However, the uncertainty associated with such estimates has not been quantified. Although BRE proposes to verify mortality estimates with monitoring data collected after the turbines are operational, post-construction monitoring cannot inform development of the HCP or evaluation of alternatives addressed in the NEPA review process.

⁵ G.G. Turner, D.M. Reeder, and J.T.H. Coleman. 2011. A Five-Year Assessment of Mortality and Geographic Spread of White-Nose Syndrome in North American Bats and a Look to the Future. *Bat Research News*, 52(2): 13-27.

⁶ W.E. Frick, J.F. Pollock, A.C. Hicks, K.E. Langwig, D.S Reynolds, G.G. Turner, C.M. Butchkoski, and T.H. Kunz. 2010. An Emerging Disease Causes Regional Population Collapse of a Common North American Bat Species. *Science*, 329: 679-682.

BRE proposes that the potential take of Indiana bats at the BRE facility, as well as the population-level impact of this take, can be estimated using the little brown bat as a surrogate, calculating Indiana bat mortality based on (1) the ratio of Indiana bats to little brown bats in West Virginia, (2) the number of bats killed per turbine at existing wind projects in the Indiana bat range, and (3) the percentage of total bat fatalities per turbine at existing wind projects in the Indiana bat range that are little brown bats. The calculation propagates the uncertainties associated with all these factors. Underlying this is the assumption that the little brown bat and the Indiana bat are the same with respect to behavior that results in turbine-related mortality.

Some of the uncertainties associated the use of the little brown bat as a surrogate in this fashion include:

- the ratio of Indiana bats to little brown bats observed in multiple West Virginia mist net surveys: 0 - 4.88% (see DHCP Table 4.6)
- the wide range of bat fatalities determined for wind projects in the Indiana bat range: 24.5 - 47.5, given as estimated means (see DHCP Table 4.2)
- the wide range of results relied upon to determine the percentage of little brown bats among bat fatalities at wind projects in the Indiana bat range: 0 - 14.7% (see DHCP Table 4.3)

It's also relevant that other data cited in the DHCP suggest that Indiana bat numbers are 7.4% of little brown bat numbers in West Virginia. Accounting only for the ranges in total bat mortality and ratios between numbers of Indiana bats to little brown bats, the estimates of annual Indiana bat mortality for the BRE facility range from 6.5 - 45.9, a seven-fold difference.

For the Virginia big-eared bat the surrogate approach is even more problematic given a general lack of data, and BRE proposes to rely on post-monitoring mortality data to develop a relationship between fatalities of Virginia big-eared bats and all bat species.

Added to all of this uncertainty is the major complication that is introduced by the WNS. BRE proposes that post-construction monitoring will be used to verify mortality estimates for the Indiana bat, to parameterize the surrogate approach for the Virginia big-eared bat, and to undertake adaptive management if needed. This will be impossible given crashing populations of the hibernating bats, including the Indiana bat, the little brown bat, and many of the other bats at risk of collision with BRE turbines. There is no reason to think that the previous assumptions and ratios used for BRE's surrogate approach to predictive modeling will continue to apply.

5_07

The estimates of future mortality of endangered bats at the BRE facility are unreliable given the uncertainties associated with the proposed surrogate approach. Even if these uncertainties could be resolved, the current rapid changes in bat populations and communities resulting from WNS will likely alter the critical relationships that underlie BRE's analysis. BRE's estimates of future bat mortality at its facility are unreliable.

(4) The need for a more-objective and quantitative analysis of cumulative impacts.

The discussion of cumulative impacts in the DEIS (Section 5) makes it clear that bat populations in the Mid-Appalachian region are suffering decreased reproduction and survival due to the cumulative effects of multiple stressors, and that mortality related to wind power is additive. The DEIS also cites a general concurrence that mortality related to wind power contributes to a cumulative effect at the population level. The DEIS describes uncertainty related to the magnitude of this risk, but also states that there is "a great deal of agreement that there is risk to populations [of] both tree roosting and cave dwelling bats at some level." An important aspect of this uncertainty concerns the effects of WNS on susceptible species, including whether the significance of mortality caused by wind turbines increases or decreases as species numbers decline in response to WNS. It is clear that many bats species are at high risk due to the cumulative effects of multiple factors, including both WNS and wind turbines. It is also clear that the FWS and the scientific community are unable to parse and separately quantify these risk factors.

It is evidently not known whether:

- The absolute number of bats killed by wind turbines will go down as populations decrease due to WNS.
- The risk of catastrophic bat population decline or species extinction related to WNS is made greater by the additional mortality caused by wind turbines.
- The additive effect of fatalities related to wind turbines is or will remain the same for all species affected by WNS.

It is known, however, that because of long life-spans and low recruitment rates, mortality of bat species becomes more significant as population numbers decline.

Despite this context of uncertainty and risk associated with WNS, the DHCP states:

If the Indiana bat and Virginia big-eared bat take from the project has been negligible or the estimated take as determined by evaluation of impacts to other species is negligible, it is possible that no additional actions will be needed.

5_08



The central question, of course, is how a determination of negligible versus significant impact would be made when bat mortality is associated with both wind turbines and WNS. The DHCP is seemingly suggesting that any effect of the BRE project on species decline will be relatively small compared to the effect of WNS, and thus the BRE project does not put bat populations at risk. Following this logic, the FWS should authorize take of an endangered species by a project no matter what the status of the species – no matter how dire its circumstances – so long as the project's take is small relative to other causes of decline. This logic is inconsistent with ESA regulations and guidance.

5_08



Neither BRE nor the FWS have directly addressed this critical issue, other than to indicate that they will confer later –after the HCP has been adopted and the ITP has been issued. At that point, discussions will apparently be focused on the post-construction mortality monitoring data collected by BRE, which will

likely be rendered uninteruptable given the crash of bat populations due to the WNS. It will not be an enviable position for an agency responsible for effective implementation of the ESA.

5_09

The FWS should take a precautionary approach to protection of bat species and to effective implementation of both the ESA and NEPA. This can be achieved if the FWS applies rigorous population models to examine and project the status of both listed and unlisted bat species in the context of both the range of WNS scenarios and the range bat mortality that may result due to the BRE project. Such models should be run on a range of geographic scales and should quantify uncertainty. The results of such analyses should then provide an objective basis for predicting how bat populations will fare given a range of project alternatives.

5_10

As published by the FWS, the DEIS does not provide the analysis nor address the deficiencies described in these comments. I therefore recommend that the FWS withdraw the published DEIS for further

5_11

analysis and additional input from BRE and other stakeholders. Otherwise, the FWS should adopt Alternative 1, the "No-Action" alternative, as presented in Table 3-1 of the DEIS, which stipulates no new construction and that the existing 67 turbines will be turned off from 30 minutes before sunset to 15 minutes after sunrise from April 1 through November 15.

Thank you for consideration of my comments and recommendations.



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P.O. Box 194
Circleville, West Virginia 26804

October 23, 2012

Via E-Rulemaking Portal

Public Comments Processing
Attn: FWS-R5-ES-2012-0059
Division of Policy and Directives Management
U.S. Fish and Wildlife Service
4401 N. Fairfax Drive
MS 2042-PDM
Arlington, VA 22203

Re: Public Comments Concerning the Draft Environmental Impact Statement, Habitat Conservation Plan, and Application for an Incidental Take Permit by Beech Ridge Energy, LLC (FWS-R5-ES-2012-0059)

Please accept the following comments submitted on behalf of the Allegheny Highlands Alliance, Inc. (“AHA”), an organization comprised of residents of the states of West Virginia, Pennsylvania, Maryland, Virginia and North Carolina. AHA is registered with the Internal Revenue Service as a 501(c)(3) private foundation. Among other efforts, AHA seeks to advance public knowledge and understanding of the cultural and environmental significance of the Allegheny Highlands, and to preserve and protect areas of particular importance in the region.

These comments are in response to the U.S. Fish and Wildlife Service’s (“FWS” or “Service”) Draft Environmental Impact Statement (“Draft EIS”), Beech Ridge Energy, LLC’s (“BRE”) Habitat Conservation Plan (“HCP”), and BRE’s application for an Incidental Take Permit (“ITP application”), all of which the Service requested public comment on in the Federal Register. *See* 77 Fed. Reg. 511554 (August 24, 2012). Each of these documents pertains to BRE’s existing wind energy facility in Greenbrier and Nicholas Counties, West Virginia, which is comprised of 67 utility-scale wind turbines, and to BRE’s proposed 33-turbine expansion of the facility. These segments, “Phase I” and Phase II,” unless otherwise noted, are referred to

jointly in these comments as the “Project.”

The Service’s issuance of an ITP to BRE may be the first awarded to a wind energy developer in the Appalachian region. Thus, the Service’s eventual decision concerning the operation and potential expansion of the Project promises to have immense precedential value in terms of the legal and regulatory mandates applicable to wind developers seeking ITPs. Accordingly, AHA requests that the Service carefully evaluate and consider these comments and those of others submitted in the process.

6_01

AHA supports and endorses the comments submitted in this docket by the Conservation Law Center, particularly those addressing lack of attention in the Draft EIS to cumulative impacts from activities inside the “action area,” which has not been defined by the Service in the Draft EIS. Cumulative effects in this context are “those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area.” 50 C.F.R. § 402.02.

6_02

Similarly, AHA lauds the Conservation Law Center for proposing that a reliable population model be utilized to determine cumulative impacts from wind projects to bats and birds on a broader scale, whether that be across the Indiana bat’s Appalachian Mountains Recovery Unit or another reasonably defined geographic area. Indeed, aside from the Beech Ridge Project, six wind energy facilities comprising over 300 grid-scale turbines are presently in operation in West Virginia and western Maryland alone. Inattention to the aggregate bat and bird mortality resulting from the operation of these installations will undermine the Service’s mission and ultimately will force more species to be listed under the ESA, if not also force other species currently listed into extinction.

6_03

Moreover, based on information that emerged during the state permitting process for wind projects currently in operation in the region, AHA is skeptical that wildlife studies conducted at wind facility sites will yield good science, absent vigilance by the Service to ensure the integrity of these undertakings. Too often the members of AHA have witnessed wind developers utilizing unqualified researchers in the field in the course of both pre- and post-construction surveys, as well as at least one state agency exercising imprudent deference to siting certificate applicants with respect to the scope of and methodology employed in such efforts.

The Allegheny Highlands Alliance, Inc. would like to thank the Service for its consideration of these comments.

Respectfully submitted,

/s/

Brad Stephens
Executive Director

Comments on the draft Environmental Assessment and Habitat Conservation Plan for the Beech Ridge Wind Project in West Virginia.

The Maryland Conservation Council opposes the construction of Phase II and therefore requests that the Service select Alternative 1 for several reasons:

7_01 1) Beech Ridge is only one of many wind plants planned for the region and the cumulative ecological effects of these is unknowable given our current understanding of ecosystem dynamics. The paucity of data on cumulative effects, especially for taxa other than birds, is mentioned in the NRC report, "Environmental Effects of Wind Energy Projects," which is cited several times in the EA, but in other contexts. The NRC report states: "The construction and maintenance of wind-energy facilities alter ecosystem structure, through vegetation clearing, soil disruption, and potential for erosion, and this is particularly problematic in areas that are difficult to reclaim, such as desert, shrub-steppe, and forested areas."

7_02 2) The EA elaborates only on avian and bat mortality. Other effects which may have significant cumulative ecological impacts are denial of habitat and forced energy expenditure from extensive arrays of wind turbines. Another ornithological study, "Wind and Waterbirds" (Watts, B.D., 2010, Center for Conservation Biology, Technical Report Series, College of William and Mary, VCU) elaborates on these hazards, and should be cited in the final EA.

7_03 3) The electricity production of the various alternatives given in Table 3-1 do not take into account the known annual average capacity factor (30%) of wind turbines in the Appalachian Mountains. Using a 30% annual capacity factor; even the full 186 MW installation will have an expected annual output of only 490,000 MWh per year if operated at full potential whenever wind is available. This is not enough electrical energy to justify the environmental impacts of the project (see below).

7_04 4) The HCP does not propose using by extrapolation from surrogate species mortality to estimate Indiana bat mortality. These data should be used as a potential source of confirmation of the Indiana bat data.

7_05 5) The Monitoring Plan contains an intrinsic conflict of interest because the Applicant's employees will perform the monitoring, and report the results to the USFWS. We urge that a monitoring contractor, chosen by the USFWS be employed, and that the data first be evaluated by the Service.

7_06 In conclusion, the Maryland Conservation Council is one of the oldest conservation organizations in the State. Our mission is the protection of Maryland's natural heritage. We believe that climate change is currently perhaps the most serious threat to humanity and the natural world. After thorough study, we have concluded that nuclear power is by far the most benign method for electricity generation, because: 1) industrial-scale renewable electricity production cannot be implemented without the use

of fossil fuel backup generation; and 2) renewable installations adversely impact orders of magnitude more biological habitat than nuclear power to generate an equivalent amount of electricity.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

October 23, 2012

Ms. Laura Hill
Assistant Field Supervisor
West Virginia Field Office
U.S. Fish and Wildlife Service
694 Beverly Pike
Elkins, WV 26241

Subject: Draft Environmental Impact Statement (DEIS) for the Proposed Issuance of an Incidental Take Permit for the Beech Ridge Energy (BRE) Wind Project Habitat Conservation Plan, Greenbrier and Nicholas Counties, West Virginia (CEQ # 20120268)

Dear Ms. Hill:

In accordance with Section 102(2) (C) of the National Environmental Policy Act (NEPA), 42 U.S.C. § 4332(2) (C), Section 309 of the Clean Air Act, 42 U.S.C. § 7609, and the Council on Environmental Quality (CEQ) regulations, 40 CFR Parts 1500-1508, the United States Environmental Protection Agency (EPA), has reviewed the DEIS for the above referenced project.

The DEIS evaluates the potential impacts of four alternatives actions including the No Action alternative, related to the U.S. Fish and Wildlife Service's (USFWS) proposed issuance of an Endangered Species Act Incidental Take Permit (ITP) for the Beech Ridge Wind Energy Project. Currently, 67 wind turbines have been constructed. The Wind Energy Project will consist of up to 100 wind turbines, access roads, transmission and communication equipment storage areas, and control facilities. The proposed ITP would authorize the incidental take of the Indiana bat and the Virginia big ear bat associated with the construction and operation of up to 33 additional wind turbine, associated infrastructure, and the operation of 67 existing wind turbines. The assessment includes evaluation of impacts associated with the decommissioning of the entire project at the end of the life span of the project.

The proposed project is located in Greenbrier and Nicholas counties, West Virginia. The BRE has leased 6,860 acres for the project from a commercial timber company. The area of direct land use is 71 acres. The DEIS has identified 8 streams and 3 wetlands within the area of the construction of the additional 33 wind turbines.

8_01

The DEIS does not identify a preferred alternative. The USFWS is seeking public input into the selection of a preferred alternation through the DEIS comment period. EPA has evaluated the DEIS and has rated the project (each alternative) as an EC-2, Environmental Concerns, Insufficient Information. EPA has developed the rating system to evaluate EISs under the NEPA process. A copy of the EPA EIS rating system is enclosed for your information.

Further information regarding the rating system can be found at: <http://www.epa.gov/Compliance/nepa/comments/ratings.html>. EPA has based the EC-2 on the following comments. EPA recommends that these comments be considered to further improve the project.

8_02

1. For clarification and to be consistent with the rest of the alternative numbering system, the No-Action Alternative should be identified as "Alternative 1: No Action Alternative"

8_03

2. The DEIS should consider as part of the alternative analysis whether reducing the number of wind turbines by selecting a higher power output per unit wind turbine would affect bird and bat strikes.

8_04

3. It is suggested that the historical bat caves and hiberacula areas be referenced on a map relative to proposed project site.

8_05

4. According to the Purpose and Need (P&N) the project will produce up to 186 MW of electricity while complying with the Endangered Species Act (ESA). The stated power output performance for the alternatives is in megawatt-hours. In order to determine if the alternative is meeting the power condition of the Purpose and Need an estimate of operating hours should be included.

8_06

5. The intent of the DEIS P&N is to evaluate Beech Ridge Energy's application for an ITP. The analysis of the DEIS provides the USFWS with the necessary tools to make an informed decision on the issuance of the ITP. It is suggested that the P&N be specific to provide a discussion of the intent of the NEPA analysis to inform decision-making for the Federal agency in issuance of the permit.

8_07

6. While the DEIS identifies wetlands and streams within the area of construction for the additional 33 wind turbines, it does not clearly quantify these impacts; please provide a discussion of avoidance, minimization and mitigation to these aquatic resources. Any necessary permits will need to be approved by appropriate agencies.

8_08

7. All construction activities and the completed facilities (including access roads and transmission line right of ways) must comply with all state, local and federal requirements for sediment and erosion and stormwater management.

EPA appreciates the USFWS efforts in early coordination throughout the development of the project. USFWS should continue the effort to avoid and minimize the project impacts to the ecological community. If you have any questions regarding our concerns, please feel free to contact me or Kevin Magerr at (215) 814 5724.

Sincerely,



Barbara Rudnick, PG
NEPA Team Leader

9_01 1. *Executive Summary, "Avoidance, Minimization, and Mitigation Measures Common to All Alternatives for Potentially Affected Sensitive Resources," Surface and Groundwater Protection Subsection:* To be more consistent with the language of our regulatory authorities, the Corps recommends changing "concerning the crossing of Waters of the U.S." to "concerning any discharge of dredged or fill material into Waters of the U.S."

9_02 2. *Section 1.5.1.4, Section 404 Subsection:* To be consistent with our authorities, the Corps suggests removing this section and replacing it with the following: "USACE is directed by Congress under Section 404 of the Clean Water Act (CWA) (33 USC 1344) to regulate the discharge of dredged and fill material into all waters of the U.S., including wetlands. Section 404 of the CWA authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits, after notice and opportunity for public hearing, for the discharge of dredged or fill material into the waters of the United States at specified disposal sites. The selection and use of disposal sites will be in accordance with guidelines developed by the Administrator of EPA in conjunction with the Secretary of the Army and published in 40 CFR part 230."

9_03 3. *Section 1.5.1.4, Wetlands and waters of the U.S. subsection:* The Corps suggests the first sentence be revised to "Waters of the U.S. are defined in 40 CFR 230.3(s)."

9_04 4. *Section 1.5.1.4, Subsections on Floodplain Management and Invasive Species Prevention and Management:* It is unclear why these subsections are included under the Clean Water Act section.

9_05 5. *Section 1.5.2.2, second paragraph, last sentence:* Remove the word "general" in "general permits." 401 WQC is required for any 404 CWA permit, not just general permits.

9_06 6. *Section 1.6.1, 1st sentence:* The Corps previous NWP #12 included a NEPA analysis (which was performed before NWP #12 was issued). The Corps cannot concur with this statement. Perhaps it would be more accurate to state no previous Federal action necessitated a project-specific NEPA analysis.

9_07 7. *Section 1.6.1.6:* This section will require revision. The Corps provided an initial NWP #12 verification on October 3, 2006, stating the discharge of fill material to waters of the United States for the construction of the proposed transmission line met the criteria for authorization under NWP #12 (67 FR 2020) . This version of NWP #12 expired on March 18, 2007. On May 6, 2008 the Corps issued a NWP #12 verification stating the discharge of fill material into waters of the United States for the a construction of the proposed transmission line met the criteria for authorization under NWP #12 (72 FR 11092).

9_08 Second paragraph: To date, the USACE has not accepted the results of the delineation for Phase II. Our jurisdictional determination is still pending.

9_09 In comparing Figure 1-4 of the DEIS with the 2010 delineation report the Corps has received, the Corps is concerned the project area do not match, particularly in the area of Blue Ridge.

9_09

Based on this, the Corps cannot verify aquatic resources within the expansion area have been adequately described.

9_10

8. *Section 1.6.2.2, first sentence:* The Corps cannot concur with this statement. The Corps took a federal action when we issued the NWP #12 verification. However our Section 106 scope was not the entire wind farm project area.

9_11

9. *Section 3.2.2.1, Surface and Ground Water Protection subsection: 2nd paragraph:* To be more consistent with the language of our regulatory authorities, the Corps recommends changing “for crossing of Waters of the U.S.” to “regarding any discharge of dredged or fill material into Waters of the U.S.” (for example, the Corps may not regulate span “crossings” of jurisdictional waters.)

9_12

10. *Section 3.2.2.2, General Avoidance and Minimization Measures and Mitigation Measures, Surface and Ground Water Protection subsection, 4th paragraph.* To be more consistent with the language of our regulatory authorities, the Corps recommends changing “for crossing of Waters of the U.S.” to “regarding any discharge of dredged or fill material into Waters of the U.S.”

9_13

11. *Section 4.4.2.4:* As noted above, in comparing Figure 1-4 of the DEIS with the 2010 delineation report the Corps has received, the Corps is concerned the project areas do not match, particularly in the area of Blue Ridge. Based on this, the Corps cannot verify aquatic resources within the expansion area have been adequately described.

9_14

12. *Section 4.4.2.4:* Previous sections of the DEIS note 5 wetlands were identified in the Phase II area. This section lists all 6 wetlands described in the 2010 delineation report. This is confusing and the document should be revised for consistency. Potesta, on behalf of the applicant, has indicated Wetland 6 is not within any area proposed for construction.

9_15

13. *Section 4.4.2.4:* The Corps notes the March 23, 2006 jurisdictional determination was only valid for 5 years and is now expired. This section states one non-jurisdictional wetland was identified during the Phase I delineation but is now included in the Phase II analysis area. Will the applicant be impacting this wetland? Does the Corps need to re-evaluate the jurisdictional status of this wetland as part of our review of the Phase II delineation? If so, the applicant needs to advise the Corps accordingly. Also, please see notes above regarding the areas around Blue Ridge.

9_16

14. *Table 4.4.* Given the delineation for the Phase II boundary has not been approved by the Corps, we suggest the title of this table be revised to “Potential jurisdictional wetlands...”

9_17

15. *Table 4.4:* Which resource does footnote 2 apply to?

9_18

16. *Table 4.4:* The acreages for Wetlands 4 and 5 do not match the information in the 2010 delineation report.

9_19

17. *Two paragraphs below Table 4.4.* The Corps has not verified the findings of the 2010 delineation report. It would be preferred that these sections caveat the statement about meeting the definition of waters of the U.S. accordingly.

9_20

18. *Section 5.4.2.2, 100-Turbine Decommissioning, 1st paragraph, last sentence:* The Corps cannot concur with this statement. Based on our Administrative Record, the Corps previous NWP #12 verifications authorized the discharge of fill material into waters of the U.S. associated with the construction of 11 temporary access crossings required for the construction of the 15-mile transmission line. This should also be considered in the Phase I Decommissioning subsection in Section 5.4.2.1.

9_21

19. *Section 5.16.4.4, Surface water subsection:* This section references "Appendix 4.C." Where is this appendix?

9_22

20. *Section 5.16.4.4, Surface water subsection, first sentence:* Change "activities" to "the discharge of fill material into waters of the United States associated with the construction of the transmission line..."

9_23

21. *Section 5.16.4.4, Surface water subsection, first paragraph, last sentence:* Revise the last part of the sentence to state "...the discharge of fill material into waters of the United States associated with the construction of the transmission line would meet the criteria for authorization under NWP 12."

9_24

22. *Section 5.16.4.4, Surface water subsection, 3rd paragraph, 3rd sentence:* This sentence indicates the project the Corps authorized under NWP #12 was not constructed. If this is the case, this should be made clear throughout the document. If this work was not conducted, the Corps is unsure why any discussion of the work is included in the document, especially this cumulative effects section.

9_25

23. *Section 5.16.4.4, Future Effects, 1st paragraph, last sentence:* There is a typo in the word "implementation".

PUBLIC SUBMISSION

As of: 10/1/12 2:22 PM
Tracking No. 810f0bbb
Comments Due: October 23, 2012

Docket: [FWS-R5-ES-2012-0059](#)

Beech Ridge Energy

Comment On: [FWS-R5-ES-2012-0059-0001](#)

Draft Environmental Impact Statement and Habitat Conservation Plan; Receipt of Application for Incidental Take Permit; Beech Ridge Energy

Document: [FWS-R5-ES-2012-0059-0019](#)

Comment on FR Doc # 2012-20223

Submitter Information

Name: JEAN PUBLIC

Address:

NOT AVAILABLE, NJ, 00000

Organization: NONE

Government Agency Type: Federal

Government Agency: FWS

10_1

General Comment

THIS PLAN STINKS TO HIGH HEAVEN. DENY THIS PERMIT. THOSE BATS PERFORM EXTREMELY MPORTANT ECOLOGICAL SERVICES BY EATING WILD VERMIN, INSECTS THAT CAN HARM PEOPLE. THIS PLAN FOR ALLEGED ENERGY IS FROM THE AWFUL BUSH CHENEY KILL THE ENVIRONMENT YEARS. THESE TWO PEOPLE WHO WERE ROUTED OUTOF OFFICE BECAUSE THEY WERE SO TERRIBLE TO AMERICA PUT ALL KINDS OF HARMFUL PLANS INTO PLACE. UNFORTUNATELY THEY ARE STILL THERE AND THEY NEED TO BE TAKEN OFF THE BOOKS. THIS IS AN EXAMPLE OF A HARMFUL INSTALLATION. AMERICA DOES NOT WANT THIS ALLEGED ENERGY PLAN THERE. IT IS NOT A HELP TO AMERICA. THE BATS ARE A BETTER THELP AND MORE NECESSARY TO AMERICA THAN THIS PLAN. THIS PLAN ONLY IS THERE TO HELP GREEDY PROFITEERS, LOOKING TO MAKE A KILLING FINANCIALLY. THEIR PLAN WILL WIPE OUT OUR ECOLOGICAL BENEFITS. DENY THIS PROPOSAL.

PUBLIC SUBMISSION

As of: 10/1/12 2:23 PM
Tracking No. 810f1504
Comments Due: October 23, 2012

Docket: [FWS-R5-ES-2012-0059](#)

Beech Ridge Energy

Comment On: [FWS-R5-ES-2012-0059-0001](#)

Draft Environmental Impact Statement and Habitat Conservation Plan; Receipt of Application for Incidental Take Permit; Beech Ridge Energy

Document: [FWS-R5-ES-2012-0059-0020](#)

Comment on FR Doc # 2012-20223

Submitter Information

Name: Timothy R Ruckman

Address:

Leivasy, WV 26676, WV, 26676

11_1

General Comment

I have reviewed the DEIS for the Beech Ridge Project and I am greatly impressed with the amount of work and resources that went into its preparation and its thoroughness and attention to detail. I am also impressed by the fact that the impact of the project is relatively minor (especially with regard to the bats). The proposed mitigation efforts appear to be appropriate and I hope the Incidental Take Permit will be issued soon and this important project allowed to proceed without further delay before humankind becomes an endangered species. Who will study us when global warming wreaks more havoc and starts decreasing our numbers???

PUBLIC SUBMISSION

As of: 10/1/12 2:22 PM
Tracking No. 8110e307
Comments Due: October 23, 2012

Docket: [FWS-R5-ES-2012-0059](#)

Beech Ridge Energy

Comment On: [FWS-R5-ES-2012-0059-0001](#)

Draft Environmental Impact Statement and Habitat Conservation Plan; Receipt of Application for Incidental Take Permit; Beech Ridge Energy

Document: [FWS-R5-ES-2012-0059-0021](#)

Comment on FR Doc # 2012-20223

Submitter Information

Name: Kyle Ragan

Address:

Richmond, VA,

12_1

General Comment

Upon reviewing the DEIS, I feel that appropriate measures have been taken to consider and mitigate the impact of the wind farm on endangered bats. It appears that, with the proper precautions, the impact on the endangered bats will be minimal and that appropriate monitoring protocol will be in place. The need for clean energy is crucial for the economic and environmental future of the United States. If this project can help promote growth in renewable energies while causing minimal damage to the ecosystems in which the turbines are operating, then we must go forward with the development of the wind farm.

PUBLIC SUBMISSION

As of: 10/1/12 2:20 PM
Tracking No. 8110f1bc
Comments Due: October 23, 2012

Docket: [FWS-R5-ES-2012-0059](#)

Beech Ridge Energy

Comment On: [FWS-R5-ES-2012-0059-0001](#)

Draft Environmental Impact Statement and Habitat Conservation Plan; Receipt of Application for Incidental Take Permit; Beech Ridge Energy

Document: [FWS-R5-ES-2012-0059-0022](#)

Comment on FR Doc # 2012-20223

Submitter Information

Name: Chad M Goldfarb

Address:

Hingham, MA, 02043

13_1

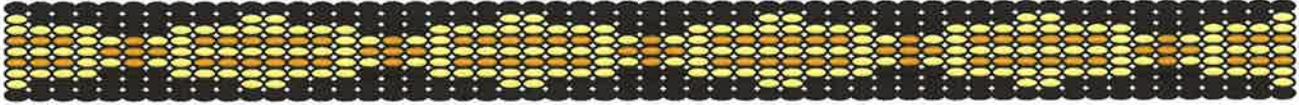
General Comment

After reviewing the DEIS on Beech Ridge Energy, I have a few concerns with the operation. Although the effects of the expected 100 turbines you plan to maintain, operate, and or construct are not extremely threatening to the environment as a whole, the endangered Indiana bats that will be harmed could have a major impact on it's already diminishing population. In the last 10 years, the bat's population has decreased by a whopping 50%. Not only will the turbines themselves kill the bats but the construction of each can destroy much of their habitat. These bats eat many insects that carry harmful diseases, making them crucial in the food chain. If the proper measurements are taken in the construction of these turbines, I approve this Environmental Impact Statement. Please be aware that these bats are ENDANGERED and it would be catastrophic if this project increased the chances of their extinction.

Catawba Indian Nation
Tribal Historic Preservation Office
1536 Tom Steven Road
Rock Hill, South Carolina 29730

Office 803-328-2427
Fax 803-328-5791

RECEIVED
SEP 10 2012
Div. of Policy & Dir. Mgt.



September 5, 2012

Attention: FWS-R5-ES-2012-0059
Public Comments Processing
Division of Policy and Directives Management
U.S. Fish and Wildlife Service
4401 N. Fairfax Drive
MS 2042-PDM
Arlington, VA 22203

Re. THPO #	TCNS#	Project Description
2012-107-3		Draft EIS and HCP for the Beech Ridge Energy Wind Power Project, West Virginia

14_1

Dear Ms. Carter,

The Catawba have no immediate concerns with regard to traditional cultural properties, sacred sites or Native American archaeological sites within the boundaries of the proposed project areas. **However, the Catawba are to be notified if Native American artifacts and / or human remains are located during the ground disturbance phase of this project.**

If you have questions please contact Caitlin Totherow at 803-328-2427 ext. 226, or e-mail caitlinh@ccppcrafts.com.

Sincerely,

Wenonah G. Haire
Tribal Historic Preservation Officer

PUBLIC SUBMISSION

As of: 10/1/12 2:18 PM
Tracking No. 8111a99c
Comments Due: October 23, 2012

Docket: [FWS-R5-ES-2012-0059](#)

Beech Ridge Energy

Comment On: [FWS-R5-ES-2012-0059-0001](#)

Draft Environmental Impact Statement and Habitat Conservation Plan; Receipt of Application for Incidental Take Permit; Beech Ridge Energy

Document: [FWS-R5-ES-2012-0059-0025](#)

Comment on FR Doc # 2012-20223

Submitter Information

Name: David C Sommerville

Address:

Craigsville, WV, 26205

15_1



General Comment

I would like to see the permit approved which would authorize the incidental take of the two endangered species of bats.

I live in the same county as the large wind turbines and they have been a positive asset to our area. As a local church pastor, I have taken groups of church members and visitors to our area to view the wind turbines.

It seems when any kind of "green" energy project is going well, some group will seek to delay or hinder it by filing frivolous complaints such as the impact on these two bat species.

The wind turbines are not placed side by side, so there is plenty of room for bats, birds, and other flying creatures to navigate around them.

Thank you.
David Sommerville

PUBLIC SUBMISSION

As of: 10/26/12 11:45 AM
 Tracking No. 1jw-81kk-vnle
 Comments Due: October 23, 2012

Docket: [FWS-R5-ES-2012-0059](#)

Beech Ridge Energy

Comment On: [FWS-R5-ES-2012-0059-0001](#)

Draft Environmental Impact Statement and Habitat Conservation Plan; Receipt of Application for Incidental Take Permit; Beech Ridge Energy

Document: [FWS-R5-ES-2012-0059-0039](#)

Comment on FR Doc # 2012-20223

Submitter Information

Name: Larry Victor Thomas

Address:

Circleville, WV, 26804

Submitter's Representative: Larry Thomas

Organization: Friends of Beautiful Pendleton County

General Comment

December 8, 2009, the U.S. District Court of Maryland ruled that Beech Ridge Energy LLC was in violation of section 9 of the ESA for its potential to take endangered Indiana bats (*Myotis sodalis*) and its failure to file an application for an incidental take permit related to its industrial wind energy project located in West Virginia. There has been a growing concern at the FWS and in the scientific community regarding the potential for bat and bird kills as well as population declines given the rapid proliferation of industrial wind facilities and the large-scale mortality that has occurred at WV industrial wind facilities. Limited knowledge of migration and other movement behaviors of bats and birds (and indeed of the recent kills of bats and birds at WV industrial wind facilities) and of behavioral responses of bats and birds to landscape changes and turbine design and operation limits the FWS's ability to understand interactions between bats and birds and wind power facilities. The impacts of this projects alternatives, the effectiveness of mitigation measures, and the cumulative impacts of the many threats of numerous industrial wind projects throughout the Allegheny Highlands to bats and birds are highly uncertain and must be evaluated using the best available data, reasonably obtainable new data developed, and risk assessments. FWS must uphold the law to the fullest extent possible. FOBPC fully supports the comments filed October 23, 2012 by the Conservation Law Center. Respectfully submitted, Larry V, Thomas, President

16_1

16_2

16_3

FRIENDS of BLACKWATER

501 Elizabeth St., Room 3 • Charleston, WV 25311 • 304-345-7663 • info@saveblackwater.org

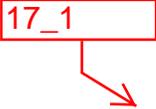
October 23, 2012

Public Comment Processing
Attn: FWS-R5-ES-2012-0059
Division of Policy and Directives Management
US Fish and Wildlife Service
4401 Fairfax Dr.
MS 2042-PDM
Arlington, VA 22203

Dear Laura Hill,

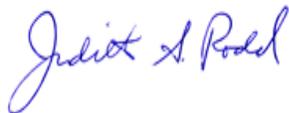
The Friends of Blackwater is a statewide West Virginia conservation organization with a strong interest in protecting the rare and vulnerable wildlife of the state. We have been following the development of industrial wind projects here since 2002 and are very concern about their impacts on birds and bats which collide with wind turbines and the rare species that are impacted by land clearing activities associated with these projects such as the West Virginia northern flying squirrel. We deplore the negative impacts of industrial wind on the rare ecosystems that exist along our highest ridgelines.

17_1



We are especially concerned about bats whose populations are plummeting due to white nose syndrome and will be driven closer to extinction as they are killed by industrial wind turbines. We find that the draft HCP and draft EIS for Beech Ridge Energy is completely inadequate. We agree with the points raised by the Conservation Law Center of Bloomington Indiana in their letter sent to you as part of the public comments process on Beech Ridge Energy (dated 10/23/12).

Sincerely



Judith Rodd, Executive Director



FAX-BeechRidgeHCP
<BeechRidgeHCP@invenergyllc.com>

08/21/2012 01:04 PM

To "Laura_Hill@fws.gov" <Laura_Hill@fws.gov>,

cc

bcc

Subject FW: Beach Ridge HCP

1 of 2

Karyn Coppinger, Invenergy LLC
50 Antelope Avenue, Laramie, Wyoming 82072
307 399 8807

This electronic message and all contents contain information which may be privileged, confidential, or otherwise protected from disclosure. The information is intended to be for the addressee(s) only. If you are not an addressee, and disclosure, copy, distribution, or use of the contents of this message is prohibited. If you have received this electronic message in error, please notify the sender by reply email and destroy the original message and all copies.

From: Rop, Charles [mailto:Charles.Rop@UToledo.Edu]

Sent: Wednesday, May 23, 2012 8:07 AM

To: FAX-BeechRidgeHCP

Subject: Beach Ridge HCP

18_1

I am an ecologist and academic and have studied the literature on the ecological impacts of large wind turbines and wind farms. I am strongly against issuing any take permits for endangered bats and birds. No industry should be allowed to knowingly and deliberately place these large machines in places where they will endanger protected animals and plants. Bats are especially under pressure already by other factors and we can't allow industry to contribute to their demise. There are plenty other actually green alternative energy sources available.

I strongly urge the FWS to deny this permit request.

Thank you,
Charles Rop



FAX-BeechRidgeHCP
<BeechRidgeHCP@invenergyllc.com>

08/21/2012 01:04 PM

To "Laura_Hill@fws.gov" <Laura_Hill@fws.gov>,

cc

bcc

Subject FW: ATTN. Beech Ridge HCP

3 attachments



Earl Dodrill (edodrill).vcf RE Beech Ridge HCP.docx Earl Dodrill (edodrill)2.vcf

2 of 2

Karyn Coppinger, Invenergy LLC
50 Antelope Avenue, Laramie, Wyoming 82072
307 399 8807

This electronic message and all contents contain information which may be privileged, confidential, or otherwise protected from disclosure. The information is intended to be for the addressee(s) only. If you are not an addressee, and disclosure, copy, distribution, or use of the contents of this message is prohibited. If you have received this electronic message in error, please notify the sender by reply email and destroy the original message and all copies.

From: Earl Dodrill (edodrill) [mailto:edodrill@dslcc.edu]

Sent: Tuesday, May 22, 2012 9:53 AM

To: FAX-BeechRidgeHCP

Subject: FW: ATTN. Beech Ridge HCP

From: Earl Dodrill (edodrill)

Sent: Tuesday, May 22, 2012 10:29 AM

To: 'beechridgecp@invenergyllc.com'

Cc: 'Bonnie Dodrill'

Subject: ATTN. Beech Ridge HCP

Please find my comments in support of the Beech ridge plan attached.

Thank you,

Earl R. Dodrill

EARL R. DODRILL
853 BELGIAN VIEW ESTATES
LEWISBURG, WEST VIRGINIA 24901

Received
5-22-12

RE: Beech Ridge HCP

To Whom It May Concern,

I am a resident of Greenbrier County and an unwavering supporter of the Beech Ridge Wind Energy project. From the outset, the men representing Beech Ridge LLC and Invenergy LLC have provided accurate and timely information regarding every aspect of the project. They have proven to be professional gentlemen in conduct and contributory corporate citizens. The project has proven to be beneficial to Greenbrier and Nicholas counties with jobs and revenue injected into the economy. I am unaware of any negative impact to wildlife or habitat or citizens of the county.

19_1
With my observations above and direct benefits, I strongly support the application and underlying concepts of the published Habitat Conservation Plan (HCP) and the Implementing Agreement (IA). Noting data provided by Beech Ridge, LLC and reports provided by biologists in meetings at the Rupert Community Center, the impact on Indiana bats and Virginia big-eared bats seems minimal. The Incidental Take Permit under section 10 of the Endangered Species Act is in my opinion a reasonable and proper step to initiate. **The U.S. Fish and Wildlife Service should approve the permit.**

To continue under the current agreement of limited operation hinders not only the growth and productivity of Beech Ridge LLC but also our community. Economic Development of our region is a vital concern for all citizens. From our school system to our public services and emergency services will receive the all important funding needed to provide our communities with an equivalent life style to other more prosperous regions. Young men I know on a personal basis and volunteer coach and Sunday school teacher are preparing themselves for employment in this high tech high pay industry. They deserve a chance at good employment within their chosen field near their place of birth. The project cannot move on to its full employment and productivity until they are permitted to operate their business at full capacity.

The renewable energy produced by this sustainable energy plant provides much more than just lights on in homes and businesses. It does so without further harm to our environment. It does so without consumption of limited natural resources that ultimately must be trucked or shipped into a region for power generation. It does so without harm to the beauty of the mountains and forests of Greenbrier and Nicholas Counties. The positive social impact of quality of life conditions will keep our young men and women serving and contributing in our communities. We see the potential loss of emergency services such as volunteer fire departments and emergency medical services due to the flat economy. Allowing Beech Ridge LLC to operate at full capacity and complete the remaining turbine installations does not answer all of the ills of Greenbrier and surrounding counties but it certainly goes a long way to contribute effectively. Finally, without the permit we continue as usual while others move on to improved living conditions and quality of life. Personally, I would sacrifice one bat every year or two to improve the conditions of my brothers and sisters in Greenbrier County.

Respectfully submitted,

Earl R. Dodrill

Earl R. Dodrill

Allegheny Front Alliance
94 Orchard Street
Keyser, WV 26726
October 23, 201

Alleghenyfrontalliance@frontier.com



"To protect the Allegheny Front's cultural and natural environment"

October 23, 2012
Public Comments Processing
Attn: FWS-R5-ES-2012-0059
Division of Policy and Directives Management
U.S. Fish and Wildlife Service
4401 N. Fairfax Drive, MS 2042-PDM
Arlington, VA 2203

Electronic Portal submission: receipt verification requested
Re: Comments on Draft EIS and Draft HCP for Beech Ridge Energy Wind Facility

Dear Ms. Hill:

Allegheny Front Alliance (AFA) represents interested community members concerned over the construction and proposed development of industrial wind projects and its impact on wildlife and habitat. AFA is a legal West Virginia business entity. AFA mission is *"To protect the Allegheny Front's cultural and natural environment."*

Since January 2009, AFA opposed the development of two West Virginia Projects, AES, New Creek Project – (# 08- 2105-E-CS) and Pinnacle Project (# 09-0360-E-CS) AFA filed to intervene in both cases.

20_1

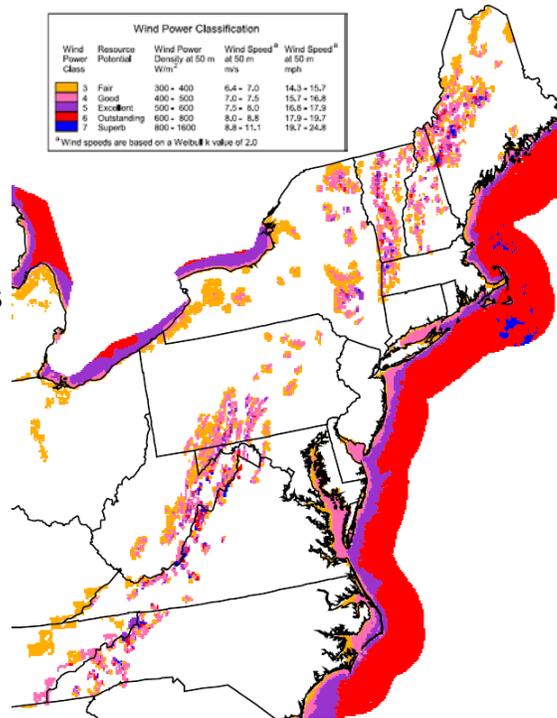
AFA has read, agrees and supports the Conservation Law Center, submitted document entitled, *Comments on Draft EIS and Draft HCP for Beech Ridge Energy Wind Facility.*

AFA believes there are serious environmental issues the industrial wind corporations do not address. AFA is particularly concerned that projects approved by state public service commission are without regard to consulting state and or national wildlife agencies. Currently political support, federal tax incentives, and promises of windfall economics support industrial wind projects. These policies directly influence conducting effective wildlife management practices during the pre-construction, construction, and post construction project phases.

The wind resources of Beechridge as well as the other sited and proposed projects in the Appalachian region, including the Allegheny Front and the Ridge and Valley Mountains are at best only good. Most wind project rarely achieves any operation effectiveness greater than 30% of the time.

NE – mid Atlantic
wind resource

Best locations:
Appalachian ridges
Offshore



20_2

Bats utilize large areas for migration, foraging and habitat. No consideration of cumulative effects: Wind power project sites are evaluated and approved on an individual basis, with no regard for the potential cumulative effects on birds or bats from other nearby wind power facilities or other potential sources of bat mortality

AFA strongly supports Comment 5,

“The DEIS should take a hard look at the cumulative impacts to bat (and bird) species by using a Leslie Matrix model or an equivalent population model with formalized uncertainty analysis. The Leslie model can assess the trajectories and viability of bat colonies and populations in the face of mortality over the ITP term. This model offers a simple method to compare population size with and without Project-associated take, and, thus, provides insight on how the Project could influence population dynamics. This model should be run both on a local scale (Action Area) as well as on a wider geographic scale (Appalachian Mountains RU).”

“In general, the Leslie Matrix or other population model also should be used to examine the expected trajectories of the Indiana bat population, the Virginia big-eared bat population, and other bat populations given the existing and reasonably foreseeable future wind projects in the Appalachian Mountain RU.”

Consider the Pinnacle, LLC Project, located in Mineral County and operated by Edison Mission Energy. From nearby the Pinnacle Look Tower¹ the following projects are visible:

- Mountaineer^{2, 3, 4}, (Tucker County, WV)
- the Ned Power Project⁵ (Grant County, WV)
- The Rock Roth Project,⁶ (Garrett County, MD- Case Number 9008)
- the Criterion Project^{7, 8, 9, 10} (Maryland, formerly Clipper, Constellation, Case Number 8938),
- Four Mile Project^{11, 12, 13, 14, 15} (Pennsylvania) and the
- Pinnacle Project.^{16, 17, 18, 19} (Mineral County WV)

From the Pinnacle Lookout, the following approved projects can be viewed, including

¹ <http://www.voanews.com/media/video/1524397.html?z=2321&zp=1>

² <http://www.voanews.com/media/video/1524397.html?z=2321&zp=1>

³ <http://realneo.us/blog/zebra-mussel/wind-turbines-proven-bat-grinders-slaughter-avian-species>

⁴ <http://www.windaction.org/pictures/500>

⁵ http://www.wvcommerce.org/App_Media/assets/pdf/energy/summits/2008Orndorff.pdf

⁶ <http://realneo.us/blog/zebra-mussel/wind-turbines-proven-bat-grinders-slaughter-avian-species>

⁷ <http://www.youtube.com/watch?v=jKi-rcv2tXg>

⁸ <http://www.youtube.com/watch?v=O1HmsLMpltk>

⁹ <http://www.dnr.state.md.us/irc/docs/00013918.pdf>

¹⁰ http://articles.baltimoresun.com/2010-12-22/features/bs-gr-wind-lawsuit-20101222_1_rare-bats-indiana-bats-wind-project

¹¹ http://www.pjm.com/pub/planning/project-queues/feas_docs/u2030_fea.pdf

¹² <http://times-news.com/local/x325724801/Fourmile-wind-project-has-its-share-of-blowback>

¹³ <http://www.windaction.org/news/36095>

¹⁴ <http://dep.sc.delaware.gov/orders/7998.pdf>

¹⁵ http://times-news.com/latest_news/x608924479/By-2013-Western-Md-could-have-more-wind-turbines

¹⁶ <http://www.windaction.org/documents/23965>

¹⁷ <http://www.windaction.org/documents/34687>

¹⁸ <http://www.whiteconstruction.com/featured-projects/lists/featured-projects/pinnacle-wind-farm->

¹⁹

http://www.wvcommerce.org/App_Media/assets/doc/energy/Energy_Summits/presentations_2011/JimCookman_U_SWindForce.pdf

- AES New Creek ^{20, 21, 22, 23, 24, 25}
- Dan Mountain Project ^{26, 27, 28} (Allegheny County, Maryland, a US Wind Force Project), Case 9164
- Mt Storm Project ²⁹ (Grant County, WV US Wind Force).
- Savage Mountain ^{30, 31}, (Maryland – Case Number 8939)
- Black Rock Wind Force ³², US Wind Force and Edison Mission Energy agreement to own and operate a wind powered electric generating facility in Mineral County, West Virginia
- South Avenue Wind Force, ³³ Formed to develop, build, own, and operate a wind powered electric generating facility in West Virginia
- Clipper Fair Wind ^{34, 35} (Garrett County, Maryland)

And nearby is

- Liberty Gap ³⁶ (Pendleton County, US Wind Force
- Rich Mountain Wind Force, ³⁷ Formed to develop, build, own, and operate a wind powered electric generating facility in Randolph County, West Virginia

²⁰ <http://climate-connections.org/2011/11/07/massive-bird-kill-at-west-virginia-wind-energy-project/>

²¹ <http://sundaygazette.com/News/201205040033>

²² <http://www.scribd.com/doc/63564828/AFA-Response-SmalFootedBat-USFWS-2011-R>

²³ http://www.fws.gov/windenergy/wind_comments/tony_colman.pdf

²⁴ <http://climate-connections.org/2011/11/07/massive-bird-kill-at-west-virginia-wind-energy-project/>

²⁵

<http://www.psc.state.wv.us/Scripts/WebDocket/ViewDocument.cfm?CaseActivityID=258580&Source=OrderSearch>

²⁶ <http://www.windaction.org/news/34781>

²⁷ http://web.uswindforce.com/index.php?option=com_content&task=view&id=6&Itemid=7

²⁸ <http://times-news.com/archive/x1540442772>

²⁹ http://web.uswindforce.com/index.php?option=com_content&task=view&id=3&Itemid=4

³⁰ <http://alleghenytreasures.com/2010/03/19/seven-years-after-permit-approval-savage-mountain-md-industrial-wind-plant-scrapped-due-to-lack-of-interest/>

³¹ <http://esm.versar.com/pprp/bibliography/PPSE-USFW-01/WindForce%20ERD%20Final%20Aug06.pdf>

³² <http://investing.businessweek.com/research/stocks/private/snapshot.asp?privcapId=109314357>

³³ http://www.sce.com/nrc/aboutsce/regulatory/affiliatenotices/SCE_Affiliates.pdf

³⁴ <http://times-news.com/local/x228008654/Permit-for-Clipper-Fair-Wind-project-may-be-issued-this-week>

³⁵ <http://maryland.sierraclub.org/action/p0133.asp>

³⁶ http://web.uswindforce.com/index.php?option=com_content&task=view&id=5&Itemid=6

20_2

- AES Laurel Mountain

The USFWS should examine the cumulative impact of industrial wind development across a large unique biological and ecological geographical landscape.

John Muir, Founder of the Sierra Club stated, “If you try to pick just one thing out of the universe, you realize it attached to something else”

Thank you,

Frank O’Hara
Allegheny Front Alliance

³⁷ http://www.sce.com/nrc/aboutsce/regulatory/affiliatenotices/SCE_Affiliates.pdf

RECEIVED
SEP 14 2012
Div. of Policy & Dir. Mgt.

Public Comments Processing
Attn: FWS-R5-ES-2012-0059
Division of Policy and Directives Management
U.S. Fish and Wildlife Service
4401 N. Fairfax Drive, MS 2042-PDM
Arlington, Virginia 22203

RE: Beech Ridge Energy Project, Docket Number FWS-R5-ES-2012-0059
Letter of Support for Incidental Take Permit

Dear Sir or Ms:

The U.S. Fish and Wildlife Service is reviewing a proposed Incidental Take Permit for the Beech Ridge Wind Farm located in Greenbrier and Nicholas Counties. I request that the Fish and Wildlife Service expedite issuance of the ITP.

The proposed second phase of the Beech Ridge project will create up to 150 construction jobs utilizing local available workers for a period of 6-9 months. Once completed, the second phase will add an additional three full-time wind turbine technicians, bringing the total Beech Ridge Energy staff to 10 quality technical positions with an average starting annual salary of \$35,000 with full benefits.

The addition of 33 turbines to the project will provide approximately \$200,000 in additional local tax revenues paid directly to Greenbrier County every year. It will also result in a \$75,000 increase in the Business and Occupation Taxes paid annually by the project to the State.

Between taxes and salaries, not to mention direct spending, the Beech Ridge Wind Farm will provide over one million dollars that will directly contribute to supporting the local, regional and state economies.

The US Fish and Wildlife Service should approve the Habitat Conservation Plan and issue the Incidental Take Permit as soon as possible. The HCP was developed over several years of interaction with the USFWS, has been extensively peer reviewed, and includes a reasonable set of conservation measures that minimize impacts to bats while at the same time permitting the project to operate in an economic manner. The economic benefits of this project for the people of Greenbrier County cannot be overstated. At a time when economics are poor and layoffs are occurring in many industries, economic growth through development and the additional new jobs are rare and very important.

Sincerely,



JOSH BENDER
P.O. BOX 1216
RUPERT, WV 25984

RECEIVED
SEP 14 2012
Div. of Policy & Dir. Mgt.

Public Comments Processing
Attn: FWS-R5-ES-2012-0059
Division of Policy and Directives Management
U.S. Fish and Wildlife Service
4401 N. Fairfax Drive, MS 2042-PDM
Arlington, Virginia 22203

RE: Beech Ridge Energy Project, Docket Number FWS-R5-ES-2012-0059
Letter of support for Incidental Take Permit

Dear Sir or Ms.:

Beech Ridge Energy has submitted an application for an Incidental Take Permit (ITP) to the U.S. Fish and Wildlife Service (USFWS) for the Beech Ridge Wind Energy Project. As a part of its permit application, Beech Ridge also prepared a Habitat Conservation Plan (HCP) and an Implementing Agreement. The HCP includes a series of conservation measures to avoid, minimize and mitigate the effects of the project on endangered Indiana bats and Virginia big-eared bats.

I urge the USFWS to issue the proposed ITP for the potential take of listed bats. Beech Ridge Energy should be allowed to operate the project as described in the HCP, and move forward with Phase II of the project. Doing so will enable the project to continue to generate clean, renewable energy in a manner that will benefit the local economy.

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Thank you for the opportunity to comment. Please expedite the issuance of the ITP.

Sincerely,



Christopher W. Meehan
133 Wilderness Lane
Crawley, WV 24931

RECEIVED
SEP 14 2012
Div. of Policy & Dir. Mgt.

Public Comments Processing
Attn: FWS-R5-ES-2012-0059
Division of Policy and Directives Management
U.S. Fish and Wildlife Service
4401 N. Fairfax Drive, MS 2042-PDM
Arlington, Virginia 22203

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Sincerely,


9/13/12

Shannon Langley
P.O. Box 142
Lansing WV 25862

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MAY 14 2012
Div. of Policy & Dir. Mgt.

RECEIVED
SEP 14 2012
Div. of Policy & Dir. Mgt.

Public Comments Processing
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Sincerely,



Stephen M. Tolley

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SEP 14 7
Div. of Policy & Dir. Mgt.

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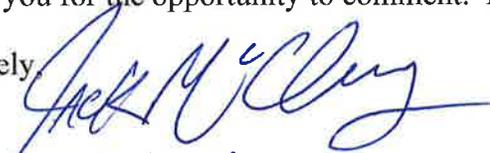
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Sincerely,


Jack McClung

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SEP 14 2012
Div. of Policy & Dir. Mgt.

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Sincerely,


Box 97
Crawley WV 24931

9/14/12
Dewey L. Stickle

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SEP 14 2012
Div. of Policy & Dir. Mgt.

Public Comments Processing
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Dewey L. Stickle
11684 ~~MS~~ Alderess Hwy.
Nallen WV 26680

Brandon L. Daily

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U.S. Fish and Wildlife Service
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FEB 25 2012

Div. of Policy & Dir. Mgt.

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SEP 26 2012

Div. of Policy & Dir. Mgt.

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Division of Policy and Directives Management
U.S. Fish and Wildlife Service
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DEC 11 2012
Div. of Policy & Dir. Mgt.

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HC TG, Box 66
Nimitz, WV 25978

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Attn: FWS-R5-ES-2012-0059
Division of Policy and Directives Management
U.S. Fish and Wildlife Service
4401 N. Fairfax Drive, MS 2042-PDM
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RECEIVED
OCT 01 2012
Dir. of Policy & Dir. Mgt.

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RECEIVED
OCT 09 2012
Div. of Policy & Dir. Mgt.

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Sincerely,

Jeri Lynne Allison
Rt. 1, Box 57
Landside, WV 24951

RECEIVED
09/27/12
Div. of Policy & Dir. Mgt.

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Attn: FWS-R5-ES-2012-0059
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4401 N. Fairfax Drive, MS 2042-PDM
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JUN 11 11:12
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RECEIVED
OCT 19 2012
Div. of Policy & Dir. Mgt.

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The US Fish and Wildlife Service should approve the Habitat Conservation Plan and issue the Incidental Take Permit as soon as possible. The HCP was developed over several years of interaction with the USFWS, has been extensively peer reviewed, and includes a reasonable set of conservation measures that minimize impacts to bats while at the same time permitting the project to operate in an economic manner. The economic benefits of this project for the people of Greenbrier County cannot be overstated. At a time when economics are poor and layoffs are occurring in many industries, economic growth through development and the additional new jobs are rare and very important.

Sincerely,



RECEIVED
OCT 19 2012
Div. of Policy & Dir. Mgt.

Public Comments Processing
Attn: FWS-R5-ES-2012-0059
Division of Policy and Directives Management
U.S. Fish and Wildlife Service
4401 N. Fairfax Drive, MS 2042-PDM
Arlington, Virginia 22203

RE: Beech Ridge Energy Project, Docket Number FWS-R5-ES-2012-0059
Letter of Support for Incidental Take Permit

Dear Sir or Ms:

The U.S. Fish and Wildlife Service is reviewing a proposed Incidental Take Permit for the Beech Ridge Wind Farm located in Greenbrier and Nicholas Counties. I request that the Fish and Wildlife Service expedite issuance of the ITP.

The proposed second phase of the Beech Ridge project will create up to 150 construction jobs utilizing local available workers for a period of 6-9 months. Once completed, the second phase will add an additional three full-time wind turbine technicians, bringing the total Beech Ridge Energy staff to 10 quality technical positions with an average starting annual salary of \$35,000 with full benefits.

The addition of 33 turbines to the project will provide approximately \$200,000 in additional local tax revenues paid directly to Greenbrier County every year. It will also result in a \$75,000 increase in the Business and Occupation Taxes paid annually by the project to the State.

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4401 N. Fairfax Drive, MS 2042-PDM
Arlington, Virginia 22203

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Dear Sir or Ms.:

Beech Ridge Energy has submitted an application for an Incidental Take Permit (ITP) to the U.S. Fish and Wildlife Service (USFWS) for the Beech Ridge Wind Energy Project. As a part of its permit application, Beech Ridge also prepared a Habitat Conservation Plan (HCP) and an Implementing Agreement. The HCP includes a series of conservation measures to avoid, minimize and mitigate the effects of the project on endangered Indiana bats and Virginia big-eared bats.

I urge the USFWS to issue the proposed ITP for the potential take of listed bats. Beech Ridge Energy should be allowed to operate the project as described in the HCP, and move forward with Phase II of the project. Doing so will enable the project to continue to generate clean, renewable energy in a manner that will benefit the local economy.

As described in the Draft Environmental Impact Statement (DEIS), the HCP contains a set of conservation measures that were developed over several years of coordination between the Beech Ridge Energy and USFWS. Conservation measures contained in the HCP are supported by independent scientific peer review and a large body of scientific information. Scientific information contained in the HCP supports the operational protocols and mitigation strategy proposed by Beech Ridge Energy. Implementation of habitat protection measures will provide additional benefits to the listed species, as well as other species of bats that may use these habitats.

In summary, the HCP contains a well-designed set of conservation actions that should minimize and mitigate the effects of the project on the environment. Issuance of the proposed permit by USFWS will likewise enable Beech Ridge Energy to generate clean, renewable energy, offsetting emissions from other generation sources.

Thank you for the opportunity to comment. Please expedite the issuance of the ITP.

Sincerely,

Fred W Shamblin Jr



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NOV 08 2012

Public Comments Processing
Attn: FWS-R5-ES-2012-0059
Division of Policy and Directives Management
U.S. Fish and Wildlife Service
4401 N. Fairfax Drive, MS 2042-PDM
Arlington, Virginia 22203

Div. of Policy & Dir. Mgt.

RE: Beech Ridge Energy Project, Docket Number FWS-R5-ES-2012-0059
Letter of support for Incidental Take Permit

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Thank you for the opportunity to comment. Please expedite the issuance of the ITP.

Sincerely,



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NOV 08 2012

Div. of Policy & Dir. Mgt.

Invenergy

October 23, 2012

VIA WEBSITE www.regulations.gov

Public Comments Processing
Division of Policy and Directives Management
U.S. Fish and Wildlife Service
4401 N. Fairfax Drive, MS 2042-PDM
Arlington, VA 22203

RE: Comments on Draft Environmental Impact Statement for Beech Ridge Wind Energy Project Incidental Take Permit; FWS-R5-ES-2012-0059

To Whom It May Concern:

The purpose of this letter is to provide the comments of Beech Ridge Energy LLC (“BRE”) on the Draft Environmental Impact Statement (“DEIS”) evaluating the proposed issuance of an Endangered Species Act (“ESA”) Section 10 Incidental Take Permit (“ITP”) for the Beech Ridge Wind Project (the “Project”), located in Greenbrier and Nicholas Counties, West Virginia.

By way of background, BRE initiated development of an application for an ITP in January, 2010, as part of a settlement agreement with various groups concerning the Project. On January 10, 2012, BRE submitted its application for an ITP, including a Habitat Conservation Plan (“HCP”). The application and associated HCP were developed by BRE in collaboration with U.S. Fish and Wildlife Service (“USFWS”) staff. The HCP identifies the specific measures BRE proposes to implement to avoid, minimize, and mitigate take of listed species. BRE believes construction and operation of the Project will provide a range of benefits not only to the local community, but to the region as a whole by providing an important source of clean, renewable energy.

41_1



BRE has reviewed the DEIS in detail, and believes the DEIS thoroughly analyzes the environmental impacts of ITP issuance on the human environment. BRE offers the following comments to assist the USFWS in its deliberations over ITP issuance:

41_2



1. The DEIS notes that the USFWS has not selected a preferred alternative for the proposed action, and that after receipt of public comment, USFWS will chose a preferred alternative, and that alternative will be announced in the Final Environmental Impact Statement or Record of Decision. BRE urges USFWS to select Alternative 2 as the Preferred Alternative for the proposed action. Full construction of the Project and implementation of the HCP (as described in Alternative 2) will provide substantial benefits to the local area, region, and country. At full build-out, the Project will produce enough energy annually to power about 48,000 homes. Project construction and operation will likewise avoid the emission of 7.8 million metric tons of carbon dioxide from coal fired generation¹ over the life of the Project. As indicated above, BRE

¹ <http://www.pjm.com/~media/documents/reports/20090127-carbon-emissions-whitepaper.ashx>

Invenenergy

has worked for over two years with USFWS to develop an HCP that will avoid, minimize, and mitigate the impacts of the Project on ESA-listed species. Implementation of the HCP as contemplated by Alternative 2 will contribute to species recovery and enable Project impacts to be minimized while maximizing benefits from the Project to the human environment, including wildlife.

41_3

2. BRE notes that the federal action under consideration is the proposed issuance of an ITP by USFWS. BRE recommends that USFWS review statements throughout the EIS in this regard, and clarify, where appropriate, the federal action under review in this case.

41_4

3. The DEIS provides a limited discussion of the environmental benefits associated with wind energy generation. Available scientific information indicates that construction of alternative energy projects, such as wind energy, will reduce greenhouse gas emissions, thus resulting in beneficial direct, indirect and cumulative environmental affects to humans and wildlife. BRE believes the EIS would benefit from a fuller discussion of such beneficial impacts, including how such benefits may contribute to species conservation in the long-term.

Thank you for this opportunity to provide these comments on the DEIS. BRE looks forward to working with USFWS to finalize the HCP and related documents. Please feel free to contact Karyn Coppinger at 307-399-8807 if you have any questions regarding these comments.

Sincerely,
Beech Ridge Energy LLC



Bryan Schueler
Senior Vice President

PUBLIC SUBMISSION

As of: 10/26/12 11:57 AM
 Tracking No. 1jw-81in-bszc
 Comments Due: October 23, 2012

Docket: [FWS-R5-ES-2012-0059](#)

Beech Ridge Energy

Comment On: [FWS-R5-ES-2012-0059-0001](#)

Draft Environmental Impact Statement and Habitat Conservation Plan; Receipt of Application for Incidental Take Permit; Beech Ridge Energy

Document: [FWS-R5-ES-2012-0059-0033](#)

Comment on FR Doc # 2012-20223

Submitter Information

Name: Arthur & Pamela Dodds

Address:

Montrose, WV, 26283

Organization: Laurel Mountain Preservation Association

42_1

General Comment

It is imperative that FWS uphold the law to the fullest extent possible. Judge Titus ruled in the Beech Ridge case that BRE could not continue construction until an ITP was obtained and that operation can only occur during the periods of time when Indiana bats [IBats] are in hibernation

42_2

from November 16 to March 31. Only the NO-ACTION ALTERNATIVE insures no bats will die. To uphold the ESA and honor the court order, FWS must maintain that there can only be wind turbine operation during hibernation periods for IBats. Cumulative impacts causing IBat deaths by the growing number of wind facilities, WNS, and destruction of habitat compel the NO-ACTION ALTERNATIVE. The IBat killed at the AES Laurel Mountain wind facility had to be identified by using DNA, indicating that possible identification of dead IBats is extremely difficult, if the bat is even found because of its small size, predation, and searcher inefficiency. BRE stated, presumptuously, in its recent permit application to the WVPSA that it anticipates "a final ITP will be issued in the second quarter of 2013." BRE is evidently also ignoring the FWS recommendation to conduct 3 years of pre-construction bat monitoring, especially acoustic. The concept of higher cut-in speeds for the wind turbines is only feasible because the wind speeds are predominantly low, thus resulting in a greater amount of time that the wind turbines are not operating at all. Both the HCP and DEIS ignored Paul Cryan's evidence that male bats are drawn to the highest tree as part of the mating behavior, with the highest tree being the wind turbine.

42_3

Wind turbines operating at this time of mating behavior kill bats. The DEIS must include a more comprehensive watershed analysis than DEP's NPDES requirements in order to evaluate the greater flow of water downstream that causes stream bank erosion and aquatic habitat destruction downstream. Respectfully submitted, Pamela C. Dodds, Ph.D. & Arthur W. Dodds, Jr., President, LMPA

42_4