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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:

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

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 Guidance[3] 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 DEIS[6] 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.

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.

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.

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 Cassleman, 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, *Psuedoreplication 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.

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

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]

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).

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.

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:

- 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);
- Determine whether those measures are practicable, and justify the decision based on FWS's guidance;
- 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).

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]

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]

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.

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 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

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.

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. The EIS Should Study an Alternative that Reflects the Terms of the Modified Stipulation Agreement.

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.

2. The EIS Should Incorporate an Alternative that Mirrors Alternative 3 But Only for Indiana Bats and Virginia Big-eared Bats.

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.

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.

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]

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).

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 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]

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.

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 OMITS 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

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]

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.

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]

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 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.

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.

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.

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

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

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.

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.

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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