

## Request for Information: DE-FOA-0001668 - Wind Wildlife Operational Minimization and Compensatory Mitigation Research Needs

DATE: September 22, 2016  
SUBJECT: Request for Information (RFI)

### Description

The Department of Energy's (DOE) Office of Energy Efficiency and Renewable Energy (EERE) invites input from the public regarding a potential funding opportunity to 1) refine and improve wind turbine operational strategies for reducing impacts to bats and 2) refine and validate approaches designed to compensate for eagle take in circumstances where risk to eagles cannot be reduced to zero after all practicable measures are taken to minimize impacts.

### Background

The mission of the Wind Energy Technologies Office (WETO) within EERE is to accelerate widespread U.S. deployment of clean, affordable, and reliable wind power to promote energy security, economic growth, and environmental quality. For more information, please visit our website at <http://wind.energy.gov>.

EERE, through WETO, is committed to supporting technological innovations that facilitate the growth of the domestic wind industry. In addition to wind technology research and development (R&D), EERE funds R&D to address market barriers that affect the deployment of wind energy, including the effects of wind on wildlife. In permitting wind facilities and complying with state and federal laws protecting wildlife, such as the Endangered Species Act, Migratory Bird Treaty Act, and Bald and Golden Eagle Protection Act, developers and operators of wind energy facilities must often implement measures to mitigate (avoid, minimize, or compensate for) the potential impacts of their facilities on protected species.

### Operational Minimization for Bats

Research on bat interactions with wind turbines funded by EERE and numerous partners under the Bats and Wind Energy Cooperative (BWEC) has found that raising cut-in speeds or feathering blades and slowing rotor speed up to the turbine manufacturer's cut-in speed ("operational minimization") can result in 50% or greater reductions in bat fatalities.<sup>i</sup> While

---

*This is a Request for Information (RFI) only. EERE will not pay for information provided under this RFI and no project will be supported as a result of this RFI. This RFI is not accepting applications for financial assistance or financial incentives. EERE may or may not issue a Funding Opportunity Announcement (FOA) based on consideration of the input received from this RFI.*

effective, such operational minimization strategies have a negative impact on energy production and revenue. The current parameters of these strategies as they have generally been employed do not consider environmental conditions beyond wind speed, or time of year that may affect bat activity (e.g., barometric pressure), potentially preventing operations during periods with little or no risk to bats.

As wind technology advancements in rotor size and hub height enable the development of wind energy facilities in new markets with lower average wind speeds, such as the southeast, the implementation of impact minimization measures that curtail turbine operations will have a proportionally larger effect on project revenue in those regions. As a result, significant refinement operational minimization may help enable wind deployment in new regions, while assuring that effective measures are in place to minimize impacts to bats.

Research is underway to establish the relationship between a suite of environmental variables and bat activity, in order to help refine operational minimization strategies; however, more work is needed to validate these relationships across locations and species.

### **Eagle Compensatory Mitigation**

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (BGEPA). Their habitat spans virtually the entire country, thereby posing one of the most challenging siting issues to wind developers, particularly in the west and mid-west where population densities are greatest. In 2009, the U.S. Fish and Wildlife Service (FWS) promulgated a final rule under the BGEPA allowing for the issuance of incidental take permits. While this rule allows for take of a certain number of bald eagles per year based on population levels in a given area, FWS adopted a “no-net-loss” standard for golden eagles across the US in 2009. This means that operators are required to take necessary steps to avoid and minimize mortality to as close to zero as possible during siting and operations. If additional take is likely despite the implementation of measures to minimize mortality, developers and operators must compensate for the additional take by reducing another form of eagle mortality by an amount equal to or greater than the take at the wind facility (“compensatory mitigation”).<sup>ii iii</sup> In May of 2016, FWS issued a draft Programmatic Environmental Impact Statement and proposed a revision to the 2009 rule to address concerns raised in a federal lawsuit striking down a 2013 rule revision. Notably, the revision does not provide for allowable take of golden eagles anywhere in the U.S. given current understanding of population levels, upholding the “no-net-loss” standard. This further reinforces the need for a suite of viable compensatory mitigation measures that can be readily available to developers seeking to operate and comply with the wildlife protection regulations in areas with golden eagles.<sup>iv</sup>

---

*This is a Request for Information (RFI) only. EERE will not pay for information provided under this RFI and no project will be supported as a result of this RFI. This RFI is not accepting applications for financial assistance or financial incentives. EERE may or may not issue a Funding Opportunity Announcement (FOA) based on consideration of the input received from this RFI.*

The U.S. Fish and Wildlife Service’s Eagle Conservation Plan Guidance defines compensatory mitigation as “replacement of project-induced losses to fish and wildlife resources. Substitution or offsetting of fish and wildlife resource losses with resources considered to be of equivalent biological value” and provides “retrofitting power lines to reduce eagle electrocutions, removing road-killed animals along roads where vehicles hit and kill scavenging eagles, or increasing prey availability” as examples of compensatory mitigation measures for eagle take.<sup>v</sup> In the 2016 draft Eagle Rule revision, FWS acknowledges power pole retrofits as “[o]ne of the most well-established methods for conserving and mitigating effects to eagles.”<sup>vi</sup> At present, the Service does not specifically recognize any other compensatory mitigation options as “established”. Industry stakeholders have begun to develop and peer review models exploring other compensatory mitigation options. However, these measures must be demonstrated and validated as effective and affordable in order to gain acceptance for use in eagle permitting.<sup>vii</sup>

## **Purpose**

The purpose of this RFI is to solicit feedback from industry, academia, research laboratories, government agencies, and other stakeholders on issues related to refining operational minimization strategies, and developing and validating compensatory mitigation approaches for eagles. Specifically, EERE seeks:

- 1) Information on on-going research in these areas and remaining research gaps, and
- 2) Feedback on potential EERE funding in these research areas.

## **Definitions**

In this RFI, the term “operational minimization” means reducing the impact of turbine operations on wildlife through the controlled operation of one or more wind turbines during a period where normal turbine operations would otherwise occur (based on wind speed and manufacturer’s recommended operational parameters). The term “Informed curtailment” or “informed operational minimization” means minimizing the impact of turbine operations on wildlife through the controlled operation of one or more wind turbines during environmental conditions that can be demonstrated to be low risk to bat species (e.g., certain barometric pressure or temperature). Informed operational minimization will allow turbine operators to refine their impact reduction strategies to maximize turbine operations and minimize impacts to species.

---

*This is a Request for Information (RFI) only. EERE will not pay for information provided under this RFI and no project will be supported as a result of this RFI. This RFI is not accepting applications for financial assistance or financial incentives. EERE may or may not issue a Funding Opportunity Announcement (FOA) based on consideration of the input received from this RFI.*

As cited above, the term “compensatory mitigation” refers to “replacement of project-induced losses to fish and wildlife resources. Substitution or offsetting of fish and wildlife resource losses with resources considered to be of equivalent biological value.”

This is solely a request for information and not a Funding Opportunity Announcement (FOA). EERE is not accepting applications.

### **Disclaimer and Important Notes**

This RFI is not a Funding Opportunity Announcement (FOA); therefore, EERE is not accepting applications at this time. EERE may issue a FOA in the future based on or related to the content and responses to this RFI; however, EERE may also elect not to issue a FOA. There is no guarantee that a FOA will be issued as a result of this RFI. Responding to this RFI does not provide any advantage or disadvantage to potential applicants if EERE chooses to issue a FOA regarding the subject matter. Final details, including the anticipated award size, quantity, and timing of EERE funded awards, will be subject to Congressional appropriations and direction.

Any information obtained as a result of this RFI is intended to be used by the Government on a non-attribution basis for planning and strategy development; this RFI does not constitute a formal solicitation for proposals or abstracts. Your response to this notice will be treated as information only. EERE will review and consider all responses in its formulation of program strategies for the identified materials of interest that are the subject of this request. EERE will not provide reimbursement for costs incurred in responding to this RFI. Respondents are advised that EERE is under no obligation to acknowledge receipt of the information received or provide feedback to respondents with respect to any information submitted under this RFI. Responses to this RFI do not bind EERE to any further actions related to this topic.

### **Proprietary Information**

Because information received in response to this RFI may be used to structure future programs and FOAs and/or otherwise be made available to the public, **respondents are strongly advised to NOT include any information in their responses that might be considered business sensitive, proprietary, or otherwise confidential.** If, however, a respondent chooses to submit business sensitive, proprietary, or otherwise confidential information, it must be clearly and conspicuously marked as such in the response.

Responses containing confidential, proprietary, or privileged information must be conspicuously marked as described below. Failure to comply with these marking requirements may result in the disclosure of the unmarked information under the Freedom of Information

---

*This is a Request for Information (RFI) only. EERE will not pay for information provided under this RFI and no project will be supported as a result of this RFI. This RFI is not accepting applications for financial assistance or financial incentives. EERE may or may not issue a Funding Opportunity Announcement (FOA) based on consideration of the input received from this RFI.*

Act or otherwise. The U.S. Federal Government is not liable for the disclosure or use of unmarked information, and may use or disclose such information for any purpose.

If your response contains confidential, proprietary, or privileged information, you must include a cover sheet marked as follows identifying the specific pages containing confidential, proprietary, or privileged information:

**Notice of Restriction on Disclosure and Use of Data:**

Pages [List Applicable Pages] of this response may contain confidential, proprietary, or privileged information that is exempt from public disclosure. Such information shall be used or disclosed only for the purposes described in this RFI DE-FOA-0001668. The Government may use or disclose any information that is not appropriately marked or otherwise restricted, regardless of source.

In addition, (1) the header and footer of every page that contains confidential, proprietary, or privileged information must be marked as follows: “Contains Confidential, Proprietary, or Privileged Information Exempt from Public Disclosure” and (2) every line and paragraph containing proprietary, privileged, or trade secret information must be clearly marked with double brackets or highlighting.

**Evaluation and Administration by Federal and Non-Federal Personnel**

Federal employees are subject to the non-disclosure requirements of a criminal statute, the Trade Secrets Act, 18 USC 1905. The Government may seek the advice of qualified non-Federal personnel. The Government may also use non-Federal personnel to conduct routine, nondiscretionary administrative activities. The respondents, by submitting their response, consent to EERE providing their response to non-Federal parties. Non-Federal parties given access to responses must be subject to an appropriate obligation of confidentiality prior to being given the access. Submissions may be reviewed by support contractors and private consultants.

**Request for Information Categories and Questions**

To facilitate and enable the development and operation of wind energy facilities across the US, including expanding into new wind class regimes and improving the regulatory approval process for permits, EERE seeks input on the development of a potential research and development Funding Opportunity Announcement (FOA).

---

*This is a Request for Information (RFI) only. EERE will not pay for information provided under this RFI and no project will be supported as a result of this RFI. This RFI is not accepting applications for financial assistance or financial incentives. EERE may or may not issue a Funding Opportunity Announcement (FOA) based on consideration of the input received from this RFI.*

Based on consideration and input from stakeholders during public meetings on research priorities, gaps, and needs, and in consideration of past solicitations conducted to improve impact minimization technologies, EERE is considering the following Topic Areas for a potential future solicitation.

**Category 1: Development of Informed Operational Minimization Strategies for Bats**

EERE is considering funding research to further the development and testing of informed operational minimization strategies to reduce bat mortality at wind farms.

- 1) Please share information regarding ongoing research occurring in this area.
- 2) What are the most pressing research gaps in this space? Please be specific (i.e., replication in new regions, establishment of a correlation between specific variables and specific species, better SCADA (Supervisory Control and Data Acquisition) system integration, etc.)
- 3) To your mind, what would be the most impactful studies that EERE could fund in this space and how much do you anticipate that such studies would cost? In responding please consider the number of sites and seasons you would recommend studies cover and please provide some breakdown/rationale for anticipated costs.
- 4) Given your understanding of the relative research needs, should EERE prioritize research in this area?
- 5) For wind farm owners/operators: do you have concerns about the effects of informed operational minimization on turbine reliability or warranty conditions?

**Category 2: Developing and Validating Compensatory Mitigation Approaches for Eagles**

In 2016, EERE issued a Funding Opportunity Announcement to support the development of tools to help minimize eagle take at wind farms. In 2017, EERE is considering funding research to help validate compensatory mitigation approaches for eagle take. This work will help complement the research funded in 2016, providing the wind energy industry with a more complete set of tools needed to obtain eagle take permits and providing strategies for reducing impacts to eagles along multiple stages of the mitigation hierarchy.

---

*This is a Request for Information (RFI) only. EERE will not pay for information provided under this RFI and no project will be supported as a result of this RFI. This RFI is not accepting applications for financial assistance or financial incentives. EERE may or may not issue a Funding Opportunity Announcement (FOA) based on consideration of the input received from this RFI.*

- 1) What are the most promising approaches for compensatory mitigation of bald and golden eagles? Is there a high priority need for validation of these approaches?
- 2) To your mind, what would be the most impactful studies that DOE could fund in this space and how much do you anticipate that such studies would cost? In responding please be specific regarding study design and please provide some breakdown/rationale for anticipated costs
- 3) In their draft proposed revisions for their 2009 BGEPA rule, FWS states, “The Service will encourage the use of in-lieu fee programs, mitigation and/or conservation banks, and other established mitigation programs and projects. We intend to facilitate the establishment of an in-lieu fee program to allow permit applicants to contribute to a compensatory mitigation fund as an alternative to developing individual mitigation measures for each project.”<sup>viii</sup> If this policy is incorporated into the Final Rule, will validating compensatory mitigation approaches for eagles remain a high priority?
- 4) What other factors or sensitivities should EERE consider in developing compensatory mitigation development and validation program?
- 5) Should EERE consider compensatory mitigation for other species, such as bats, or grouse? If so, what are the most promising ideas for compensatory mitigation for those species?

**Category 3: Other**

- 1) How should EERE prioritize research between improving operational minimization options, validating compensatory mitigation options, or other research priorities? If other, please elaborate on the research priority need, and provide justification for importance.
- 2) If funding allows, EERE is also considering funding research to help refine and validate risk models for predicting strike risk to golden and/or bald eagles. Is such work high priority? If so, what would be the most impactful studies that EERE could fund in this space, to your mind what are most promising modeling approaches, and how much do you anticipate that such studies would cost?

---

*This is a Request for Information (RFI) only. EERE will not pay for information provided under this RFI and no project will be supported as a result of this RFI. This RFI is not accepting applications for financial assistance or financial incentives. EERE may or may not issue a Funding Opportunity Announcement (FOA) based on consideration of the input received from this RFI.*

## Request for Information Response Guidelines

Responses to this RFI must be submitted electronically to WindWildlife@ee.doe.gov no later than 12:00pm (ET) on October 11, 2016. Responses must be provided as attachments to an email. It is recommended that attachments with file sizes exceeding 25MB be compressed (i.e., zipped) to ensure message delivery. Responses must be provided as a Microsoft Word (.docx) attachment to the email, and no more than **10** pages in length, 12 point font, 1 inch margins. Only electronic responses will be accepted.

Please identify your answers by responding to a specific question or topic if applicable. Respondents may answer as many or as few questions as they wish.

EERE will not respond to individual submissions or publish publicly a compendium of responses. A response to this RFI will not be viewed as a binding commitment to develop or pursue the project or ideas discussed.

Respondents are requested to provide the following information at the start of their response to this RFI:

- Company / institution name;
- Company / institution contact;
- Contact's address, phone number, and e-mail address.

---

*This is a Request for Information (RFI) only. EERE will not pay for information provided under this RFI and no project will be supported as a result of this RFI. This RFI is not accepting applications for financial assistance or financial incentives. EERE may or may not issue a Funding Opportunity Announcement (FOA) based on consideration of the input received from this RFI.*



- 
- <sup>i</sup> Arnett, E. B., G. D. Johnson, W. P. Erickson, and C. D. Hein. 2013. A synthesis of operational mitigation studies to reduce bat fatalities at wind energy facilities in North America. A report submitted to the National Renewable Energy Laboratory. Bat Conservation International. Austin, Texas, USA.
- <sup>ii</sup> U.S. Fish and Wildlife Service. “Eagle Conservation Plan Guidance Module 1 – Land-based Wind Energy Version 2”. April 2013. Date Accessed: 9/13/2016.  
<https://www.fws.gov/migratorybirds/pdf/management/eagleconservationplanguidance.pdf>
- <sup>iii</sup> “Eagle Permits; Take Necessary To Protect Interests in Particular Localities” 74 Federal Register 102 (11 September 2009), pg. 46840  
<https://www.fws.gov/northeast/ecologicalservices/pdf/FinalDisturbanceRule9Sept2009.pdf>
- <sup>iv</sup> “Eagle Permits; Revisions to Regulations for Eagle Incidental Take and Take of Eagle Nests” 81 Federal Register 88 (6 May 2016). Pg. 27941 (<https://www.federalregister.gov/documents/2016/05/06/2016-10542/eagle-permits-revisions-to-regulations-for-eagle-incident-take-and-take-of-eagle-nests>)
- <sup>v</sup> U.S. Fish and Wildlife Service. “Eagle Conservation Plan Guidance Module 1 – Land-based Wind Energy Version 2”. April 2013. Date Accessed: 8/15/2016.  
<https://www.fws.gov/migratorybirds/pdf/management/eagleconservationplanguidance.pdf>
- <sup>vi</sup> “Eagle Permits; Revisions to Regulations for Eagle Incidental Take and Take of Eagle Nests” 81 Federal Register 88 (6 May 2016). Pg. 27957 (<https://www.federalregister.gov/documents/2016/05/06/2016-10542/eagle-permits-revisions-to-regulations-for-eagle-incident-take-and-take-of-eagle-nests>)
- <sup>vii</sup> “Eagle Permits; Revisions to Regulations for Eagle Incidental Take and Take of Eagle Nests” 81 Federal Register 88 (6 May 2016). Pg. 27942 (<https://www.federalregister.gov/documents/2016/05/06/2016-10542/eagle-permits-revisions-to-regulations-for-eagle-incident-take-and-take-of-eagle-nests>)
- <sup>viii</sup> “Eagle Permits; Revisions to Regulations for Eagle Incidental Take and Take of Eagle Nests” 81 Federal Register 88 (6 May 2016). Pg. 27941 (<https://www.federalregister.gov/documents/2016/05/06/2016-10542/eagle-permits-revisions-to-regulations-for-eagle-incident-take-and-take-of-eagle-nests>)

---

*This is a Request for Information (RFI) only. EERE will not pay for information provided under this RFI and no project will be supported as a result of this RFI. This RFI is not accepting applications for financial assistance or financial incentives. EERE may or may not issue a Funding Opportunity Announcement (FOA) based on consideration of the input received from this RFI.*