

Exhibit No.  
Issue(s): CCN for High  
Prairie Wind Project  
Witness: Dr. Janet Haslerig  
Type of Exhibit: Written Rebuttal  
Testimony  
Sponsoring Party: Missouri  
Department of  
Conservation  
File No.: EA-2018-0202  
Date Testimony Prepared: August 20, 2018

**MISSOURI PUBLIC SERVICE COMMISSION**

**FILE NO. EA-2018-0202**

**WRITTEN REBUTTAL TESTIMONY**

**OF**

**DR. JANET HASLERIG**

**ON**

**BEHALF OF**

**MISSOURI DEPARTMENT OF CONSERVATION**

**\*\*\*DENOTES HIGHLY CONFIDENTIAL INFORMATION\*\*\***

**\*\*DENOTES CONFIDENTIAL INFORMATION\*\***

**REBUTTAL TESTIMONY OF  
DR. JANET HASLERIG  
MISSOURI DEPARTMENT OF CONSERVATION  
CASE NO. EA-2018-0202**

1 **I. INTRODUCTION**

2 **Q. Please state your name, title and business address.**

3 A. Janet Haslerig, Ph.D., Resource Scientist, Missouri Department of  
4 Conservation, P.O. Box 180, Jefferson City, Missouri 65102-0180.

5 **Q. What are your qualifications and experience?**

6 A. I have a Ph.D. in Wildlife Ecology and over 15 years of professional  
7 experience in wildlife conservation. I have served as the Bald Eagle Recovery leader  
8 for the Department since October 2010 where I am responsible for the monitoring  
9 and recovery of bald eagle populations in the state.

10 **Q. Have you testified previously before the Missouri Public  
11 Service Commission?**

12 A. No.

13 **Q. What is the purpose of your rebuttal testimony?**

14 A. The purpose of this testimony is to respond to the direct testimony of  
15 Ameren Missouri (“Ameren”) witness Ajay Arora, specifically with respect to his  
16 testimony describing conservation of endangered species as one of the main risks  
17 associated with the High Prairie Wind Project (“Project”). (Arora Direct, 17:4-13). It  
18 is my opinion that the Project poses a risk to bald eagles and other raptors in and  
19 around the Project area and that mitigation and monitoring should be addressed by

1 the Commission in this case in order to ensure that the construction and operation  
2 of the proposed wind turbines do not adversely impact the state's interest in  
3 protection of these wildlife species.

4 **Q. Are bald eagles currently protected by federal or state law?**

5 A. Yes, both. While bald eagles were removed from the federal  
6 Endangered Species Act list in June 2007, they remain federally protected by the  
7 Bald and Golden Eagle Act, 16 U.S.C. 668-668c, and the Migratory Bird Treaty Act,  
8 16 U.S.C. 703-712. These acts generally prohibit anyone, without a permit, from  
9 taking or disturbing bald eagles, including their parts, nests, or eggs.

10 The bald eagle has been also listed by the Missouri Department of  
11 Conservation as a Species of Conservation Concern ("SOCC"). This state designated  
12 status and rank indicate the level of concern about the species and/or natural  
13 community continued existence throughout its range in Missouri. The bald eagle is  
14 currently listed as "S3" within the state – which means that it is vulnerable in the  
15 state due to a restricted range, relatively few populations or occurrences, recent and  
16 widespread declines, or other factors making it vulnerable to extirpation. As a  
17 SOCC, the bald eagle in Missouri warrants routine monitoring to assess the  
18 population status and to document the continual recovery of the species as well as  
19 detect any eminent or pending threats to its survival.

20 **Q. Can you generally describe the life history of bald eagles?**

21 A. The bald eagle is a North American species with a historic range from  
22 Alaska and Canada to northern Mexico. As many as 300,000 – 500,000 bald eagles

1 once made their home on the continent in the 1700s. By 1963 less than 500 nesting  
2 pairs remained in the lower 48 states. Habitat destruction and degradation, illegal  
3 shooting, and the contamination of its food source, largely because of dichloro-  
4 diphenyl-trichloroethane ("DDT", decimated the eagle population. Consequently,  
5 the United States Fish and Wildlife Service ("USFWS" or "Service") listed the bald  
6 eagle as endangered in all 48 contiguous states under the Endangered Species Act  
7 in 1978. With the enforced federal protection, bald eagles have recovered  
8 dramatically with about 10,000 nesting pairs in the lower 48 states. In 2007, the  
9 USFWS announced the recovery of our nation's symbol and removal from the list of  
10 threatened and endangered species.

11 Bald eagles may live 15 to 25 years in the wild, and longer in captivity.  
12 Eagles mate for life, choosing the tops of large trees to build nests, which they  
13 typically use and enlarge each year. They may also have one or more alternate nests  
14 within their breeding territory. Breeding bald eagles (beginning in fourth or fifth  
15 year) typically lay one to three eggs once a year, and they hatch after about 35 days.  
16 Hatchlings usually fly within three months and typically remain in the nest area for  
17 several months. The foraging area during the breeding season varies based on  
18 location and the abundance of food in the area. Until the fledgling learns how to  
19 hunt for food, they are dependent on the adults for food and will remain in the nest  
20 area for several weeks at which time they will follow the adults to foraging sites. In  
21 addition, it is well documented that fledged eagles typically return to the general  
22 vicinity (100-250 miles) of their nest area to breed once they have reached sexual

1 maturity between the ages of four to five. Disease, lack of food, human disturbance,  
2 lead poisoning, electrocution, collision with vehicles or power lines kill many  
3 fledglings.

4 **Q. What are the Department's efforts in restoring, managing and**  
5 **protecting bald eagles?**

6 A. The Department has invested and will continue to invest considerable  
7 resources in the restoration, management and protection of bald eagles. From 1981  
8 to 1990, the Department, in cooperation with USFWS and the Dickerson Park Zoo  
9 in Springfield, released 74 young bald eagles in Missouri to reestablish them as  
10 nesters. The eaglets were obtained from captive breeding facilities or healthy wild  
11 populations and released in good nesting habitat at Mingo National Wildlife Refuge  
12 and Schell-Osage Conservation Area.

13 Since 1990, the Department has opportunistically monitored the population  
14 of nesting bald eagles in the state. After the USFWS delisted the bald eagles, we  
15 have systematically surveyed nesting bald eagles under the USFWS post-delisting  
16 monitoring plan. This plan calls for states nationwide to monitor the status of bald  
17 eagles for a 20-year period. In 2006 (prior to the official delisting of the bald eagle  
18 under the ESA), the Department participated in the pilot study to test the  
19 effectiveness of the post-delisting monitoring protocol. Since then, the Department  
20 conducted statewide aerial and ground surveys in 2011, 2016, 2017 and 2018. The  
21 yearly estimated monetary cost of conducting aerial surveys is approximately  
22 \$10,189 (helicopter only), not including staff hours.

1 Initiated in the spring of 2018, the Missouri Eagle Watch Program allows  
2 volunteers to contribute to “real” science by collecting critical monitoring  
3 information necessary for the conservation and protection of bald eagles in the  
4 state. The Eagle Watch Program is a standardized and comprehensive eagle nest  
5 monitoring program using citizen scientists to monitor bald eagle populations and  
6 their productive status. In just the first year, we had over 35 citizens participate in  
7 this program and we expect that number to grow rapidly.

8 **Q. Are you concerned about the impact of the High Prairie**  
9 **Project ("Project") upon bald eagles? And if so, why?**

10 A. Yes, I am concerned about the impact of the Project on bald eagles.  
11 Based upon a Raptor Nest Study conducted by Stantec Consulting Services, Inc.  
12 (“Stantec) in early 2018 and provided by Ameren in response to MDC Data Request  
13 No. 7, there are \*\*\* \*\*\* bald eagle nests within the Project boundary, \*\*\*  
14 \*\*\* The inactive nests likely serve as  
15 alternative nests, as described above. Moreover, there are \*\*\* \*\*\* eagle nests  
16 within 10-miles of the Project, and \*\*\* \*\*\* outside of the 10-mile buffer, with  
17 \*\*\* \*\*\* of these nests considered to be active. It is my understanding from project  
18 discussions with Terra-Gen representative Mark Casper in June 2018 that there is  
19 at least \*\*\*

20 \*\*\* The Department has requested Shapefiles regarding  
21 turbine and eagle/raptor nest locations that would help us determine how far the  
22 other eagle nests are around the Project area and distance from the wind turbines.

1           According to the National Audubon Society, wind turbines and their  
2 associated infrastructure kill an estimated 140,000 to 328,000 birds each year in  
3 North America.<sup>1</sup> However, at best these are very rough estimates that are highly  
4 variable due in part of the lack of published and comparable studies or the general  
5 lack of rigorous monitoring and reporting of eagle mortalities.<sup>2</sup> It is my  
6 understanding that wind energy projects are among the fastest growing energy  
7 sectors in the world, and one of the most concerning threats to birds and bats in the  
8 United States.<sup>3</sup> At the end of 2016, there were more than 52,000 operating,  
9 commercial-scale wind turbines in the United States and many more currently  
10 under construction.<sup>4</sup>

11           Increasingly, estimates of raptor mortality at wind farms is the subject of  
12 intense effort and study.<sup>5</sup> Reportedly, diurnal raptors like bald eagles are relatively  
13 vulnerable to collision with wind turbines.<sup>6</sup> Because these groups are far less  
14 abundant than song birds, there is concern that the potential relatively high fatality

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<sup>1</sup> Bryce, E. 2016. Will Wind Turbines Ever Be Safe For Birds. National Audubon Society.

<sup>2</sup> American Wind Wildlife Institute (AWWI). 2018. Wind Turbine Interactions with Wildlife and Their Habitats: A Summary of Research Results and Priority Questions. Washington, DC; Pagel, Joel, K. Kritz, B. Millsap, R. Murphy, E. Kershner and S. Covington. 2013. Bald Eagle and Golden Eagle Mortalities at Wind Energy Facilities in the Contiguous United States. *J. Raptor Res.* 47(3):311-315

<sup>3</sup> Colleen Martin, E. Arnett, and M. Wallace. 2013. Evaluating Bird and Bat Post-Construction Impacts at the Sheffield Wind Facility, Vermont. 2012 Annual Report.

<sup>4</sup> Hutchins, Michael. 2017. Wind Energy and Birds FAQ- Part 1: Understand the Threats Wind Energy Poses to Birds. American Bird Conservancy.

<sup>5</sup> Watson, R.T., P.S. Kolar, M. Ferrer, T. Nygard, N. Johnston, W.G. Hunt, H.A. Smit-Robinson, C.J. Farmer, M. Huso and T. E. Katzner. 2018. Raptor Interactions with Wind Energy: Case Studies From Around the World. *J. Raptor Res.* 52(1):1-18.

<sup>6</sup> American Wind Wildlife Institute (AWWI). 2018. Wind Turbine Interactions with Wildlife and Their Habitats: A Summary of Research Results and Priority Questions. Washington, DC; Mojica, E.K., B. Watts, and C. L. Turrin. 2016. Utilization Probability Map for Migrating Bald Eagles in Northeastern North America. A Tool for Siting Wind Energy Facilities and Other Flight Hazards. *PLoS ONE* 11(6):e0157807.doi:10.1371/journal.pone.0157807.

1 rates are reflective of a high vulnerability to collision.<sup>7</sup> The high vulnerability of  
2 birds of prey is especially problematic as many species are slow to reproduce. Thus,  
3 a loss of breeding adults from fatal collisions has a greater effect on the population  
4 than on many other avian species.<sup>8</sup> Significant losses to raptors are exacerbated by  
5 wind energy projects located in or near major migratory routes, stopover sites, or  
6 key breeding or foraging areas.<sup>9</sup>

7 Disturbance, displacement from suitable habitat, or demographic effects due  
8 to fragmentation of habitat from pre-construction, construction, or operation and  
9 maintenance activities might result in loss of productivity at nearby nests.<sup>10</sup>  
10 Serious disturbance or mortality effects could result in the permanent or long-term  
11 loss of a nesting territory and disturbances near important eagle use areas or  
12 migration concentration sites might stress eagles so much that they suffer  
13 reproductive failure or mortality elsewhere.

14 **Q. Ameren has suggested that it plans to develop an Eagle**  
15 **Conservation Plan in consultation with the USFWS (Ameren Response to**  
16 **MDC Data Request 05), which will permit the incidental take of eagles**  
17 **under certain circumstances. Are you familiar with the ECP?**

18 A. I am familiar with Eagle Conservation Plans (“ECP”), but I have not  
19 yet seen a draft copy of the plan described by Ameren. An ECP documents how the

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<sup>7</sup>Pagel, *supra* n. 2.

<sup>8</sup> Beston, Julie A., J. Diffendorfer, Scott R. Loss, and D.H. Johnson. 2016. Prioritizing Avian Species For Tier Risk of Population-Level Consequences from Wind Energy Development. PLoS One 11(3):e0150813.doi:10.1371/journal.pone.0150813.

<sup>9</sup>Mojica, *supra* n. 6.

<sup>10</sup>AWWI, *supra* n. 6.



1 project developer or operator intends to comply with the regulatory requirements  
2 for programmatic permits and the associated federal National Environmental Policy  
3 Act process by avoiding and minimizing the risk of taking eagles up-front, and  
4 formally evaluating possible alternatives in (ideally) siting, configuration, and  
5 operation of wind projects.<sup>11</sup> Post-construction monitoring (i.e., disturbance and  
6 fatality monitoring) may be required by USFWS as a condition of an eagle  
7 programmatic take permit and will be required for wind-energy projects that may  
8 potentially take eagles.

9 **Q. Does Ameren obtaining an ECP and an incidental take permit**  
10 **from the USFWS eliminate your concerns about eagles in Missouri?**

11 A. No. At this point, we do not know if Ameren will actually apply for and  
12 obtain an ECP. Even if it does, the Department has and continues to invest  
13 substantial resources in the restoration, monitoring, and preservation of bald  
14 eagles, as well as other raptors. The Department has an interest in knowing how  
15 many eagles are killed by wind turbines, as well as how and where they are killed.  
16 We need greater understanding of how to protect eagles from threats from wind  
17 turbines. This understanding can help us in the process described by Jennifer  
18 Campbell in working with project developers on any number of projects to ensure  
19 we are meeting the state's economic development goals, renewal energy stands but  
20 not un-doing or ignoring conservation concerns and nullifying the significant  
21 investments by our state in conservation efforts.

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<sup>11</sup> USFWS Eagle Conservation Plan Guidance, 2013

1           **Q.     What is the Department asking the Public Service Commission**  
2 **to do with respect to bald eagles and other raptors?**

3           A.     The Department is asking that the Commission ensure that the  
4 Missouri's investment in conservation of bald eagles is protected by requiring that  
5 an ECP is a condition of the Certificate of Convenience and Necessity ("CCN). MDC  
6 further asks that the following conditions be imposed so that that the Department  
7 can adequately protect, monitor and determine the impacts of the Project on the  
8 area's bald eagle population:

9           1.     Require Ameren to conduct post-construction monitoring of eagle  
10 fatality and disturbances in accordance in USFWS Guidance. Fatality  
11 monitoring efforts involve searching for eagle carcasses beneath turbines and  
12 other facilities to estimate the number of fatalities. Disturbance monitoring  
13 will determine post-construction territory or roost occupancy rates, nest  
14 success rates and productivity.<sup>12</sup>

15          2.     Ensure a two-mile buffer around known (present and future) eagle  
16 nests within the Project area where turbines cannot be constructed, or if  
17 already constructed, cannot operate. Two miles is necessary to protect the  
18 adjacent foraging area. This buffer should also protect any nearby alternate  
19 nests.

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<sup>12</sup> *Id.*

1           3.       Report to the Department all eagle carcasses observed within 48 hours  
2           to the Department via email noting the date, turbine location (UTMs),  
3           species, and sex.

4           4.       Report observed mortalities for all raptor and bird species of  
5           conservation concern ("SOCC") observed annually by December 31. Describe  
6           each individual species, date found, and location.

7           5.       Provide MDC copies of all quarterly/annual monitoring reports  
8           submitted to USFWS.

9           6.       Provide the Public Service Commission annual reports documenting its  
10          monitoring and any raptor fatalities on the Project area.

11          **Q.       Why should the Public Service Commission consider these**  
12          **issues when issuing a CCN?**

13          A.       The bald eagle is a symbol of national significance. In 1782, a  
14          committee of the Continental Congress selected the bald eagle as our nation's  
15          symbol. At that time, there were an estimated 100,000 nesting pairs in the United  
16          States. By 1890, bald eagles were nearly eliminated as nesters in Missouri, and by  
17          1963, the bald eagle population was reduced to only 487 nesting pairs nationwide.  
18          Through increased protected, reintroductions and education spanning decades, the  
19          bald eagle population slowly increased. The bald eagle's recovery is one of the great  
20          conservation success stories in the United States. Although bald eagle numbers  
21          have increased from delisting in 2009, they are still well below historic numbers.

1 Therefore, continued monitoring is critical to ensure a stable and increasing  
2 population.

3 The public, through the Department's Eagle Watch Program and "Eagle  
4 Days" events held throughout the state, are enthusiastically engaged in helping  
5 ensure that the bald eagle continues to thrive in the state. As an example, the 2018  
6 Eagle Adventure Event at the Runge Conservation Center in Jefferson City hosted  
7 1,500 visitors for the one-day event. The associated viewing at the nearby Marion  
8 Access hosted 436 visitors. This continues to be Runge Nature Center's largest one-  
9 day event, even though the program has been held for nearly 30 years.

10 **Q. Does this conclude your testimony?**

11 A. Yes

**BEFORE THE PUBLIC SERVICE COMMISSION  
OF THE STATE OF MISSOURI**

In the Matter of the Application of Union Electric                    )  
Company d/b/a Ameren Missouri for Permission and                    )  
Approval and a Certificate of Convenience and Necessity            )  
Authorizing it to Construct a Wind Generation Facility            )            Case No. EA-2018-0202

**AFFIDAVIT OF DR. JANET HASLERIG**

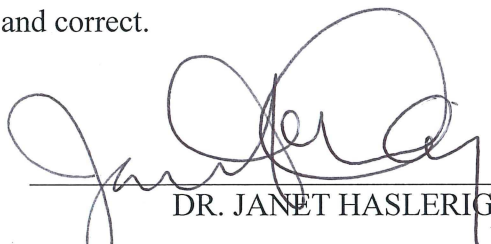
STATE OF MISSOURI    )  
  ) ss  
COUNTY OF COLE     )

Dr. Janet Haslerig, being first duly sworn on her oath, states:

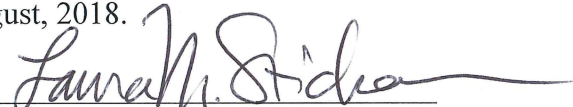
1.       My name is Dr. Janet Haslerig. I work in Jefferson City, Missouri, and am employed at the Missouri Department of Conservation as a Resource Scientist.

2.       Attached to this affidavit and made a part hereof for all purposes is my Written Rebuttal Testimony (testimony) on behalf of Missouri Department of Conservation. The testimony is 11 pages and has been prepared in the appropriate format to be introduced into evidence in the case above.

3.       I hereby swear and affirm that my answers contained in the attached testimony to the questions promulgated therein are true and correct.

  
\_\_\_\_\_  
DR. JANET HASLERIG

Sworn to and subscribed before me this 20th day of August, 2018.

  
\_\_\_\_\_  
Notary Public

My commission expires: November 24, 2021

LAURA M. STICKANN  
Notary Public - Notary Seal  
State of Missouri  
Commissioned for Cole County  
My Commission Expires: November 24, 2021  
Commission Number: 13551367