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Witness:	Dr. Janet Haslerig
Sponsoring Party:	Missouri Department of Conservation
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**MISSOURI PUBLIC SERVICE COMMISSION
FILE NO. EA-2019-0010**

**WRITTEN REBUTTAL TESTIMONY
OF
DR. JANET HASLERIG
ON
BEHALF OF
MISSOURI DEPARTMENT OF CONSERVATION**

FEBRUARY 4, 2019

****DENOTES CONFIDENTIAL INFORMATION****

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REBUTTAL TESTIMONY OF DR. JANET HASLERIG
MISSOURI DEPARTMENT OF CONSERVATION
CASE NO. EA-2019-0010

1 **I. INTRODUCTION**

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

3 A. Janet Haslerig, Ph.D., Resource Scientist, Missouri Department
4 of 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
7 professional experience in wildlife conservation. I have served as the Bald
8 Eagle, Interior Least Tern and Northern Harrier Recovery Leader for the
9 Missouri Department of Conservation (“MDC”) since October 2010. As
10 Recovery leader, I monitor the recovery of these species in the state. I am the
11 state coordinator for the North American Breeding Bird Survey and the
12 Principal Investigator for a long-term songbird research project (MOFEP:
13 Missouri Ozark Forest Ecosystem Project). I review the state wildlife
14 collector’s permit applications for avian species. I serve on the Missouri Bird
15 Plan Technical committee.

16 **Q. Have you testified previously before the Missouri Public**
17 **Service Commission?**

1 A. Yes. I have provided testimony in Case No. EA-2018-0202 and
2 Case No. EA-2019-0021. Both cases involved an application for Certificate of
3 Convenience and Necessity filed by Ameren for wind projects.

4 **Q. Are you familiar with the application for Certificate of**
5 **Convenience and Necessity in the current case filed by Empire?**

6 A. Yes. I am familiar with the project proposal by Empire District
7 Electric (“Empire”) to construct a wind farm in Barton, Dade, Jasper, and
8 Lawrence counties, Missouri known as the Kings Point and North Fork Ridge
9 Wind Farm (the “Projects”). I have reviewed shapefiles provided by Empire
10 designating the project boundary and have compared that information with
11 data contained in the MDC’s Natural Heritage Database,¹ which indicates
12 current and past locations of threatened and endangered species as well as

¹The Missouri Natural Heritage Program, which provides scientific information about Missouri’s species and natural communities of conservation concern to help guide effective conservation action and natural resource management. Information critical to the conservation of Missouri’s biodiversity is made available to governmental agencies, private industry, conservation organizations, researchers, academia, and the public to inform decision-making and prioritization of resources. Identifying, mapping, and understanding Missouri’s biodiversity is essential to protect our natural heritage. As a member of the multi-national Natural Heritage Program Network organization, NatureServe, the Missouri Natural Heritage Program contributes to an understanding of global biodiversity and helps to provide for the conservation and recovery of the earth’s species and ecosystems. MDC collects and manages information on the location and status of species and natural communities of conservation concern throughout the state. The Missouri Natural Heritage Database is a repository for this information and is part of an international network.

1 species designated by MDC as Species of Conservation Concern (“SOCC”) as
2 described below.

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

4 A. The purpose of my testimony is to express concern that the
5 Projects potentially pose a risk to bald eagles and to explain why the
6 Commission should impose conditions on the Projects related to mitigation
7 and monitoring to ensure that the construction and operation of the proposed
8 wind turbines do not adversely impact the state’s interest in protection of
9 wildlife species.

10 **II. BALD EAGLES**

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

13 A. Yes, both. While bald eagles were removed from the federal
14 Endangered Species Act list in June 2007, they remain federally protected by
15 the Bald and Golden Eagle Protection Act, 16 U.S.C. 668-668c, and the
16 Migratory Bird Treaty Act, 16 U.S.C. 703-712. These acts generally prohibit
17 anyone, without a permit, from taking or disturbing bald eagles, including
18 their parts, nests, or eggs. The bald eagle has been also listed by MDC as a
19 Species of Conservation Concern (“SOCC”). This state designated status and
20 rank indicate the level of concern about the species and/or natural
21 community continued existence throughout its range in Missouri. The bald

1 eagle is currently listed as “S3” within the state – which means that it is
2 vulnerable in the state due to a restricted range, relatively few populations or
3 occurrences, recent and widespread declines, or other factors making it
4 vulnerable to extirpation. As an SOCC, the bald eagle in Missouri warrants
5 routine monitoring to assess the population status and to document the
6 continual recovery of the species as well as detect any eminent or pending
7 threats to its survival.

8 **Q. Can you explain the history of the bald eagle as it relates**
9 **to federal protection?**

10 A. The bald eagle is a North American species with a historic range
11 from Alaska and Canada to northern Mexico. As many as 300,000 – 500,000
12 bald eagles once made their home on the continent in the 1700s. By 1963, less
13 than 500 nesting pairs remained in the lower 48 states. Habitat destruction
14 and degradation, illegal shooting, and the contamination of its food source,
15 largely because of dichlorobiphenyl-trichloroethane ("DDT"), decimated the
16 eagle population. Consequently, in 1978, the United States Fish and Wildlife
17 Service ("USFWS") listed the bald eagle as endangered in all 48 contiguous
18 states under the Endangered Species Act. With the enforced federal
19 protection, bald eagles have recovered dramatically with about 10,000
20 nesting pairs in the lower 48 states. In 2007, the USFWS announced the

1 recovery of our nation's symbol and removal from the federal list of
2 threatened and endangered species.

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

4 A. Bald eagles may live 15 to 25 years in the wild, and longer in
5 captivity. Eagles mate for life, choosing the tops of large trees to build nests,
6 which they typically use and enlarge each year. They may also have one or
7 more alternate nests within their breeding territory. Breeding bald eagles
8 (beginning in fourth or fifth year) typically lay one to three eggs once a year,
9 and they hatch after about 35 days. The breeding territory varies based on
10 location and the abundance of food in the area. The area traveled by a
11 nesting pair for food gathering, mating and caring for young, based on my
12 observations is generally 1-2 miles.

13 Hatchlings typically become fledglings (ready for the first flight) by
14 twelve weeks and generally remain in the nest area for several months. Until
15 the fledgling learns how to hunt for food, they are dependent on the adults for
16 food and will remain in the nest area for several weeks at which time they
17 will follow the adults to foraging sites. In addition, it is well documented that
18 fledged eagles typically return to the general vicinity (approximately 100
19 miles) of their nest area to breed once they have reached sexual maturity
20 between the ages of four to five. Disease, lack of food, human disturbance,

1 lead poisoning, electrocution, collision with vehicles or power lines kill many
2 fledglings.

3

4 **III. BALD EAGLES IN MISSOURI**

5 **Q. What resources has MDC's invested in restoring,**
6 **managing and protecting bald eagles?**

7 A. MDC has invested and will continue to invest considerable
8 resources in the restoration, management and protection of bald eagles. From
9 1981 to 1990, MDC, in cooperation with USFWS and the Dickerson Park Zoo
10 in Springfield, released 74 young bald eagles in Missouri to reestablish them
11 as nesters. The eaglets were obtained from captive breeding facilities or
12 healthy wild populations and released in good nesting habitat at Mingo
13 National Wildlife Refuge and Schell-Osage Conservation Area. Since 1990,
14 MDC has opportunistically monitored the population of nesting bald eagles in
15 the state. After the USFWS delisted the bald eagles, we have systematically
16 surveyed nesting bald eagles under the USFWS post-delisting monitoring
17 plan. This plan calls for states nationwide to monitor the status of bald eagles
18 for a 20-year period. In 2006 (prior to the official delisting of the bald eagle
19 under the ESA), MDC participated in the pilot study to test the effectiveness
20 of the post-delisting monitoring protocol. Since then, MDC conducted
21 statewide aerial and ground surveys in 2011, 2016, 2017 and 2018. The

1 yearly estimated monetary cost of conducting aerial surveys is approximately
2 \$10,189 (helicopter only), not including staff hours.

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

11

12 **IV. THE IMPACT OF THE PROJECTS ON BALD EAGLES**

13 **Q. Are you concerned about the impact of the Kings Point**
14 **Project proposed in this case upon bald eagles? And if so, why?**

15 A. Based upon shapefiles and reports provided by Empire in
16 response to MDC data requests, as well as a review of the MDC’s Natural
17 Heritage Database, there are no known bald eagle active or inactive nests
18 within the Project boundary. As defined by Empire, in the Eagle Nest Survey
19 Area (Project boundary plus 10- mile buffer), there are

20 *** _____

21 _____***. I am concerned about the potential impacts from ***_

1 _____ *** that are located less than *** _____

2 _____ *** See Figure 1.

3 **Q. Are you concerned about the impact of the North Folk**
4 **Ridge Project proposed in this case upon bald eagles? And if so, why?**

5 A. Based upon shapefiles and reports provided by Empire in
6 response to MDC data requests, as well as a review of the MDC’s Natural
7 Heritage Database, there are no known bald eagle active or inactive nests
8 within the Project boundary. As defined by Empire, in the Eagle Nest Survey
9 Area (Project boundary plus 10-mile buffer), there are

10 *** _____

11 _____ ***. MDC’s Natural Heritage Database lists an
12 additional ** _____

13 _____

14 _____ I have minimal concern about the
15 proximity of this occupied/active nest to the Project boundary.

16 **Q. What evidence exists to support your claim that wind**
17 **farms could impact Missouri’s bald eagles?**

18 A. According to the National Audubon Society, wind turbines and
19 their associated infrastructure kill an estimated 140,000 to 328,000 birds

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

9 Increasingly, estimates of raptor mortality at wind farms is the subject
10 of intense effort and study.⁶ Reportedly, diurnal raptors like bald eagles are

² Bryce, E. 2016. Will Wind Turbines Ever Be Safe For Birds. National Audubon Society.

³ American Wind Wildlife Institute (AWWI). 2018. Wind Turbine Interactions with Wildlife and Their Habitats: A Summary of Research Results and Priority Questions. Washington, DC.

⁴ 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.

⁵ Colleen Martin, E. Arnett, and M. Wallace. 2013. Evaluating Bird and Bat Post-Construction Impacts at the Sheffield Wind Facility, Vermont. 2012 Annual Report.

⁶ Colleen Martin, E. Arnett, and M. Wallace. 2013. Evaluating Bird and Bat Post-Construction; Impacts at the Sheffield Wind Facility, Vermont. 2012 Annual Report; Hutchins, Michael. 2017. Wind Energy and Birds FAQ- Part 1: Understand the Threats Wind Energy Poses to Birds. American Bird Conservancy.

1 relatively vulnerable to collision with wind turbines.⁷ Because these groups
2 are far less abundant than song birds, there is concern that the potential
3 relatively high fatality rates are reflective of a high vulnerability to collision.⁸
4 The high vulnerability of birds of prey is especially problematic as many
5 species are slow to reproduce. Thus, a loss of breeding adults from fatal
6 collisions has a greater effect on the population than on many other avian
7 species.⁹ Significant losses to raptors are exacerbated by wind energy projects
8 located in or near major migratory routes, stopover sites, or key breeding or
9 foraging areas.¹⁰ Disturbance, displacement from suitable habitat, or
10 demographic effects due to fragmentation of habitat from pre-construction,
11 construction, or operation and maintenance activities might result in loss of

⁷ 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.

⁸ American Wind Wildlife Institute (AWWI). 2018. Wind Turbine Interactions with Wildlife and Their Habitats: A Summary of Research Results and Priority Questions. Washington, DC.

⁹ 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.

¹⁰ Pagel, *supra* n. 2.

1 productivity at nearby nests.¹¹ Serious disturbance or mortality effects could
2 result in the permanent or long-term loss of a nesting territory and
3 disturbances near important eagle use areas or migration concentration sites
4 might stress eagles so much that they suffer reproductive failure or mortality
5 elsewhere.

6 **Q. Are you familiar with Eagle Conservation Plans, which**
7 **when developed in consultation with the USFWS will permit the**
8 **incidental take of eagles under certain circumstances?**

9 A. Yes, I am familiar with Eagle Conservation Plans (“ECP”),
10 generally. An ECP documents how the project developer or operator intends
11 to comply with the regulatory requirements for programmatic permits under
12 the Federal Endangered Species Act and the associated federal National
13 Environmental Policy Act process by avoiding and minimizing the risk of
14 taking eagles up-front, and formally evaluating possible alternatives in
15 (ideally) siting, configuration, and operation of wind projects.¹² Post-
16 construction monitoring (i.e., disturbance and fatality monitoring) may be

¹¹ 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 (3): e0150813.doi:10.1371/journal.pone.0150813.

¹² USFWS Eagle Conservation Plan Guidance, 2013. <https://www.fws.gov/migratorybirds/pdf/management/eagleconservationplanguidance.pdf>

1 required by USFWS as a condition of an eagle incidental take permit and will
2 be required for wind-energy projects that may potentially take eagles.

3

4 **V. MDC'S RECOMMENDATION CONCERNING BALD EAGLES**

5 **Q. What is the MDC asking the Public Service Commission to**
6 **do with respect to bald eagles?**

7 A. MDC is asking that the Commission ensure that Missouri
8 citizens' investment in conservation of bald eagles is protected by requiring
9 that an ECP be a condition of the Certificate of Convenience and Necessity
10 (CCN). MDC further asks that the following conditions be imposed so that
11 that MDC can adequately protect, monitor and determine the impacts of the
12 Project on the area's bald eagles, as well as raptors and bird species of
13 conservation concern:

14 1. Require Empire to conduct post-construction monitoring of eagle
15 fatality and disturbances in accordance with USFWS Eagle Conservation
16 Plan Guidance. Fatality monitoring efforts involve searching for eagle
17 carcasses beneath turbines and other facilities to estimate the number of
18 fatalities. Disturbance monitoring will determine post-construction territory
19 or roost occupancy rates, nest success rates and productivity.

1 2. Require a minimum of one-mile buffer around known active and
2 inactive or alternative eagle nests within the Project area where turbines
3 cannot be constructed.

4 3. Require Empire to conduct bald eagle nest surveys this spring
5 (2019) as recommended in the USFWS Eagle Conservation Plan Guidance.

6 4. Require Empire to report all eagle carcasses observed within 48
7 hours to the MDC via email noting the date, turbine location (UTMs), species,
8 and sex.

9 5. Require Empire to report observed mortalities for all raptor and
10 bird species of conservation concern ("SOCC") observed annually by
11 December 31. Describe each individual species, date found, and location.

12 6. Require Empire to provide MDC copies of all quarterly/annual
13 monitoring reports submitted to USFWS.

14 7. Require Empire to provide the Public Service Commission annual
15 reports documenting its monitoring and any raptor fatalities on the Project
16 area.

17 8. Prohibit Empire or its agents from clearing any trees with active
18 or inactive eagle nests during the construction or operation of the Project.

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

1 A. The degradation of Missouri’s eagle population due to wind farm
2 mortalities damages the investments MDC has made related to bald eagles
3 and is detrimental to the public interest. The bald eagle is a symbol of
4 national significance. In 1782, a committee of the Continental Congress
5 selected the bald eagle as our nation’s symbol. At that time, there were an
6 estimated 100,000 nesting pairs in the United States. By 1890, bald eagles
7 were nearly eliminated as nesters in Missouri, and by 1963, the bald eagle
8 population was reduced to only 487 nesting pairs nationwide. Through
9 increased protection, reintroductions and education spanning decades, the
10 bald eagle population slowly increased. The bald eagle’s recovery is one of the
11 great conservation success stories in the United States. Although bald eagle
12 numbers have increased from delisting in 2009, they are still well below
13 historic numbers. Therefore, continued monitoring is critical to ensure a
14 stable and increasing population. The public, through MDC’s Eagle Watch
15 Program and “Eagle Days” events held throughout the state, are
16 enthusiastically engaged in helping ensure that the bald eagle continues to
17 thrive in the state. As an example, the 2018 Eagle Days Event at the
18 Springfield Conservation Nature Center hosted over 5,000 visitors for the
19 three-day event. This continues to be the Springfield Conservation Nature
20 Center’s most popular event.

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

1 A. Yes

FIGURE 1. KINGS POINT WIND PROJECT.

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

In the Matter of the Application of The Empire)
Electric District Electric Company for Approval) Case No. EA-2019-0010
and a Certificate of Convenience and Necessity)
Related to its Customer Savings Plan)

AFFIDAVIT OF DR. JANET HASLERIG

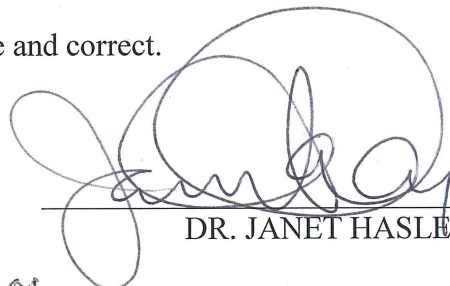
STATE OF MISSOURI)
) ss
COUNTY OF COLE)

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.

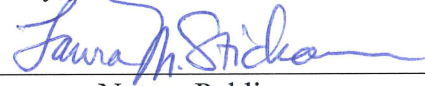
2. Attached to this affidavit and made a part hereof for all purposes is my Written Rebuttal Testimony (testimony) on behalf of Missouri Department of Conservation. The testimony is 17 pages and has been prepared in the appropriate format to be introduced into evidence in the case above.

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 04 day of February, 2019.



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
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