

Wind Energy Development and Eagles: Estimated Impacts and Mitigation

Taber Allison, Ph. D., Director of Research AWWI Wyoming Wind Energy Forum October 2, 2017



Presentation Highlights

- Eagles are protected from take permits are available
- Bald and Golden Eagles collide with wind turbines
- Frequency of collisions at most projects is zero or very low
- Many, untested, options to mitigate (avoid, minimize, compensate) impacts
- Making progress in finding solutions



Regulatory Drivers

- Bald and golden eagles protected under multiple federal laws
 - Migratory Bird Treaty Act (1918)
 - Bald & Golden Eagle Protection Act (1940)
- "Eagle Rule" (revised 2016) establishes permit system for incidental take under BGEPA
 - Eagle Conservation Plan Guidance (2011) provides a blueprint for wind developers to acquire permits







USFWS Permitting Approach





Bald and Golden Eagle Distribution (AWWI LAT)











Golden Eagle Use Intensity

Nielson et al. 2016.Modeling Late-Summer Distribution of Golden Eagles (*Aquila chrysaetos*) in the western United States. PLOSONE





Eagle Population Status (USFWS 2016)



Bald Eagles

U.S. Region	Eagles (2009 Surveys)
Alaska	70,543
Lower 48	72,434



Golden Eagles

U.S. Region	Eagles: 2014
Alaska	4,000
Lower 48 (Western)	31,000
Lower 48 (Eastern)	5,000



Take threshold = 0



Eagle Fatalities: 1997-2012

Species	State	# Facilities Reporting	# of Fatalities	
Bald Eagle	lowa	3	3	
	Maryland	1	1	
	Wyoming	2	2	
Golden Eagle	California	13	27	
	Colorado	1	5	
	New Mexico	1	5	
	Oregon	2	6	
	Texas	1	1	
	Utah	1	1	Pagel, et al.
	Washington	2	5	2013. J. Raptor Res. 47: 311- 315
	Wyoming	7	29	



Predicted/Estimated Eagle Fatalities at Wind Facilities*

- Alta East: 0.6-1.0 eagles per year (permitted)
- CCSM Phase I (500 turbines): 10-14 eagles per year (permitted)
- Mohave County: 0.33 eagles per year (predicted)
- Ocotillo Wind: 2-3 eagles per five years (predicted)
- Shiloh IV: up to 5 eagles per five years (permitted)

*Source: Draft EIS (predicted) and Final EIS (permitted)



Anthropogenic Sources of Golden Eagle Mortality

Factor	Deaths per year (95% CI)
Poisoning	1,025 (316-2,266)
Shooting	926 (336-2,046)
Collision (wires, vehicles, <u>wind</u> <u>turbines</u>)	545 (133-1,509)
Electrocution	504 (124-1,494)
Trapping	231 (15-1,071)
Lead Toxicosis	160 (10-867)

Source: U.S. Fish and Wildlife Service. 2016. Bald and Golden Eagles: Population demographics and estimation of sustainable take in the United States, 2016 update. Division of Migratory Bird Management, Washington D.C., USA.



Service model terms in red





Minimizing Collisions: BMPs

- Established practices
 - \circ Micrositing
 - \circ On-site carcass removal
 - Perch deterrents
 - Buried collector lines
 - \circ Un-guyed met towers
 - Etc.
- Curtailment
 - o Informed (biomonitors or tech)o Blanket
- Detection or deterrent technologies











Technologies to Minimize Impacts





Verifying Technologies: Minimizing Risk



Pooling knowledge/resources to find best solutions

NOT FOR DISTRIBUTION



Compensatory Mitigation

- "No net loss" for golden eagles
- Power pole retrofits the principal option recommended by the Service
- Other possible options:
 - Roadkill removal
 - \circ Voluntary lead abatement
 - \circ Habitat improvement
- Offsets must be "quantifiable and verifiable"









- Coordinate research and pool data across projects
- Develop framework for more rapid incorporation of research results into policy/regulations
- Facilitate research on protected species



Questions?



Facilitating timely and responsible development of wind energy WILDLIFE IN STITUTE while protecting wildlife and wildlife habitat