Wind Industry Perspective on Eagle & Condor Issues

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Presentation Overview

- Overview of the Wind Project Development Process
- Wind Industry Perspective on Addressing Avian Impacts Generally
- Golden Eagle
- Condor

Overview of the Wind Project Development Process

Land-Use and Species Permits Are Only Part of the Puzzle -- Multiple Pieces Must Come Together:

- Confirmation of the wind resource
- Multiple willing land-owners
- Compliance with setback requirements
- Technical & meteorological restrictions
- Labor negotiations
- Transmission lines & substation access
- Military clearance (flight path & radar)
- FAA “no hazard” determination
- Power purchase agreement & CPUC approval
- Financing (requiring quantification of all risks to revenue stream)

Wind Industry Perspective on Addressing Avian Impacts (1)

Industry is committed	• **to an extensive pre-construction survey process and advanced micro-siting to avoid risk.** 1-3 years and ~$2 million in environmental due diligence (10-15% of development capital at risk)
Risk will always remain	• **Some risk must be accepted for wind energy to be part of our energy future**
Impacts comparably Low	• **Wind impacts on birds low compared to other human impacts**
Practical Strategies Needed	• **The wind energy development that is necessary to reach DRECP goals will require development of practical strategies to address the remaining risk**
Cost Effective Strategies	• **Identifying the most cost-effective mitigation/conservation strategies (best use of industry mitigation dollars) should be the primary goal for wind in the DRECP process**

Wind Industry Perspective on Addressing Avian Impacts (2)

Foreclosing practical strategies will deny the overwhelming environmental advantages of wind vs. conventional fuels:

- 400 to 550 land-bird extinctions expected this century with 'intermediate' warming
  http://www.worldwatch.org/node/5546
- No significant use of increasingly scarce water
- No emissions of any kind
- No strip-mining, mountain top removal
- No 'fracking' impacts – backyard drilling, groundwater contamination, holding ponds containing toxic materials
- No radioactive waste streams
- No risk of catastrophic nuclear events
- Safer for workforce

Wind Industry Perspective on Addressing Avian Impacts (3)

The DRECP provides an unprecedented opportunity to effectively address condor and eagle risk with practical strategies geared toward the populations …

- **Potential to create a regional, funded, effective and efficient conservation plan to support populations of concern**
- **Take coverage for eagle not otherwise available under state law (and, longer-term, potentially condor)**
- **Condor is a highly managed species; further management to avoid risk is possible as a DRECP strategy**

… while simplifying project permitting

Wind Industry Perspective on Addressing Avian Impacts (4)

Additional information of various types must be obtained to assess risk and develop effective mitigation/conservation plans

This information can be categorized in three macro-categories

What is the level and types of risk that wind energy presents to golden eagle and condor populations?	What is the level of and types of risks that other sources present to the golden eagle and condor populations?	What are most biologically meaningful mitigation opportunities and what are the real and perceived hurdles that restrict the ability to implement them?

Wind Industry Perspective on Addressing Avian Impacts (5)

In general, curtailment is neither practical nor a silver bullet

Curtailment reduces the production over which the initial capital expenditure can be spread

Upfront costs must be recovered through per-kWh payments at a rate that is fixed for the term of the contract	**High levels of curtailment drive up wind energy prices to uncompetitive levels**	**Uncertain, uncapped curtailment creates risks to the revenue stream that make the project unfinanceable** **(the project will not get built)**

Wind Industry Perspective on Addressing Avian Impacts (6)

The wind industry is willing to test curtailment schemes in order to advance the science and test techniques when:

curtailment is clearly defined and very limited	**warranted by project-specific evidence that mortality will be significantly reduced**

Technical implications of start/stop management of turbines has not been addressed (i.e., turbines are not designed with such operational concepts in mind).

Golden Eagle (1)

Lack of information is a major problem

Few eagle fatalities from standardized monitoring of modern wind energy facilities limits any meaningful understanding about cause and effect and, therefore, project-specific mitigation opportunities

An assumption that wind industry impacts are or will be significant on a population basis is being made … but we do not have data to substantiate this assumption

Golden Eagle (2)

Assessing the regional population is essential

A baseline assessment should be completed posthaste …	addressing a biologically appropriate region

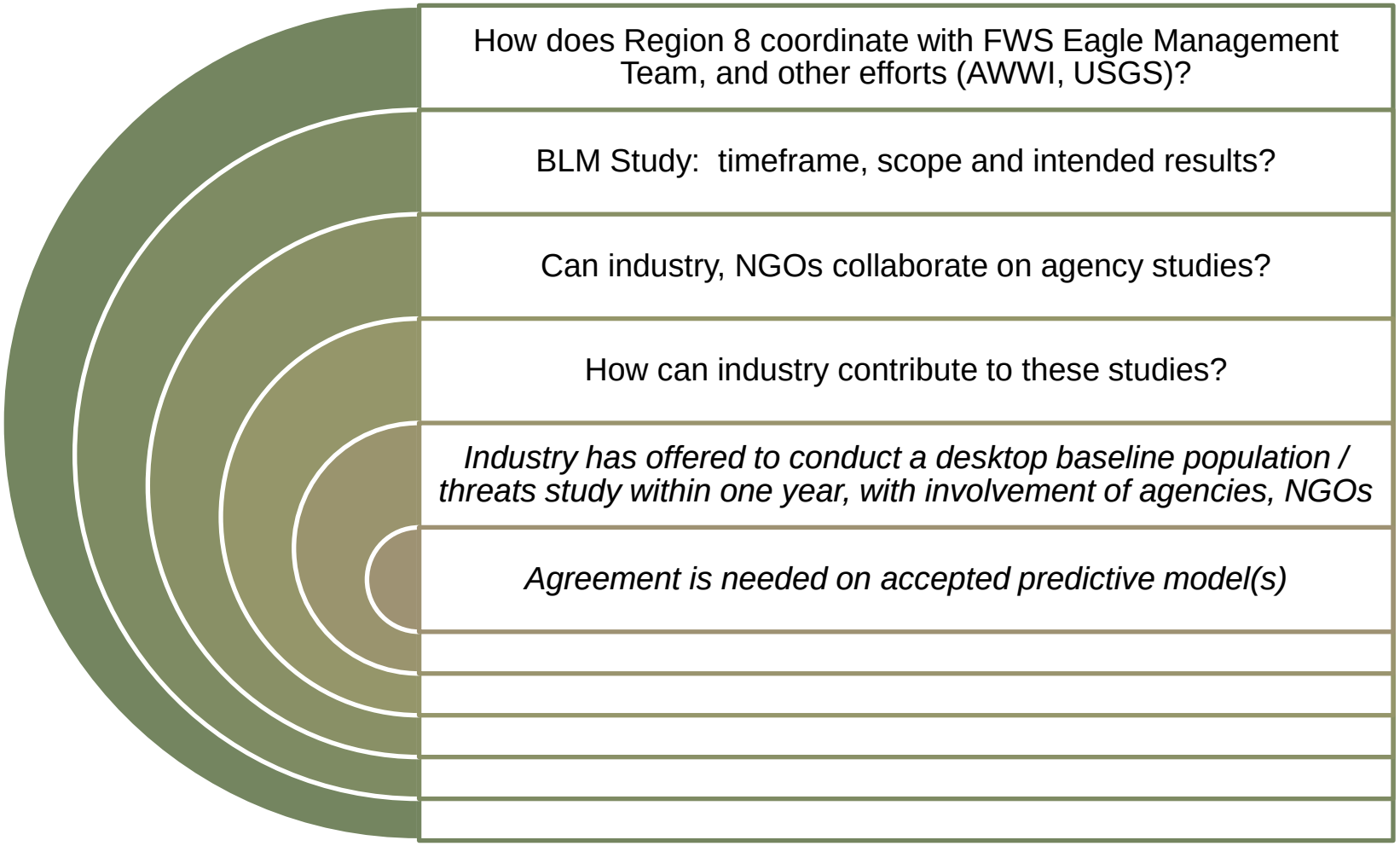
Assessing all sources of mortality, including that from wind projects is essential

A baseline assessment should be completed posthaste	Understanding relative sources of mortality will inform DRECP mitigation plans and conservation strategies	Policy mechanisms are needed to facilitate wind industry funding of non-wind industry impact-reduction initiatives

Golden Eagle (3)

Industry's Goal for this Workshop: Understanding FWS Region 8's current approach to eagles -- what are FWS's goals and plans going forward?

Golden Eagle – Specific Questions (4)



Golden Eagle – An ongoing Eagle Working Group is needed (5)

Focus on all population threats, not just wind

DRECP subgroup should develop (in coordination with national efforts):

- Population-level threat assessment and cumulative impact assessment
- Eagle Conservation Plan (on regional or sub-regional basis as biologically appropriate)
- Compensatory mitigation program on a no-net-loss basis to address individual and cumulative impacts

Conservation / mitigation plan would form the basis of an umbrella DRECP take permit program with projects tiering off

Condor (1)

The condor is a highly managed species

Further management should be considered as a DRECP strategy until wind-condor risk is better understood and/or the population has recovered.

For example: the condor feeding program can be extended as a strategy to keep condors out of the Tehachapi area until the population recovers and/or wind-condor risk is better understood.

Condor (2)

Lack of information is a major problem

Absence of wind energy-derived condor fatalities limits any meaningful understanding about cause and effect and therefore project-specific mitigation opportunities.

An assumption that wind industry impacts are or will be significant is being made, … but we do not have any data to substantiate this assumption

Condor (3)

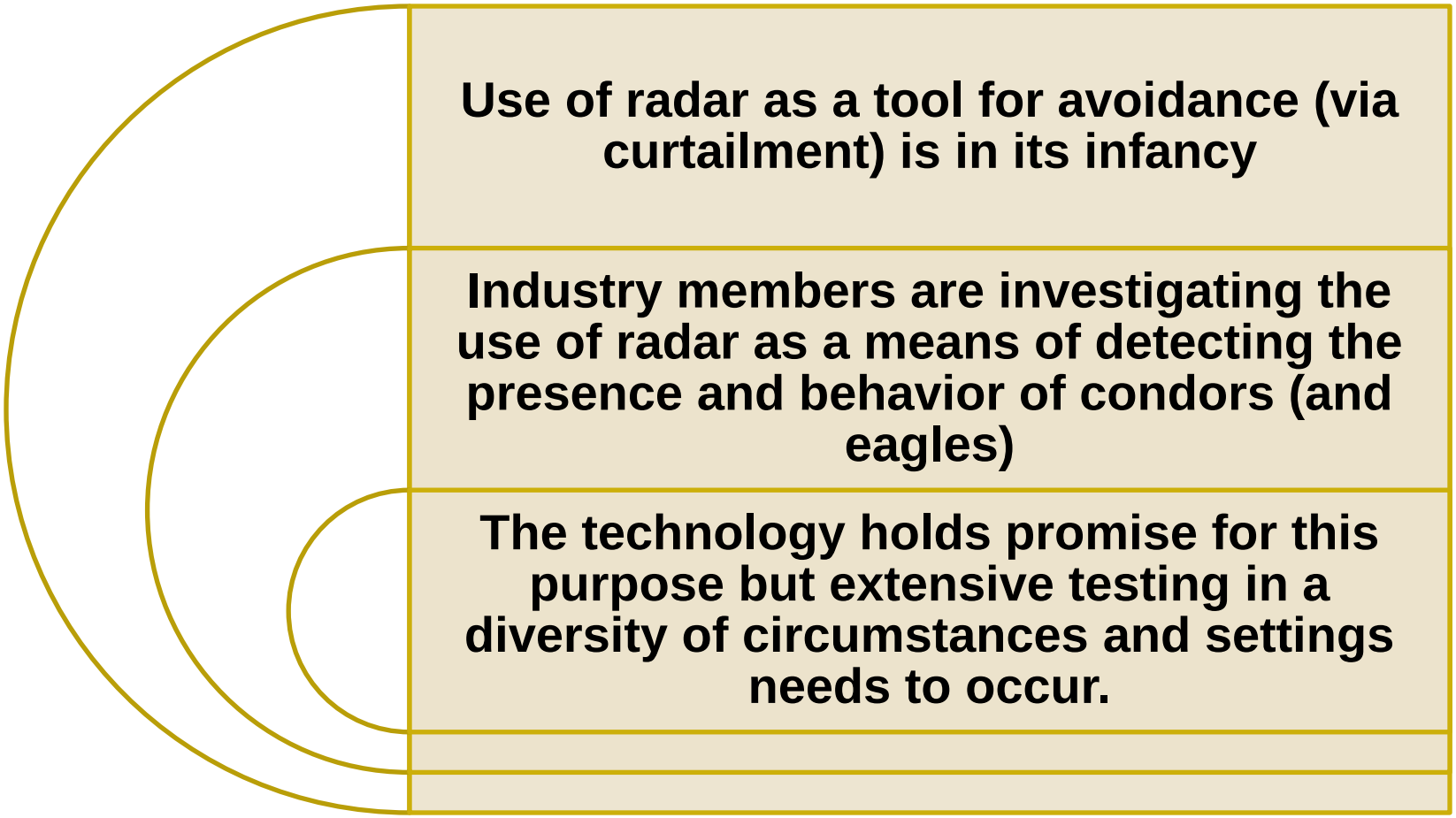
An assessment of a biologically appropriate region (beyond DRECP) is underway (USGS) and includes a modeling tool for predicting population expansion.

This model should be used to identify biologically significant habitats to inform siting decisions.

Assessing all sources of mortality, including potential mortality from wind projects, is essential.

A baseline assessment should be completed posthaste	Understanding relative sources of mortality will inform mitigation plans and conservation strategies	Policy mechanisms are needed to facilitate wind industry funding of non-wind industry impact-reduction initiatives

Condor (4) - Radar



Condor - Radar (5)

Radar will require considerable testing of operational effectiveness, species response, and development of regulatory context

Industry willing to begin an R&D effort along those lines as a long-term potential strategy

Technical implications of start/stop management of turbines have not been addressed

If ultimately successful, and cost-effective compared to lower-tech solutions, radar should be …

- applied after the Condor Wind Working Group determines all risk factors
- reserved for sites determined to be high-risk (e.g., after radar informs our understanding of presence and behaviors)

Thank you