COLORADO PARKS & WILDLIFE

6060 Broadway • Denver, Colorado 80216
Phone (303) 297-1192 • FAX (303) 291-7109
wildlife.state.co.us • parks.state.co.us

APPENDIX A
Updated May 2013

Colorado Parks and Wildlife's Best Management Practices for Wind Farm Development.

1. **Assessment of Potential Adverse Effects.** *In collecting information for a new wind farm CPW recommends the use and utilization of a 'tiered' approach to project development as established in the U.S. Fish and Wildlife Service Land-Based Wind Energy Guidelines(2012) to quantify risks of developments to species of concern and their habitats.* As designed, the tiered approach is an iterative decision-making process for collecting information and quantifying risks to species. The process includes: a) preliminary site evaluation / screening, b) a broad site characterization, c) sufficient field studies to document wildlife and habitat and predict impacts, d) post-construction studies to estimate impacts, and e) other post-construction studies and research. This document may be found at http://www.fws.gov

2. **Alignment and Compliance with Colorado PUC Rule 3668-Environmental Impacts.** For eligible energy resources, CPW recommends that new renewable energy projects align with and closely follow CPUC Rule 3668 in conducting wildlife surveys and in using these surveys to avoid, minimize and mitigate potential impacts to wildlife and their habitats, and work closely with CPW in the design of their project.

3. **Avoiding/Minimizing Impacts.** *In selecting sites for construction, focus on options that avoid critical wildlife habitats, over the use of mitigation strategies.* Areas that exhibit high levels of wildlife use within this project area would benefit greatly by not placing facility infrastructure, including transmission lines, adjacent to or over such areas. Locally, micro-siting of turbines and infrastructure might be effective in minimizing losses to habitat and wildlife. If all options for avoiding impacts are taken and prove insufficient, then mitigation strategies should be identified and implemented.

4. **Study Protocols.** *Consult with CPW for review and comment on wildlife and habitat survey protocol, including monitoring locations, before the protocol is finalized.* It is recommended that pre-construction and construction/ post-construction monitoring be conducted using similar methods, so that valid comparisons can be made. The recommended length of study for both pre and post-construction surveys is 1 year. CPW requests the opportunity to comment on baseline or impact surveys, as well as amendments made to infrastructure facility placement, county permit requirements or recommendations. CPW encourages developers to be proactive in bringing plans for additional phases or developments to our attention prior to establishing infrastructure placement and routing, in the hope that proactive, cooperative efforts will identify concerns early in the project so that they may be appropriately addressed.

5. **Access / Monitoring.** *Provide CPW with pre-construction and post-construction reports with all forms of raw data collected at onset, during, and post construction surveys.* It is recommended that all research data (observed, written, recorded, GPS files, etc.) collected be accessible and provided to CPW's District Wildlife Managers and biologists in a timely manner.

6. **Construction and Operational Considerations.** *During construction and operations, limit vehicle speeds to 25 mph on project roads. During operations, limit on-site visit frequency and duration by service personnel, especially during critical nesting time, to minimize impacts to wildlife.* Educate personnel on wildlife issues, such as where species might be found, and at what time of day. During the operational phase, train staff in documenting wildlife mortalities and notifying local wildlife officials in a timely manner.

7. **Reclamation and Decommissioning.** *Reclaim areas disturbed by construction.* The width of access roads can be reduced after construction of the turbines. Areas should be reclaimed with seed for native vegetation. *Develop long-term decommissioning and reclamation plans in the event that it is decided to decommission any infrastructure of the facility.* Decommissioning plans should include (but not limited to) timing of decommissioning individual or project wide infrastructure and plans to reclaim areas back to pre-construction conditions.

8. **Hunting**. *At the landowner's discretion, hunting should be allowed to continue within and adjacent to the project area.* It is recommended that traditional uses of the land, including hunting, not be prohibited as a condition of the lease by the project proponent after construction at the site is completed. Colorado wildlife statutes prohibit landowners from claiming game damage reimbursements due to hunting restrictions on their property. Hunting restrictions further burden the state's ability to manage wildlife populations; exacerbating state/landowner relationships and increasing forage conflicts.

9. **Weed Management.** *Actively eradicate noxious weeds, and develop and implement a noxious weed and re-vegetation management plan where there will be disturbance due to construction or maintenance activities.* Clean equipment when it is moved from site to site to remove weed seeds even if no weeds are recognized. The applicant may wish to contact the County Weed Inspector to facilitate development of reclamation and weed management plans for the facility.

10. **Livestock Fencing.** *Use wildlife-friendly fencing to prevent harm or fatalities to wildlife.* Fencing should allow free passage of wildlife, incorporating three or four strand fencing with a bottom strand height of 16 inches and a maximum top strand height of 42 inches, along with installation of double stays between posts. Chain link and mesh fencing should be kept to a minimum and used only to protect facilities where security is required. Substation fencing should be built according to and meet applicable standards.

11. **Transportation Line Development**. Through the Migratory Bird Treaty Act and the Eagle Protection Act, the U.S. Fish and Wildlife Service in cooperation with the Edison Electric Institute has developed Best Management Practices to minimize impacts to avian

species. CPW recommends that both the *"Suggested Practices for Avian Protection on Power Lines, the State of the Art in 2006"* and the *"Avian Protection Plan (APP) Guidelines"* document published in 2005 be consulted for proper design considerations to minimize raptor electrocution. These documents can be ordered at the Edison Electric Institute web site (www.eei.org) or can be downloaded at the Avian Power Line Interaction Committee web site (www.aplic.org).

12. **Wildlife Protection.** The proposed wind energy project will be in an area that is rich in wildlife diversity and will span a variety of regionally unique habitat types. We recommend that sensitive wildlife species and critical habitat features be identified and buffered when considering infrastructure placement and operation, especially during critical nesting periods. We suggest that as more detailed planning occurs, you continue to contact CPW representatives to determine specific sensitive areas for each of these species.

(The species listed below are suggested as examples only. Your site may be different.)

- **Greater prairie chicken.** *Use Colorado Parks and Wildlife surveys (recent and historic) for greater prairie chicken to site wind turbines and other infrastructure (including transmission lines) away from breeding and production areas.* Greater prairie chickens are known to avoid areas of man-made disturbance; it is believed that they avoid tall structures, such as wind turbines, transmission towers, and buildings because they present possible perches for raptors. Roads contribute traffic noise and the possibility of collision. Such appurtenances could be a factor in the failure of nests and brood-rearing, and thus, appropriate setbacks are recommended. Setbacks for greater prairie chicken are 0.6 mi from leks and 2.2 mi from brood rearing habitat from March 1 through June 30.

- **Lesser prairie chicken.** *Use CPW surveys (recent and historic) for lesser prairie chicken to site wind turbines and other infrastructure (including transmission lines) away from breeding and production areas.* Lesser prairie chickens are known to avoid areas of man-made disturbance; it is believed that they avoid tall structures, such as wind turbines, transmission towers, and buildings because they present possible perches for raptors. Roads contribute traffic noise and the possibility of collision. Such appurtenances could be a factor in the failure of nests and brood-rearing, and thus, appropriate setbacks are recommended. Setbacks for lesser prairie chicken are 0.6 mi from leks and 2.2 mi from brood rearing habitat from March 15 through June 15.

- **Plains sharp-tailed grouse.** *Use CPW surveys (recent and historic) for plains sharp-tailed grouse to site wind turbines and other infrastructure (including transmission lines) away from breeding and production areas.* Plains sharp-tailed grouse are known to avoid areas of man-made disturbance; it is believed that they avoid tall structures, such as wind turbines, transmission towers, and buildings because they present possible perches for raptors. Roads contribute traffic noise and the possibility of collision. Such appurtenances could be a factor in the failure of nests and brood-rearing, and thus, appropriate setbacks are recommended. Setbacks for plains sharp-tailed grouse are 0.4 mi from leks and 1.25 mi from brood rearing habitat from March 1 through June 30.

- **Raptors.** *Identify raptor nests within the project area and implement an appropriate buffer from wind turbine and transmission lines. During nesting periods, observe timing stipulations for construction activities located near nests. Site turbines no less than ¼ mile from all deciduous trees.* Raptors are likely to use any trees or larger rock escarpments for nesting or perching. Prairie dog towns located in the project area also provide excellent shelter, feeding and nesting habitat for numerous resident and migratory raptors. By affording these areas a buffer when considering turbine placement, impacts to raptor species will be greatly reduced. CPW raptor guidelines for buffers are found in Appendix B. Only a subset of these raptors is expected to be found in the project area.

- **Mountain plover and long billed curlew.** *Identify habitat and plover/curlew nests within the project area, and plan construction activity outside of critical nesting periods, April 1st through August 15 where these species are found.* Mountain plovers can nest in short-grass prairie, dryland cultivated farms, and prairie dog towns; all of which are located on the project site. Long billed curlews can nest in short grass prairie. In a cooperative program, the CPW and Rocky Mountain Bird Observatory (RMBO) provide free services of biologists trained to detect plover activity on farm lands. *(Mountain Plover and Long Billed Curlew are Colorado species of special concern)*

- **Bats**. *Acoustic monitoring of bats is recommended with the monitoring device placed 30 to 50 meters above ground level of the MET tower.* Acoustic monitoring is recommended for spring and fall seasons. It is recommended that all survey data collected be accessible and provided to CPW.

- **Swift fox.** *Identify and avoid all maternal swift fox den sites.* Swift fox live here year-round, breed, during December, and raise their young into the next fall. Any disturbance or destruction of dens from December 15th through August 15th would be detrimental to this species. It is recommended that swift fox surveys include daylight searches for den areas and nighttime spotlight searches during August and September. *Swift fox is a species of state and federal concern that lives in and around the proposed area.*

- **Black-tailed prairie dogs.** *All prairie dog towns within and adjacent to the proposed project should be located prior to construction.* If a prairie dog town falls within an unavoidable construction site, the town should be surveyed for other species, such as burrowing owls and mountain plover. If development in prairie dog towns occurs during the spring or summer months (Feb 1 to Oct 31), the presence of burrowing owls and whether they are actively nesting should first be determined. If nesting burrowing owls are present, no human encroachment or surface disturbance should occur within 100m of nesting burrows March 1-August 15.

  If burrowing owls merely occupy the site, it is recommended that earthmoving and other disturbance activities be delayed until late fall after they have migrated.
  Burrowing Owls are a State Threatened Species.

- **Reptiles and amphibians.** *Identify critical reptile and amphibian habitat, including escarpments, ephemeral ponds, and wetlands, and avoid during construction and when siting infrastructure*. With an increase in roads and traffic, reptiles and amphibians could be negatively impacted within the project area. The "construction and operational considerations" portion of this document should be considered.

- **Deer and pronghorn.** The effects that wind turbine placement will have on mule deer and pronghorn are not well known, but studies suggest there is noticeable displacement from areas where there has been construction of roadways and increased service vehicle traffic.