

Becker, J.M., C.A. Duberstein, J.D. Tagestad, and J.L. Downs. 2009. Sage-Grouse and Wind Energy: Biology, Habits, and Potential Effects of Development. Prepared for the U.S. Department of Energy Office of Energy Efficiency and Renewable Energy Wind & Hydropower Technologies Program under Contract DE-AC05-76RL01830. http://www.pnl.gov/main/publications/external/technical_reports/pnnl-18567.pdf

Summary: Proposed development of domestic energy resources, including wind energy, is expected to impact the sagebrush steppe ecosystem in the western United States. The greater sage-grouse relies on habitats within this ecosystem for survival, yet very little is known about how wind energy development may affect sage-grouse. The purpose of this report is to inform organizations of the impacts wind energy development could have on greater sage-grouse populations and identify information needed to fill gaps in knowledge.

Sage-grouse are highly dependent on sagebrush-dominated landscapes for all phases of their life history. Much of their current range overlaps with wind power resources characterized as superb to good across 11 western states. Sage grouse may utilize different habitats during different seasons and usually require a large home range. However, they are habitual, using specific locales during all seasons, and are sensitive to habitat disturbance. Sage-grouse populations have generally been in decline since the mid-1960s; the species is currently under review for listing as threatened or endangered by the U.S. Fish and Wildlife Service.

Very little is known about wind energy and sage-grouse, but oil- and gas-field developments within the range of the sage-grouse often have caused measureable effects to their populations. Activities and disturbance related to both energy development scenarios are believed to pose some similar threats to the grouse. Sage-grouse populations typically decline following oil and gas development, and birds have been displaced from habitat near infrastructure and locations with human. Notably, it has been shown that female grouse nesting in developed areas had lower annual survival rates. Chick mortality rates also were higher within sight of oil wells.

It is not known to what extent the development of wind energy resources will affect sage-grouse populations. Information on local and landscape-level impacts is needed. Before-after control-impact studies are needed to determine impacts to grouse, and information gained could be used within an adaptive management strategy. Research protocols and efforts should be developed collaboratively between industry, resource management, and the research community.