Impacts of Wind Energy Development to Wildlife, Rare Plant Species and Natural Communities on State Lands

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Private commercial wind energy development companies are interested in locating strings of wind turbines and associated infrastructure on mountaintop ridgelines above 2500 feet in New England. In Vermont, development activities at these high elevations have always been restricted due to their remoteness and because of environmental, wildlife and public recreation conflicts. Vermont, in particular, has had relatively few high elevation commercial developments, most of which are ski resorts. State lands have rarely had commercial development allowed upon them due to the inherent conflicts between land development and land purchased specifically for wildlife conservation and public enjoyment.

The Agency of Natural Resources must review and assess potential impacts to wildlife and habitat associated with wind energy development in Vermont. Of specific concern to the ANR are:

(1) risk of mortality to migrating and resident birds;
(2) risk of mortality to migrating and resident bats;
(3) loss of significant wildlife habitat such as nesting habitat for Bicknell's thrush, wintering habitat for moose, or black bear and bobcat feeding habitat and den sites
(4) fragmentation of habitat and attendant effects on wildlife such as disruption of movement or migration, increased risk of nest predation or nest parasitism to forest interior birds; and
(5) disruption or displacement of wildlife with low tolerance for human activities and disturbance that might result from increased access to and use of remote forest habitats.

Mortality Risks to Birds & Bats

Large numbers of birds and bats have been killed at some wind energy projects. Recent investigations concerning bird collisions with wind towers indicate that, in the absence of evidence of the species of birds, number of birds, and seasonal and temporal migratory behavior of birds in the area proposed for development, it is not possible to properly screen the site for potential mortality impacts. Collisions by birds with wind tower facilities in other parts of the United States have resulted in significant mortality. Birds are collide with the turbine blades as well as the tower itself. These collision events are most likely to occur during periods of inclement weather during migration. Bats and most birds migrate at night. Lights on wind towers may draw them towards the structure, particularly during weather conditions that result in fog, low cloud levels and similar conditions. Vermont frequently experiences these sorts of weather conditions during spring and fall months, particularly at high elevations.

The most reliable method for assessing migration patterns and densities and determining which ridgelines and passes are important to nocturnal migrants is by using radar technology. Almost nothing is currently known about bird and bat migration behavior in Vermont. The level of data and knowledge by avian experts in this region is insufficient to pass judgment on detailed migration patterns of all species of birds. The collective opinion of many avian experts in the region is that birds migrate through Vermont in a "broad front". It is possible that certain regions, areas, habitats or topographic features serve to direct the migration patterns of certain bird species. Because of the absence of detailed information regarding the migratory patterns and behavior of a variety of bird species in Vermont, the Agency believes any proposed wind development site should be studied in detail using radar technology. These studies should cover, at a minimum, two spring and fall migration periods in a diversity of weather and wind conditions.

Impacts to Significant Wildlife Habitat

All proposed commercial development sites should be evaluated for potential impacts to significant wildlife habitats and for overall effects of fragmentation. The distribution, abundance and suitability of bear-scarred beech stands and other mast stands used by black bears, wetlands, black bear travel corridors, Bicknell's thrush habitat, moose winter habitat, bobcat feeding and denning habitat, and the habitat for rare, threatened and endangered species should be inventoried prior to any development planning.

Very little is known about the effects of wind energy development and infrastructure on birds and mammals and related ecosystem functions such as predator/prey interactions or travel corridors. The Agency has additional concerns regarding the potential for changes in behavior to black bear, deer, moose, bobcat and other species as a result of the potential disturbance and displacement effects associated with wind energy development.

Conclusion

Wind energy development should not be considered on sites where there would be significant cumulative impacts to wildlife populations and important habitats. Potential wind development sites should be assessed for potential negative impacts using the best science and technology available to identify any wildlife-related issues prior to the initiation of development. These pre-development wildlife investigations should be rigorous and be of up to three years duration with the costs borne by the applicant. Long term (ten year) post construction impacts may also need to be monitored at developed project sites. Where detrimental impacts are identified they should be avoided through appropriate placement and design changes or mitigation measures.