

# PPRP

## **Environmental Review of the Proposed Windpower Facility at Savage Mountain**

January 2006

**MARYLAND POWER PLANT  
RESEARCH PROGRAM**



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# Environmental Review of the Proposed Windpower Facility at Savage Mountain

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## *FOREWORD*

This document summarizes the State of Maryland's evaluation of the proposed U.S. WindForce facility at Savage Mountain. The windpower project received final approval from the Public Service Commission (PSC) on 20 March 2003.

The Maryland Department of Natural Resources (DNR) Power Plant Research Program prepared this environmental review document as part of the licensing case for the U.S. WindForce facility. The main body of this document was filed with the PSC in December 2002 as part of DNR's direct testimony in the Savage Mountain case (PSC Case No. 8939).

The appendices to this document provide additional materials relevant to the U.S. WindForce licensing case:

- Agreement of Stipulation and Settlement, dated 14 January 2003 (which includes as an attachment the State's letter of recommendations signed by department secretaries)
- Proposed Order of Hearing Examiner, dated 4 February 2003, recommending that the PSC grant a Certificate of Public Convenience and Necessity (CPCN)
- PSC Order granting the CPCN, dated 20 March 2003

## *ABSTRACT*

This environmental review summarizes PPRP's evaluation of the potential environmental and cultural resource impacts of a proposed windpower plant at Savage Mountain, located west of Lonaconing, Maryland. The project would consist of a maximum of 25 wind turbines, with a total maximum generating capacity of 40 MW. The project is recognized as having air quality benefits due to the fact that wind energy is emissions-free. The State evaluated the potential for adverse impacts, particularly with respect to ecological impacts, visual impacts, and noise. Detailed evaluation of bird and bat impacts led to recommended licensing conditions that require the applicant to perform pre-construction monitoring and post-construction mortality studies.

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U.S. Windforce has proposed construction of up to 25 wind turbines, the Savage Mountain Windforce Project, at a location west of the town of Lonaconing, Maryland (see Figure 1-1). The proposed windpower site is located near the Allegany and Garrett County border and consists of 1,052 acres, much of which has been strip mined for coal. Each turbine will have the capacity to generate up to 2 megawatts (MW) of electricity; the maximum capacity of the project is 40 MW.

The applicant plans to build a facility that will deliver electricity into the PJM Interconnection system. PJM controls 58,000 MW of generating capacity in Maryland, Pennsylvania, New Jersey, Delaware, Virginia, and the District of Columbia. Potential customers include large wholesale purchasers such as energy marketing firms as well as the PJM-operated spot market pool for ultimate usage within the region.

The Department of Natural Resources (DNR) Power Plant Research Program (PPRP), coordinating with other State agencies, performed this environmental review of the Savage Mountain project as part of the PSC licensing process. Before the facility can be constructed, the PSC must grant a Certificate of Public Convenience and Necessity (CPCN). PPRP's review is being conducted to evaluate the potential impacts to environmental and cultural resources for the proposed facility, pursuant to Section 3-304 of the Natural Resources Article of the Annotated Code of Maryland.

PPRP used the analysis of potential impacts as the basis for establishing initial recommended license conditions for operating the proposed facility, pursuant to Section 3-306 of the Natural Resources Article. PPRP's recommendations are made in concert with other programs within DNR as well as the Departments of Agriculture, Business and Economic Development, Environment, Planning, and Transportation, the Maryland Energy Administration, and the Office of Smart Growth.

This report synthesizes the evaluations that PPRP has conducted. The information is organized into the following sections:

- Section 2 provides a description of the ecological and terrestrial impacts.
- Section 3 describes the visual, cultural resources, and socioeconomic impacts that the facility will pose on the surrounding area.



- Section 4 presents a noise impact evaluation and the associated regulatory requirements.
- Section 5 addresses recommended licensing conditions.

The remainder of this introduction section provides a description of the site and proposed facility, as well as background information on windpower.

## **1.1 DESCRIPTION OF EXISTING SITE**

The site for the Savage Mountain Windforce Project is located on a 1,052-acre parcel of land that is owned and operated by coal mining interests. The project site is mostly located in western Allegany County, although a small portion of the site is in Garrett County. The site is located northwest of the town of Lonaconing and approximately 15 miles southwest of the city of Cumberland.

The site straddles Koontz Run at elevations between 2,300 to 2,800 feet above mean sea level. A map of the immediate area and the extent of the site boundaries is included in Figure 1-2.

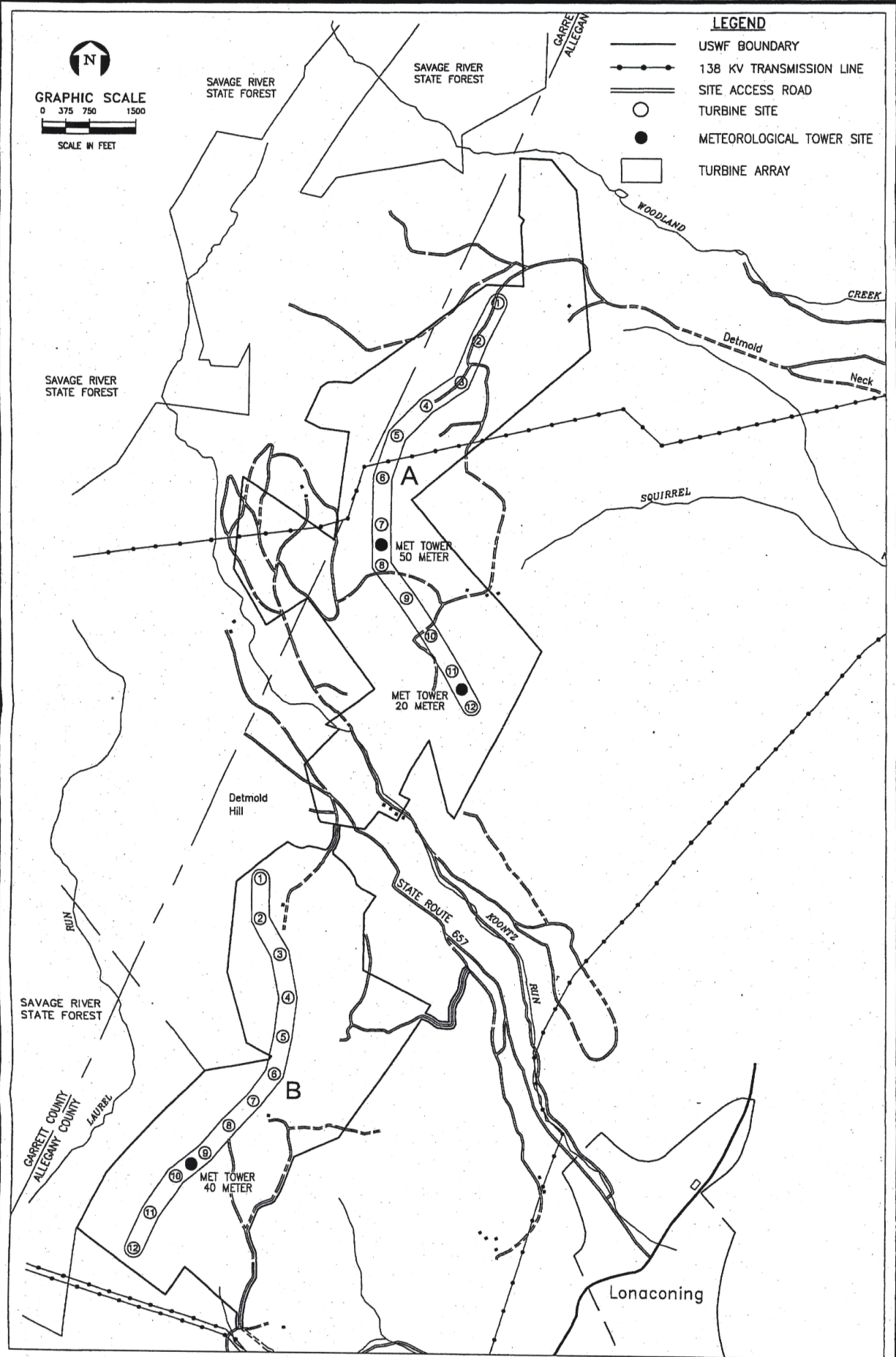
Clise Coal Company currently uses the site for strip coal mining. Much of the site has already been strip mined, while other portions are actively being mined. Development of the windpower project will not proceed until mining is complete on that portion of the site to be developed and land reclamation is also completed.

Several hauling roads provide access to the site. The majority of the surrounding area is currently undeveloped and rural.

## **1.2 DESCRIPTION OF PROPOSED FACILITY**

The proposed Savage Mountain Wind Energy Project will have a maximum electrical generating capacity of 40 MW. The major components and systems of the project will include:

- Power generation equipment - The project will generate power with up to 25 wind turbines.
- Electrical infrastructure - A step-up generator transformer will be supplied to the site with each turbine. A high voltage substation will be constructed onsite to tie into existing transmission lines.



3-9

Figure 1-2 Conceptual Layout of Wind Turbines

- Ancillary equipment - This includes equipment instrumentation, monitoring and control systems, and an onsite instrumentation building.

The principal feature of the proposed project will be the wind turbine generators. Each turbine will be housed in a nacelle and will be mounted to a tubular steel tower up to 328 feet tall. With the rotor blades, the maximum height of the structure would reach 459 feet. The actual wind turbine model to be constructed will be determined during detailed design of the facility, following issuance of a CPCN. Windforce's choice of turbine model will be based on availability and cost at the time when equipment is specified. However, all the potential wind turbine models have the same or smaller dimensions than those described in this report.

The nacelle contains the key components of the wind turbine including the gearbox and the electrical generator. The low speed shaft of the wind turbine connects the rotor hub to the gearbox. The gearbox then transfers the energy to a high-speed shaft that drives the electrical generator.

Based on conceptual designs the turbines will be situated in two separate arrays. Array A consists of 12 wind turbines located entirely within the sites northern portion and Array B consists of 12 turbines that will be located in the southern portion of the site, with Maryland Route 657 dividing the two arrays (see Figure 1-2). The transmission line tie-in and onsite substation will be located in Array A.

The project will employ up to 25 wind turbine generators, each with a nameplate capacity of up to 2,000 kW. Each turbine will be served by a single step-up transformer, which will boost the voltage level of the power generated by the turbine from several hundred volts to approximately 25 to 34.5 kV. Underground power collection lines will transmit the power from each turbine to the Project substation.

A new onsite substation will be constructed to convey the power output to the transmission grid. At the substation, the project output will be transformed to the 138 kV level. The project will tie directly into an existing 138 kV transmission line that connects to the Allegheny Power Carlos Junction substation.

Ancillary equipment includes fiber optic cables that will extend alongside the underground collection lines, connecting each turbine to control equipment located in the operations building. The turbines will be equipped with a data acquisition system that will monitor the condition of the wind turbine and control the key mechanisms. The wind turbines will be equipped with safety features that will shut down the turbine during

high wind conditions. The primary braking system for most modern wind turbines is the aerodynamic braking system, which essentially consists of turning the rotor blades along their longitudinal axis. Each blade has its own independent failsafe pitching mechanism capable of feathering the blade under any operating condition. The blades are mounted on pitch bearings and can be feathered 90 degrees for shutdown purposes. A mechanical brake can be used as a backup system. Although U.S. Windforce has not yet selected a wind turbine manufacturer, shut-off wind speeds are typically in the range of 55 miles per hour or above.

### 1.3 *BACKGROUND ON WINDPOWER*

Wind energy is a form of solar energy, as wind is the movement of air caused by the uneven heating of the earth's surface by the sun. Because warm air is less dense than cooler air and tends to rise while cooler air sinks, the movement of air (wind) occurs as a result. This is further accentuated by the tilt of the earth's axis, the earth's rotation around the sun, and the irregularities of the earth's surface. A wind energy turbine converts the kinetic energy of wind into mechanical energy that can be used for specific tasks (e.g., grinding grain or pumping water), or the mechanical energy can power a generator and make electric power.

Humankind has been using mechanical energy from wind turbines for thousands of years. Some documentation exists that wind energy was used to move boats along the Nile River as early as 5000 B.C. In the United States, millions of windmills were constructed during the settling of the western region of the country in the 19<sup>th</sup> century. By 1900, small wind turbines were designed to generate direct current electricity, but many wind turbines fell into disuse when grid power was extended to rural areas in the 1930s (DOE 2002).

#### 1.3.1 *Types of Wind Turbine Designs*

The basic turbine design is a horizontal axis wind turbine, or HAWT, that constitutes most of the utility-scale (generally 100 kilowatts or higher) wind turbines. HAWTs typically have two or three rotor blades; a few early models had four or five. HAWTs can be further categorized into upwind machines, where the blades turn in front of the tower, and downwind machines, where the blades turn in the back. The turbines proposed for this project are upwind turbines with three rotors.

Another, less common turbine design is the vertical axis, or "egg-beater" wind turbine, also known as a VAWT turbine. The VAWT wind turbine turns around a vertically mounted rotor like a spinning coin. The VAWT

wind turbine can accept wind from any direction and does not need a large tower. However, higher costs and poor performance have held the VAWT back, and no wind turbine company offers utility-scale VAWTs commercially.

Wind turbine components include a *rotor* or *blades* that turn the energy of the wind into rotational shaft energy; a *nacelle* that is the enclosure which contains the *drive train*, *gearbox* and a *generator*; a *tower* that supports the rotor and drive train; and electronic equipment such as controls, electrical cables, and equipment to interconnect the wind turbine to the utility grid. Figure 1-3 illustrates the inside of the nacelle of a typical wind turbine.

Utility-scale windpower developers typically group turbines together in “windpower plants” or “wind farms.” Windpower plants can range in capacity from a few megawatts to hundreds of megawatts. Because wind plants consist of several turbines, wind is considered a “modular” technology, and a developer can add or remove wind turbines during the design process to meet project needs.

### 1.3.2 *Wind Resources*

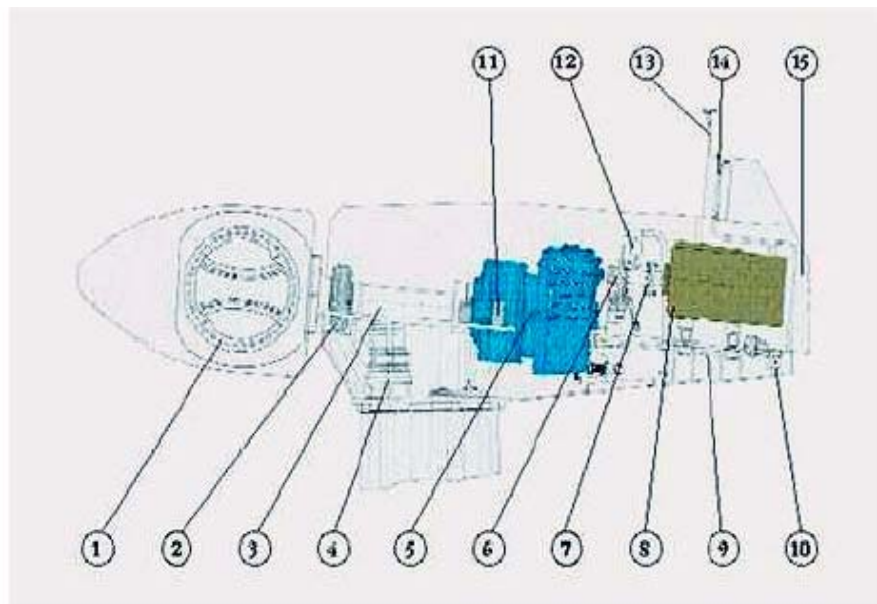
Wind resources for electricity generation are categorized into “resource classes,” with Class 1 the lowest (zero mph, or no available wind resource) and Class 7 the highest (between 21 and 26 mph). Generally, utility-scale wind projects need at least Class 4 wind resources (13 mph and higher). Maryland's only onshore Class 4 resources are found in the western part of the state (see Figure 1-4).

Wind speed is a critical element in wind project development. The power accessible in the wind is proportional to the cube of the wind speed, meaning that doubling the wind speed increases the available windpower by a factor of eight. Therefore, a 3 percent difference in average wind speed can change power production by almost 10 percent. Indeed, a one-mph difference in wind speed can affect wind energy costs by about 0.5 cents per kilowatt-hour (kWh) (Parsons 2000).

### 1.3.3 *Market Status of Wind Energy*

Wind energy is the world's fastest growing energy resource, with more than 24,000 MW installed around the world (AWEA 2002c). As of September 2002, wind energy capacity in the United States was at 4,329 MW, and almost 1,700 MW of wind energy capacity came on-line in 2001 (AWEA 2002d). Wind's growth has been driven by a combination of environmental benefit (as an electricity generating technology with no emissions) and increased cost-competitiveness. The cost of wind-

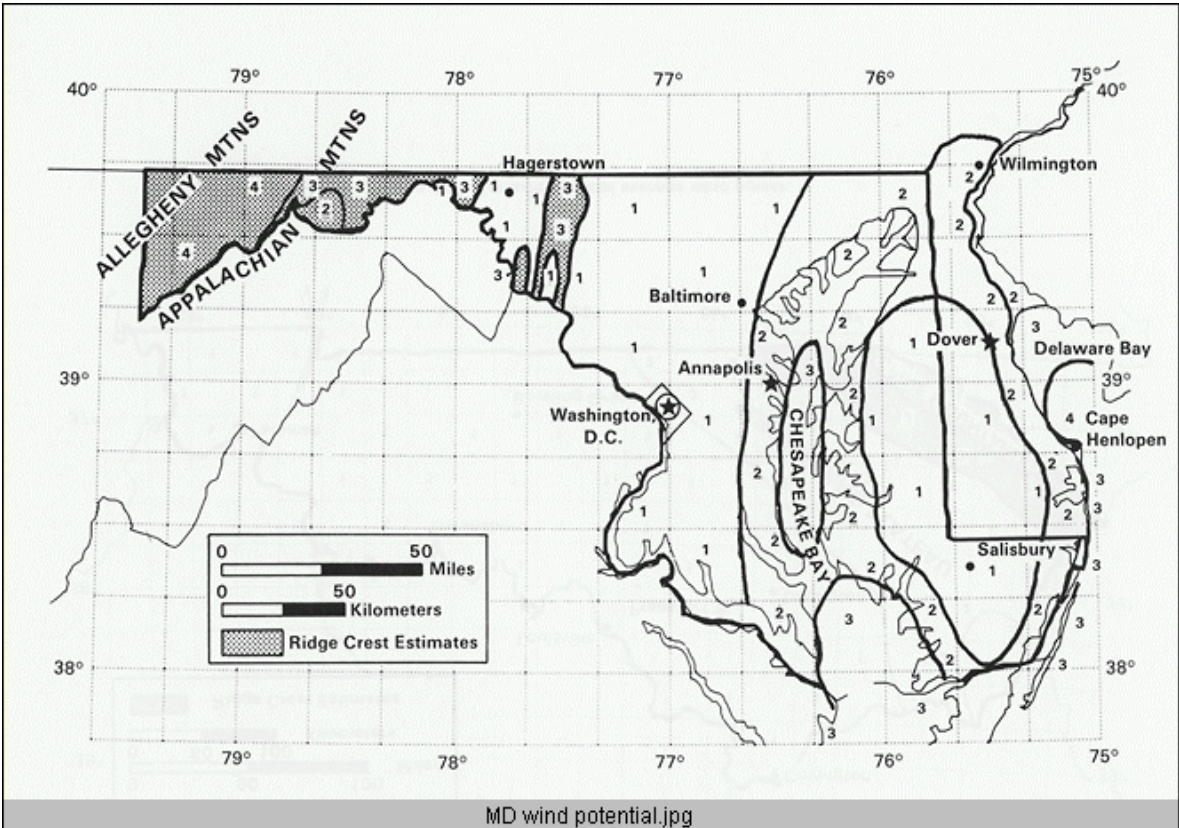
**Figure 1-3 Components of a Typical Wind Turbine Nacelle**



- |                  |  |   |                              |
|------------------|--|---|------------------------------|
| 1. Spherical hub | 5. Gearbox                             | 9. Frame  | 13. Anemometer and wind vane |
| 2. Main bearing  | 6. Fall safe hydraulic disc brake unit | 10. Heat exchanger for cooling of the gearbox oil | 14. Radiator                 |
| 3. Main shaft    | 7. Flexible coupling                   | 11. Gearbox suspension                            | 15. Cover                    |
| 4. Yaw gear      | 8. Liquid-cooled generator             | 12. Crane for maintenance work                    |                              |

Source: AWEA 2002a

Figure 1-4 Wind Resources in Maryland



generated electricity at good wind sites has dropped from 35 cents per kWh in 1980 to as low as 3 or 4 cents per kWh today (see Figure 1-5).\* The cost of wind-generated electricity is expected to further decline by 35 to 40 percent by 2006 (AWEA 2002a).

The drop in cost of wind-generated electricity can be attributed to technological advances and scale economies. Wind energy costs dropped by 15 percent with each doubling of installed wind capacity worldwide, and wind capacity doubled three times during the 1990s (AWEA 2002a). Contributing factors include using much larger turbines and rotor diameters. Table 1-1 presents the characteristics of wind generating plants in 1981 and 2000. As can be seen, wind generating projects in 2000 generate 120 times more energy than wind projects installed in 1981, at only 20 times the cost (AWEA 2001).

**Table 1-1**      *Characteristics of Wind Projects Installed in 1981 and 2000*

	1981	2000
<b>Rated Capacity</b>	25 kW	1,650 kW
<b>Rotor Diameter</b>	10 meters	71 meters
<b>Total Cost (\$000)</b>	\$65	\$1,300
<b>Cost Per kW</b>	\$2,600	\$790
<b>Output, MWh/year</b>	45	5,600

Source: AWEA, 2001.

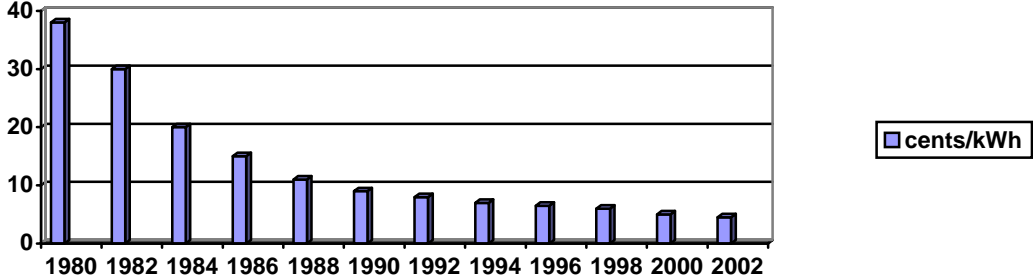
Wind development occurred first in California, thanks to a combination of tax incentives and favorable utility power purchase contracts. California still has the most installed wind energy capacity in the United States, followed by Texas (see Figure 1-6).

Wind project development in the United States is heavily dependent on the federal production tax credit, or PTC. The PTC is an inflation-adjusted federal business tax credit of 1.8 cents for every kWh of wind generation that is produced, for 10 years after the wind project begins operating. The

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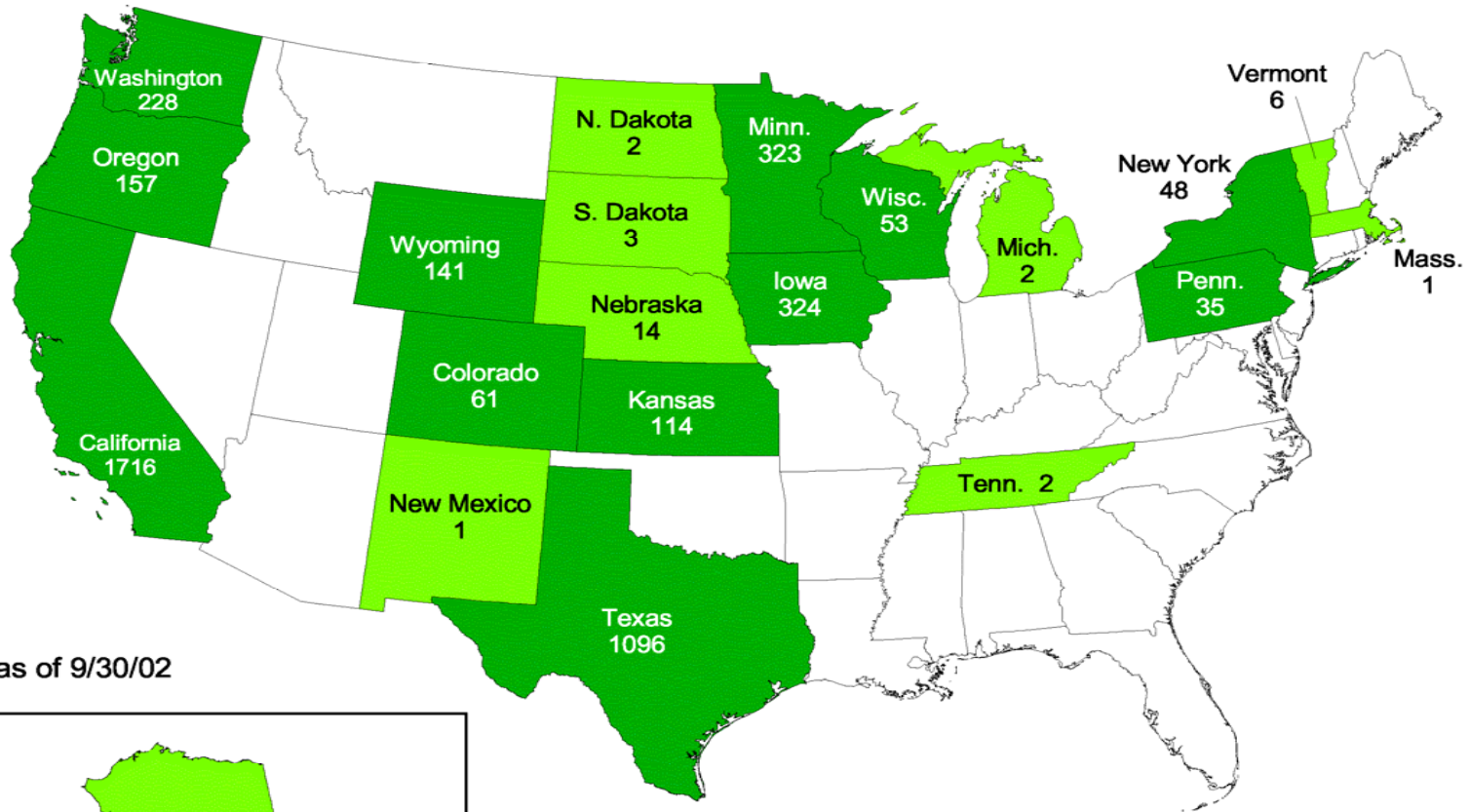
\* The higher number (4 cents/kWh) is from DOE 2001 (see Section 6, References). Assumptions include project financing costs of 7.5% annual return on debt, and 13% or less return on equity. The 3 cents/kWh is from Parsons 2000.

Figure 1-5 Cost of Wind-Generated Electricity in Levelized Cents/kWh

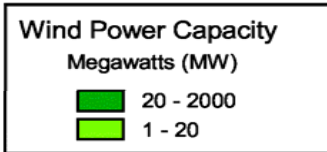
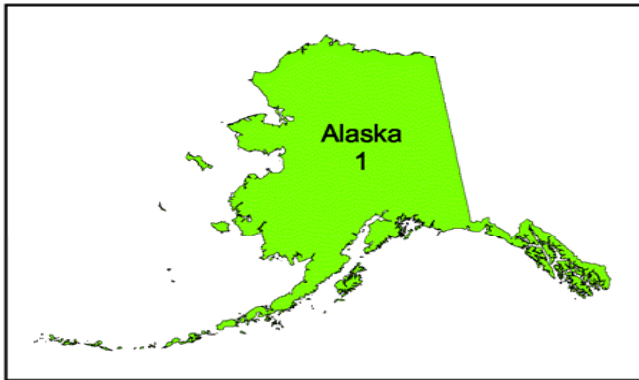


Source: AWEA 2001

## Current Installed Wind Power Capacity (MW)



4,329 MW as of 9/30/02



U.S. Department of Energy  
National Renewable Energy Laboratory



11-NOV-2002 1.1.14

Figure 1-6 Installed Wind Energy Capacity by State (as of Sept. 2002)

PTC was first enacted for five years with the passage of the Energy Policy Act of 1992, and has been extended twice since then. With the exception of its initial enactment for five years, Congress has extended the PTC for two-year periods, creating a “boom-bust” cycle for wind development. The PTC is next set to expire at the end of 2003. The pending expiration of the PTC is the reason why the two Maryland wind projects have requested expedited processing of their CPCN permit applications.

Maryland has a state production tax credit, equivalent to 0.85 cents per kWh and also lasting for 10 years after the wind project begins operating. The Maryland PTC expires at the end of 2004. Wind generators cannot claim the Maryland PTC if they are taking the federal PTC.

This section discusses the potential ecological impacts likely to arise from construction and operation of the proposed windpower facility. Resources of concern include birds and bats, terrestrial resources (including vegetation, wildlife, and wetlands), environmentally sensitive areas, threatened and endangered species, water resources (both surface water and groundwater), and air quality and climate. Birds and bats that migrate through the project area are of special concern because of the nature of wind turbines as obstructions, so these species are considered separately under avian and bat impacts. Rare birds that may nest in the project area are considered under the threatened and endangered species section.

The analysis and conclusions in this section are based on PPRP's evaluation of field studies and assessments conducted by Savage Mountain Windforce, independent research and discussion with outside experts, site visits by PPRP and DNR's Natural Heritage Program, and consultation with the Natural Heritage Program. Specifically, Windforce conducted an avian Phase I assessment (observational studies designed to detect potential effects of large magnitude), breeding bird survey, and vegetation and rare plant survey. Information on bird impacts from wind turbines generally, and bird migration data from Maryland, were consulted. The field visits involved evaluation of proposed tower locations and known occurrences of species of concern.

## 2.1 *BIRD AND BAT IMPACTS*

### 2.1.1 *Background*

The effects of wind turbines on birds have been studied since the late 1980s in the United States and earlier in Europe. Two types of adverse effects (impacts) have been documented. The first is disturbance impacts resulting from the presence of new infrastructure, particularly in situations where turbines have been built in open pastures and fields. While some birds simply avoid the area surrounding the turbines (typically to a radius of 100 to more than 300 meters), other birds habituate to the turbines and even perch on them. There is some variation among species, but habituation seems to occur over a few years in most species.

The second type of impact is the collision of birds with turbines that result in fatalities. After more than a decade of studying these impacts, there is evidence that the numbers of fatalities resulting at windpower facilities is small. On average, one to two birds are killed annually per turbine. There are currently approximately 15,000 wind turbines operating in the United States, leading to fatalities of approximately 33,000 birds per year (NWCC 2002). Typically, fatalities are spread over a variety of species so that no single species is particularly harmed, although there are specific wind turbine sites where raptors may be attracted to large prey bases such as ground squirrels. Overall, the impacts from wind turbines have not caused the decline in any particular species, nor has there been a demonstrated reduction in numbers of individual birds at any particular site. The greatest concern is for regionally declining species that may suffer mortality during migration. While the Migratory Bird Act prohibits “taking” individual migrating birds, U.S. Fish and Wildlife practice has been to require that all practical means be employed to avoid fatalities.

The role that wind turbines play in the cumulative impact on birds, when combined with other adverse effects, is unknown. On a relative scale, however, bird fatalities resulting from wind turbines are 100 to 10,000 times smaller than that resulting from other human activities, such as vehicles, buildings and windows, and communication towers (Erickson *et al.* 2001). Development of windpower may also result in less adverse impacts to birds when compared to other potential uses of the same land that would eliminate more natural habitat (e.g., use as home sites).

Several factors contribute to bird fatalities at windpower sites, most importantly perching sites, guy wires, tower height, blade speed, and lighting:

- New tubular designs for wind turbines reduce the amount of *perching* compared to older lattice designs. Birds are less likely to encounter turbine blades on towers without perch sites.
- Older wind tower designs also used *guy wires* as support structures. These guy wires were major sources of avian mortality as they are the most difficult structure for birds to see. Wind turbine towers without guy wires are now the standard in the industry.
- *Taller towers*, even those that do not require guy wires for support, are also more likely to encounter migratory birds than shorter towers.
- *Increasing blade speed* is also known to increase bird mortality at wind turbines. The New York State Alternative Energy Corporation (NYSAEC) recommends a slow constant speed of turbine rotor blades to permit more birds to avoid the turbines (NYSAEC 2002).

- *Tower lighting* has proven to be one of the most important contributors to avian mortality at windpower sites. Illumination of towers is known to cause birds to become disoriented in flight, particularly in foggy or rainy conditions, causing the birds to fly into the tower or each other. Current research has shown that strobe lights with long dark cycles are better than solid lights of any color. The minimum allowable number of cycles allowed by the Federal Aviation Administration (FAA) is 20 blinks per minute (FAA 2000); red strobe lighting systems with a frequency cycle of 24 per minute are now commercially available and have been recommended for other structure lighting applications, pending FAA approval.

The likelihood of windpower projects located in Western Maryland significantly affecting birds depends on (1) the design, number, and location of wind turbines, and (2) the species and number of birds that use the area around the turbines, especially migratory birds. Resident birds in the habitats around wind turbines are generally unlikely to collide with the structures as they nest and forage in their home range. The density of birds is also small in this immediate area of Allegany County. The concern for raptor impacts is reduced because they do not use these areas as primary feeding grounds. Migratory birds, on the other hand, can pass through the project area in high numbers. The mountain ridges of the Appalachian Plateau are known to be used for migration by raptors and other birds. It is unknown if the area of Savage Mountain where the Windforce facility is proposed supports large migrations. In general, most migratory birds fly at heights higher than wind turbine height, except in bad weather. Birds tend to fly at lower altitudes than usual on nights with more cloud cover.

The effects of windpower turbines on bats have been studied at many of the same facilities as birds. With the exception of Minnesota and Wyoming, the numbers of bats involved have been small. The hoary bat, in particular, has suffered moderate fatalities. To date, primarily migrating bats have been affected, possibly because they use acoustic navigation less frequently during migrational movements (Curry & Kerlinger 2002).

### 2.1.2

#### *Description of Site Resources*

Data from Breeding Bird Survey (BBS) routes closest to the project site were used to determine the types of birds that are likely to nest on or near the project site. The BBS is a 24.5-mile-long road survey of nesting birds. The BBS suggest a moderate diversity of nesting species, most of which are common nesters of forest, forest edge, brush, grassland, and farmyard.

Based on surveys conducted from 1992 to 2001, 61 to 76 species of breeding birds were observed in the vicinity of the project site.

Historical records show that major raptor flights were known to occur regularly over Big Savage, Backbone, and Dans Mountains (Stewart and Robbins 1958). More recent information shows that between 14 and 370 hawks per day were recorded in areas in the vicinity of the project site (Heintzelman 1986). Historically, approximately 25 species of migratory waterfowl and 17 species of sand pipers and plovers have been identified in Deep Creek and Mountain Lakes (Stewart and Robbins 1958). Golden eagles are more abundant now in Garrett and Allegany Counties than they were 10 years ago. They do not migrate through the region, but fly up and down ridges, scavenging for food (Presley 2002). While smaller birds, such as songbirds, tend to fly at lower heights and to stop often to feed or rest, it has been shown that raptors such as hawks fly at altitudes between 1,950 and 2,925 feet above the ground surface (Heintzelman 1986). In Western Maryland, the principal migration route is spread over a wide geographic area with few locations where large numbers concentrate during active migration or stopovers (Kerlinger 2002). Because the proposed Savage Mountain project does not occupy a major ridgeline, the potential for attracting migrant songbirds and hawks is much reduced.

Savage Mountain Windforce observed a variety of bird species during two site visits performed during June and July of 2002. These species are listed in Table 2-1 and include turkey vulture, American crow, owl, and various songbirds. The site supports various nesting species dependent on forest edge, brushland, and to a lesser extent, grassland. The site visit did not reveal high densities or availability of prey or other habitat attributes that could attract or host large numbers of raptors to the turbine areas, although raptors do forage on the site. A small hawk migration is known to occur along nearby ridges, but it is unlikely that many hawks will migrate to the project site because of its disturbed nature. The site is not likely to be a significant migratory flyway or pathway for other species, nor will it support many wintering birds.

### 2.1.3 *Impacts*

Windforce conducted a Phase I Avian Risk Assessment that focused on the potential for migratory bird species to be affected by the proposed windpower facility (Kerlinger 2002). The Avian Risk Assessment found that the project site has experienced significant habitat degradation and has neither sensitive habitat nor habitat suitable for federally threatened or endangered species. In addition, high densities or availability of prey or other habitat attributes that could attract or host large numbers of raptors to the turbine area were not found. It is unknown whether significant

**Table 2-1 Wildlife Species Observed on the Savage Mtn. Wind Energy Project Site, June and July 2002**

Common Name	Scientific Name
Birds	
Red-winged blackbird	<i>Agelaius phoeniceus</i>
Grasshopper sparrow	<i>Ammodramus savannarum</i>
Red-tailed hawk	<i>Buteo jamaicensis</i>
Northern cardinal	<i>Cardinalis cardinalis</i>
Turkey vulture	<i>Cathartes aura</i>
Chimney swift	<i>Chaetura pelagica</i>
Northern harrier	<i>Circus cyaneus</i>
Yellow-billed cuckoo	<i>Coccyzus americanus</i>
American crow	<i>Corvus brachyrhynchos</i>
Common raven	<i>Corvus corax</i>
Merlin	<i>Falco columbarius</i>
Barn swallow	<i>Hirundo rustica</i>
Song sparrow	<i>Melospiza melodia</i>
Black-capped chickadee	<i>Parus atricapillus</i>
Tufted titmouse	<i>Parus bicolor</i>
Indigo bunting	<i>Passerina cyanea</i>
American woodcock	<i>Philohela minor</i>
Towhee	<i>Pipilo erythrophthalmus</i>
Scarlet tanager	<i>Piranga olivacea</i>
Common grackle	<i>Quiscalus quiscula</i>
Chipping sparrow	<i>Spizella pusilla</i>
House wren	<i>Troglodytes aedon</i>
American Robin	<i>Turdus migratorius</i>
Red-eyed vireo	<i>Vireo olivaceus</i>
Mammals	
Woodchuck	<i>Marmota monax</i>
White tailed deer	<i>Odocoileus virginianus</i>
Raccoon	<i>Procyon lotor</i>
Eastern cottontail	<i>Sylvilagus floridanus</i>

Source: Savage Mtn. Energy Project Application

hawk, songbird, waterfowl, shorebird, and other migrations occur within the project site or adjacent areas, but some bird experts have concerns about potential migration impacts. Specifically, information from bird surveys conducted during the 1940s and 1950s (Chandler Robbins, personal communication) indicates that substantial numbers of hawks migrate along Maryland's mountain ridges. Less extensive surveys also indicate the possibility that migratory songbirds may migrate at night in the project area (Chandler Robbins, personal communication). Impacts to nocturnal migratory songbirds would be most likely during low clouds and fog, when they could be attracted to tower lighting. These experts harbor similar concerns about impacts to migrating bats, though virtually no information on their presence in the project area is available. Because the Windforce project site is not located along a major ridgeline it is not likely to host large numbers of migrating songbirds or hawks of concern to these bird experts.

Based on studies of existing windpower projects in the United States and Europe, the species (type and number of individuals) that frequent the project site, literature searches, site visits, and interviews, the risk of large-scale deaths of birds or bats at the project site is considered to be low. However, given that there remains considerable uncertainty regarding potential mortality from these projects, the State is recommending that Windforce be required to undertake a post-construction study of bird and bat mortality associated with the operation of the turbines. At a minimum, monitoring would be conducted for three years and cover three each of spring and fall migration periods. More intensive monitoring would be required during these migration periods. Monitoring data would be reported on a quarterly basis and would include both observed and estimated mortality by observation date and turbine. Species affected and specific weather conditions should be noted. The detailed monitoring plan would be developed by the applicant and subject to the approval of the DNR Natural Heritage Program.

If, in the opinion of the Natural Heritage Program, monitoring does indeed show evidence of significant mortalities, then a mitigation plan would be developed in consultation with DNR. Mitigation may include not operating specific turbines during times of maximum observed threat. The maximum number of hours that operation would be curtailed has been set at 450 turbine-hours, or 18 hours per turbine if fewer than 25 turbines are constructed. This maximum level of curtailment was

calculated by DNR in consultation with its bird experts and with literature on avian interaction with wind turbines.\*

In addition to studying bird mortality post-construction, available technologies should be employed in the facility design to minimize bird fatalities, in accordance with the Migratory Bird Act. The newer, industry-standard wind turbine technology (without lattice structures or guy wires) will be used, with heights not to exceed 460 feet as stated in Windforce's CPCN application. Second, subject to FAA approval, lighting on the turbines should be minimized by lighting the least number of turbines, using red strobes that flash no more than 24 times per minute.

PPRP is undertaking an independent monitoring program in Western Maryland to improve our understanding of the potential impacts to birds and bats from windpower facilities, both those currently in the licensing process and those that may be proposed in the future. The results of the State's monitoring effort, in addition to the information gathered from the site-specific Savage Mountain Windforce monitoring, will improve future assessments and facilitate the siting of potential new windpower facilities to avoid or minimize adverse effects.

## 2.2 TERRESTRIAL RESOURCES

### 2.2.1 *Description*

The project site consists of 282 acres within a 1,052-acre parcel of land, situated within the Allegheny Plateau, an area historically characterized by either spruce/fir or mixed hardwood forests. Over the years, much of the plateau, including the site, has been mined or logged, eliminating the virgin stands of timber. Currently, much of the study area is either being surface mined or has been mined for coal extraction and is in early stages of succession. As such, the project study area is highly disturbed and dominated by ruderal vegetation. Other land uses onsite include meadow, shrubland, a Christmas tree plantation, secondary growth forest, a pond, stream/wetland, and a water treatment facility.

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\* Consistent with mortality observations at other windpower facilities, we assumed that a maximum of 20 percent of the towers would be implicated in bird collisions. Assuming 25 turbines at the Windforce site, this equates to 5 towers. The season of highest risk to migratory birds is the fall migration, a period of about 45 days, with the maximum risk occurring during the 2-hour morning flight period. Thus:  
(5 towers) X (45 days) X (2 hours/day) = 450 turbine-hours

## *Vegetation*

Upland communities on site include mined areas, meadow, shrubland, mixed pine/hardwood forest, hardwood forest, a Christmas tree plantation, and a water treatment facility. Collectively, these upland communities comprise the vast majority of the project study area (281 acres; 99.7 percent of the study area). Most of these communities show signs of disturbance from mining or logging activities associated with future mining.

Active and inactive mining areas comprise approximately 54 acres (19 percent) of the project study area. They are located both on the north and south parcels of the site. The majority of the northern parcel has been mined and is currently in various stages of succession. The southwestern portion of the southern parcel has been proposed for mining prior to development of the project. The mined land areas have been cleared of vegetation, and roads have been constructed for access. Deep mining pits, stockpiles of coal and overburden, and heavy equipment are located in these areas. Ruderal species such as yarrow, sweet clover, goldenrod, ragweed, and saplings of black locust are becoming established in scattered locations throughout the inactive mining areas.

Meadow communities are present on both the northern and southern parcels of the study area, but are more prevalent on the northern parcel. Meadow communities comprise approximately 86 acres (30 percent) of the study area. Grasses and ruderal herbaceous species with occasional scattered shrubs or tree sapling dominate. Typical species include yarrow, Queen Anne's lace, milkweed, orchard grass, daisy fleabane, butter and eggs, goldenrods, red clover, sweet clover, timothy, and a few scattered saplings of sweet birch and black locust.

Shrubland covers approximately 26 acres (9 percent) of the study area and is present primarily on the northern parcel. This community is dominated by either saplings of sweet birch or by black locust with an understory dominated by herbaceous species common to the meadow community. These areas were likely mined in the past and are in an intermediate state of succession between meadow and forest.

There is a small blue spruce and fir plantation on the southern parcel of the study area, south of the active mining operation. The plantation is approximately 3 acres (1 percent) of the study area. White pine is scattered among the planted trees.

Several stands of mixed hardwood forest are present onsite. Together they cover approximately 112 acres (40 percent) of the study area. These forests

are all secondary growth. The forest stands on the northern parcel are vegetated by trees such as white ash, black cherry, red maple, sugar maple, and black locust. Scattered individuals of white hazel dominate the shrub stratum. The herb layer consists of black snakeroot, tall bell flower, goldenrod, and common milkweed, among others. Further south, the steep slope between the Koontz Run valley and the adjacent ridge is vegetated by forest dominated by sugar maple, black locust, and poplar. Here, the herbaceous cover was dominated by garlic mustard, black snakeroot, Christmas fern, clearweed, and jumpseed, among others.

The majority of the forest onsite is located on the southern parcel. Based on pre-existing plans, these forest stands will be logged prior to the development of the project. Currently, the forest is secondary growth with openings throughout caused by disturbance. Typical tree species include sugar maple, basswood, black locust, witch hazel, black cherry, and white ash. Occasional individuals of shagbark hickory, American beech, white pine, red oak, and sassafras are also present. Few shrubs are present in these forest stands. Vine and understory species include black raspberry, blackberry, grapevine, garlic mustard, black and white snakeroot, goldenrods, and cinquefoil, among others. An access road was recently constructed through one of the forest stands on the south parcel.

The Town of Lonaconing has a water treatment facility within the project study area. This facility is cleared and grassed and has a water tank and building situated onsite. This facility occupies approximately 0.9 acre (0.3 percent) of the study area.

### *Wetlands*

A willow wetland is located adjacent to Koontz Run on the north side of the adjacent access road and is associated with a drainage into the creek. The wetland is dominated by black willow, spotted Joe-pye weed, boneset, wool grass, caric sedges, soft rush, and reed canary grass. This wetland falls under the National Wetlands Inventory classification of palustrine scrub-shrub wetland. There is a manmade swale in this area that was constructed to drain water from the northern ridge down into the creek. Large rocks and boulders have been placed into the swale to prevent erosion.

There is a manmade pond on the northern parcel that is approximately 0.24 acre and is a remnant of previous mining activity. Wetland plants in and surrounding the pond include spotted smartweed, beggar tick, cattail, wool grass, reed canary grass, spike rush, and barnyard grass, among others.

## *Wildlife*

During field surveys conducted in June and July of 2002, wildlife species observed on the study area include eastern cottontail rabbit, woodchuck, groundhog, deer, and a variety of bird species, including turkey vulture, American crow, owl, and various songbirds, among others (see Table 2-1). The site supports various nesting species dependent on forest edge, brushland, and grassland habitats.

### 2.2.2

#### *Impacts*

The project site and surrounding areas have been largely disturbed through past and present mining activity and are proposed to be further disturbed through proposed logging and further mining activities prior to the development of the project. Given the disturbed nature of the site, coupled with the lack of unique vegetation or wildlife communities, the presence of very few wetlands/waterway communities, and the absence of threatened or endangered species onsite, it is expected that there will be no significant ecological impacts associated with project construction.

Table 2-2 lists the acres of proposed impact by land cover type. The total acreage of impact (108 acres) reported here represents a worst-case scenario. It is more likely that less land will be cleared since only approximately 0.5 acre will actually need to be cleared for each wind turbine in addition to a 40 ft. wide corridor for the new access road and cable trench. However, it may be necessary to trim large shrubs or trees between the turbines to prevent any interference. The worst-case scenario is addressed in the following paragraphs.

The construction of the project will cover approximately 108 acres of land, with at least half of the disturbance located in disturbed mined or logged lands. Specifically, approximately 24 acres of mined land and 30 acres of logged forest, which, combined, represent 50 percent of the construction impacts, will be cleared and used for the project. Given the low habitat quality of these communities resulting from previous impacts, development of these areas will not pose the risk of a significant decline in the area's overall ecological health. The next largest land cover type that will be cleared for construction is meadow. Approximately 37 acres of meadow will be cleared (34 percent of the overall construction impacts). Most of the meadow communities onsite were previously strip mined. These areas have been reclaimed and are now in an early successional stage, dominated by ruderal herbaceous species. Once the turbines, access road, communications and electrical lines, and office/storage buildings have been installed, the remaining area within the 300-foot construction corridor will be maintained in a natural grassy state, similar to the current

**Table 2-2 Savage Mtn. Wind Energy Project Pre- and Post-Construction Extent of Land Cover Types (Acres)**

<b>Land Cover</b>	<b>Current</b>	<b>Impact</b>	<b>Postconstruction</b>
Mined land	54.48	24.27	30.21
Meadow	84.57	36.53	48.04
Shrubland	26.42	9.75	16.67
Tree farm	2.83	2.58	0.25
Forest (northern parcel and cable route)	21.99	4.60	17.39
Logged forest (southern parcel)*	89.62	30.41	59.21
Water treatment facility	0.91	--	0.91
Pond	0.24	--	0.24
Stream/wetland/swale	0.61	0.05	0.56
<b>TOTAL</b>	<b>281.67**</b>	<b>108.19</b>	

\* Forest on the southern parcel is proposed to be logged by the mining operation prior to development of the Savage Mtn. Wind Energy Project. Therefore, Project impacts are overstated.

\*\*The 281.67 acres listed as the total current acreage represents the portion of the 1,052-acre Project site defined as the study area.

Source : Savage Mtn. Energy Project Application

meadow community. There will not be a significant decline in the meadow community in the immediate vicinity, as there are other similar communities both onsite and nearby that will remain intact.

Construction impacts to the remaining communities will be relatively minor and include 10 acres of shrubland, 5 acres of forest, and 3 acres of Christmas tree farm. With the exception of the Christmas tree farm, the percentage of these communities that will be cleared for the project is minimal compared to what is present both onsite and in the surrounding areas. Therefore, project construction will not significantly affect the functions or values these communities provide to the surrounding ecosystem. Even though almost the entire Christmas tree farm will be eliminated during construction, it is not a naturally occurring community and does not provide any unique contributions to the surrounding vegetation or wildlife communities. There will be no impacts to the pond, swale, or water treatment facility.

An estimated 0.05 acre of stream/wetland could be impacted by project construction. Although the communications and power collection lines will cross Koontz Run, the construction technique proposed for the creek crossing as well as the associated shrub wetland is jack-and-bore (alternatively, the creek crossing may be accomplished by constructing the communications cable and power collection lines overhead at this location). Using this method will eliminate the need to clear land or dig a trench through the wetland and creek, which reduces direct impacts to the soils, vegetation, hydrology, and wildlife community, as well as secondary impacts such as erosion and sedimentation downstream. However, it is possible that a permit will be required for construction of the electricity distribution line either below or above this stream/wetland.

The primary impacts of project construction activities on local wildlife will be temporary in nature and include the displacement of species in the immediate area due to noise, traffic, and human presence during construction. However, these impacts are expected to be relatively minor in comparison to the mining activity that has been ongoing on the site. Most of the construction activity will take place in disturbed portions of the site, which have fairly low-quality wildlife habitat in terms of food resources and cover. No unique wildlife habitats will be cleared, and since only 5 acres of forest will be cleared, there should be minimal impact to forest-dependent wildlife, including forest interior-dwelling species. There should also be no impacts to the aquatic biota or wetland-dependent wildlife on the project site. It is expected that the current level of wildlife activity will resume in the surrounding areas once construction is complete.

Given the previous and ongoing disturbed nature of the site and the design of the project systems and operation procedures intended to minimize impacts to the site and surrounding ecology, no significant ecological impacts are expected to occur as a result of project operations.

The presence of humans and noise are potential indirect effects of project operation that could affect surrounding wildlife. However, these impacts are expected to be minimal given that only a few permanent employees will be required to operate the plant. Furthermore, considering that human presence associated with the coal mining operation has been ongoing for many years and will continue during project operation, human presence resulting from project operations may not be noticeable to wildlife. Mammal and bird species may experience more effects since their auditory systems are the most developed. However, the mobility of these species and the fact that there is similar habitat in the area should enable these species to relocate to more desirable locations if necessary. Many of the species observed onsite are well adapted to human presence and are accustomed to the current mining activity; thus, they should be able to coexist with project operations.

### 2.3 *ENVIRONMENTALLY SENSITIVE AREAS*

There are no environmentally sensitive areas in the vicinity of the proposed windpower facility. The Georges Creek area has a long history of industrial use.

### 2.4 *THREATENED AND ENDANGERED SPECIES*

According to a letter from the Maryland Department of Natural Resources Wildlife and Heritage Division dated June 28, 2002, there are no known records for federal or state rare, threatened, or endangered plants in the project area. However, there is a record of the state rare ostrich fern known to occur in the vicinity of the project site. The U.S. Fish and Wildlife Service (USFWS) provided a letter dated August 5, 2002 that stated that except for occasional transient individuals, no federally proposed or listed threatened or endangered species are known to occur within the project impact area. Table 2-3 lists the plant and animal species protected by USFWS and the State of Maryland that have the potential to occur in the vicinity of the project site.

A survey was conducted in July 2002 to search for the plant and animal species listed in Table 2-3. None of the species were observed. There is potential habitat for ostrich fern along the margins of Koontz Run. A fern

**Table 2-3 Listed Species With Potential to Occur in the Vicinity of the Savage Mtn. Wind Energy Project Site**

Scientific Name	Common Name	Status	Preferred Habitat	Likelihood of Occurrence on the Project Site
<b>Plants</b>				
<i>Matteucia struthiopteris</i>	Ostrich fern	State-rare	Along streams/riverbeds, swamps, or slopes with open canopy	Medium
<i>Scirpus ancistrochaetus</i>	Northeastern bulrush	Federally endangered	Acidic-circumneutral natural ponds, shallow sinkholes, or wet depressions in hilly country	Low
<b>Animals</b>				
<i>Passerherbulus henslowii</i>	Henslow's sparrow	State-threatened	Grassland	Medium
<i>Haliaeetus leucocephalus</i>	Bald eagle	Federally threatened	Large trees near large open bodies of water	Low
<i>Myotis sodalis</i>	Indiana bat	Federally endangered	Caves in winter; loose bark or hollows of trees along large creeks or rivers	Low
<i>Puma concolor cougar</i>	Eastern cougar	Federally endangered	Large wilderness area with adequate food supply	Medium

Source: Savage Mtn. Energy Project Application

species along the creek was observed and thoroughly investigated, but was determined not to be the ostrich fern, but the common cinnamon fern. Although there is potential habitat for the bald eagle or the Indiana bat to occur in Allegany County, there is very little possibility these species would occur onsite due to the lack of suitable large trees near large bodies of water. It is possible that the federally endangered eastern cougar could use the study area on a transient basis, but it is unlikely owing to land disturbance and human presence associated with the mining operation. The reclaimed strip mines could possibly host Henslow's sparrow, a Maryland state-threatened bird, but it was not observed during site visits. The portion of the site that appears to be suitable habitat for this species is probably too small to sustain a population.

No impacts to state or federal listed species should occur as a result of project construction and operation, since there were no known occurrences of federal or state listed species on the project site. Furthermore, potential habitat for listed species that could occur in the area (ostrich fern, Henslow's sparrow, northeastern bulrush, bald eagle, Indiana bat, eastern cougar) will not be significantly disturbed during construction. Therefore, indirect impacts to listed species, including destruction of potential habitat will not occur.

## 2.5 WATER RESOURCES

### 2.5.1 *Surface Water*

#### 2.5.1.1 *Description*

The project site is located within the North Branch Potomac River area. As shown in Figure 2-1, Squirrel Neck Run drains the northern portion of the site and flows generally east to its confluence with Georges Creek. Koontz Run bisects the site and flows from the northwest to the southeast until its confluence with Georges Creek at Lonaconing. Georges Creek flows in a southwesterly direction to the North Branch Potomac River. The North Branch Potomac River and Georges Creek are designated Use I-P (public water supply), and all Maryland tributaries to the North Branch Potomac River, including Koontz Run, are classified Use III-P (natural trout waters).

Clise Coal and other coal companies hold mining permits issued by the Maryland Bureau of Mines. The applications for these permits identify Squirrel Neck Run and Koontz Run as receiving runoff and discharges from the mining operations.

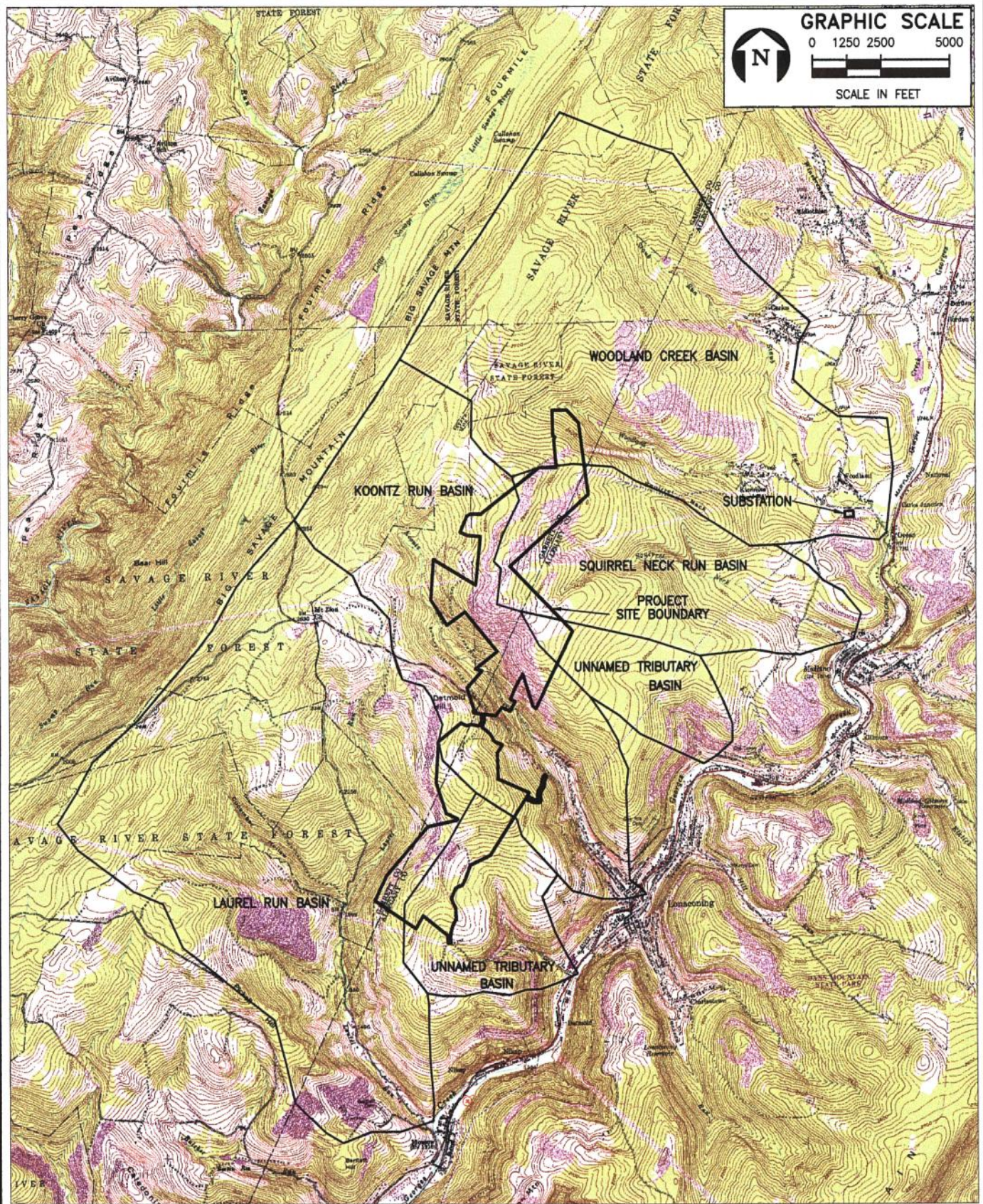


Figure 2-1 Drainage Basin Map

A search of Internet databases (at the federal, state, and local levels) was conducted to gather surface water characteristics of the site and surrounding water bodies, including Georges Creek, Koontz Run, Laurel Run, Squirrel Neck Run, and an unnamed tributary of Georges Creek.

Woodland Creek borders the north end of the site. The creek flows in an east-southeasterly direction until it converges with Georges Creek, which is approximately 1 mile north of the town of Midland. Woodland Creek has a total drainage area of 3610 acres, of which 43 acres are within the project site. Limited flow and water quality data were found for Woodland Creek, consisting of two sampling events in 1979.

Squirrel Neck Run is a small creek that originates near the eastern boundary of the northern portion of the project site and runs east-southeast for approximately 2 miles. The drainage area associated with the creek is approximately 1389 acres, of which 200 acres are within the project site. No water quality or flow data were found for Squirrel Neck Run.

A small, unnamed tributary of Georges Creek originates near the eastern boundary of the northern portion of the site and runs east-southeast for approximately 1 mile, where it converges with Georges Creek a mile north of the town of Lonaconing. The drainage area associated with the tributary is approximately 470 acres, of which 40 acres are within the project site. No water quality or flow data were found for the unnamed tributary.

Another small, unnamed tributary of Georges Creek originates near the eastern boundary of the southern portion of the site and runs east-southeast for approximately 1 mile, where it converges with Georges Creek approximately 0.5 mile south of the town of Lonaconing. The drainage area associated with the tributary is approximately 710 acres, of which 180 acres are within the project site. No water quality or flow data were found for the unnamed tributary.

Koontz Run almost bisects the project site, running in a southeasterly direction toward the town of Lonaconing where it converges with Georges Creek. The drainage area associated with Koontz Run is approximately 2340 acres, of which 460 acres are within the project site. A limited amount of flow and water quality data were found for Koontz Run consisting of four sampling events in 1980 and 1981.

Laurel Run borders the southwestern portion of the project site. It flows in a southeasterly direction to the town of Barton, where it converges with Georges Creek. The total drainage area associated with Laurel Run is 4200

acres, of which 140 acres are within the project site. No water quality or flow data were found for Laurel Run.

Georges Creek is located approximately one mile east of the project site and flows in a southwesterly direction. The drainage area associated with Georges Creek near the town of Franklin, which is approximately 4.5 miles downstream of the site, is approximately 72 mi<sup>2</sup>. The entire project site is within this drainage basin.

A search of the Maryland Biological Stream Survey (MBSS) data from 1995-1997 shows that seven sites were sampled in the Georges Creek drainage basin in 1996. Water temperature at those sites ranged from 15°C to 20.2°C. Other water quality parameters measured include pH, which ranged from 4.57 to 7.21, and dissolved oxygen, which ranged from 7.4 to 9.3 milligrams per liter (mg/L). Sulfate values were also measured at this time. They ranged from 5.75 to 520.27 mg/L. The high sulfate values combined with low pH values at several sites in the drainage basin indicate impacts to the streams from acid mine drainage. Overall, the conditions of these streams are considered degraded, based on the MBSS Indices of Biotic Integrity (IBIs) for fish and benthic macroinvertebrates. IBIs are scored on a scale of 1 to 5, with 3 as the threshold of degradation. The fish IBIs at these seven sites ranged from 1.0 to 2.14 (very poor to poor), while the benthic IBIs ranged from 1.67 to 2.56 (very poor to poor).

A list of impaired waters in the State of Maryland was compiled in 1996. Georges Creek was included on this list based on the concentration of nutrients and suspended sediment. The source of these pollutants is attributed to both point and nonpoint source runoff, as well as natural causes. The listing was updated in 1998 to include Georges Creek for low pH, with drainage from the mining industry being the primary cause. Water quality data for Georges Creek have been collected by both the U.S. Geological Survey and the Maryland Department of the Environment.

#### 2.5.1.2

##### *Impacts*

Given the establishment/modification of effective stormwater quantity and quality controls as well as spill prevention, containment, and control procedures, no significant impacts on surface waters resulting from site clearing and construction will occur.

A Stormwater Pollution Prevention Plan (SPPP), as well as a detailed erosion and sediment control plan, will be prepared in accordance with the Allegany County stormwater ordinance and consistent with State regulatory requirements. These plans will form the basis for ensuring

adequate protection of the surrounding surface waters during construction.

There are three potential sources of impacts to surface waters during project construction:

- Impacts due to direct disturbance of existing wetlands or waters of the United States – None of the areas proposed for development of the project or temporary use during construction lie within any existing wetland areas or their buffers. Therefore, no direct impacts on any of these areas are expected to occur during project construction.
- Impacts due to significant changes in stormwater quantities and/or qualities discharged offsite – Stormwater management systems will be developed in association with project construction and sediment control facilities will be developed and installed to accommodate construction activities. Therefore, no significant impacts on surrounding surface water quantity or quality are expected during construction.
- Impacts due to accidental spills of onsite chemicals, lubricants, or other potential contaminants – If any chemicals and/or lubricants are stored onsite, quantities will be small. Project systems will be designed to include spill containment and control features and plans, as necessary and appropriate. These systems and procedures will be designed to minimize the opportunity for accidental spills and identify the appropriate procedures to be followed in the case of an accidental spill. Therefore, no significant impacts due to accidental spills are expected during project construction.

## 2.5.2 *Groundwater*

### 2.5.2.1 *Description*

Within the area of the site, aquifers are generally found in sandstone units. Owing to the high surface relief, most precipitation enters surface water bodies and little recharge occurs. The area of the site has been mined for more than 100 years. Underground mining and strip mining of coal disturbs the natural groundwater flow systems and ground water quality.

In Garrett and Allegany Counties, the ground water quality is generally reported as good, with high manganese and iron being the common exceedences of standards. The areas with these high concentrations tend to be in areas underlain by coal-bearing rocks. The water is mostly soft to moderately hard calcium bicarbonate type with low dissolved solids. Ground water in the deeper aquifers is highly mineralized.

Impacts to groundwater during project construction should be minimal. There will be no direct discharges to groundwater as part of construction activities, and there will be no water use or appropriations of ground water. It is not anticipated at this time that dewatering for construction of turbine foundations will be necessary. Surface runoff and drainage from site construction and laydown areas will be controlled and diverted to stormwater management systems (swales) designed in accordance with applicable soil conservation regulations. The stormwater runoff captured in the swales will either evaporate or infiltrate to the groundwater system. Earthmoving operations will be minimal in comparison to mining operations at the site. Therefore, impacts to groundwater from this activity will be minimal. Storage of construction materials will be conducted in a manner that complies with applicable environmental regulations and prevents the release of untreated chemical constituents to the site soil, surface water, and groundwater resources.

The proposed project will not require the withdrawal of groundwater, nor will it have any direct discharges to groundwater, other than percolation from onsite stormwater management facilities. Additionally, the project will have no direct discharges to surface water, and no infiltration of surface water contaminants will be expected. It can be concluded that project operations will not affect groundwater quality.

## 2.6

### *AIR QUALITY AND CLIMATE*

Because it is a non-combustion process relying on the direct conversion of mechanical energy into electrical energy, the operation of wind turbines does not produce air emissions. This differs drastically from conventional fossil-fired electric power plants. To quantify the air quality benefits from windpower generation, PPRP calculated the avoided emissions of three significant air pollutants:

- carbon dioxide (CO<sub>2</sub>), a greenhouse gas that contributes to global warming;
- nitrogen oxides (NO<sub>x</sub>), which contribute to ground-level ozone and acid rain; and
- sulfur dioxide (SO<sub>2</sub>), another acid rain precursor that also contributes to smog and visibility problems.

PPRP estimated the pollutants that would be emitted if the Windforce facility's output were generated by a new fossil fuel-fired source rather than windpower. Typically, a new generation source constructed in

Maryland would consist of one or more natural gas-fired combustion units with some level of control for NO<sub>x</sub> emissions. For purposes of this calculation, we assumed a capacity of 40 MW with an annual capacity factor of 30 percent. The resulting emissions are listed below:

- CO<sub>2</sub> - 109,000 tons per year (tpy)
- NO<sub>x</sub> - 9.5 tpy
- SO<sub>2</sub> - 16 tpy

A new generating facility proposed in Maryland with these approximate emissions characteristics would require a detailed evaluation of impacts to air quality. Although CO<sub>2</sub> emissions are not regulated at this time, current models estimate that approximately 37,000 acres of forested land would be required to sequester the 109,000 tpy of CO<sub>2</sub> emissions arising from this theoretical source.

Electricity generated by wind turbines represents a way of meeting our region's growing demand for electric power without emitting CO<sub>2</sub>, NO<sub>x</sub>, SO<sub>2</sub>, and other types of combustion-related air pollutants.

### 3.0 *VISUAL, CULTURAL RESOURCES, AND SOCIOECONOMIC IMPACTS*

#### 3.1 *VISUAL RESOURCES*

Development of recreation and tourism is an important goal for Allegany County (Allegany County Commissioners 2002). The county hosts several scenic areas including Rocky Gap State Park, the Narrows, Dans Mountain State Park, Green Ridge State Forest, and tourist attractions such as the Western Maryland Scenic Railroad and the Allegheny Highlands Trail. Yet much of the heritage of the county is associated with industry. Cumberland's strategic location to Pittsburgh, to Ohio and points west was enhanced considerably by the C&O Canal, and later by the B&O Railroad, and one of the county's principal exports was coal.

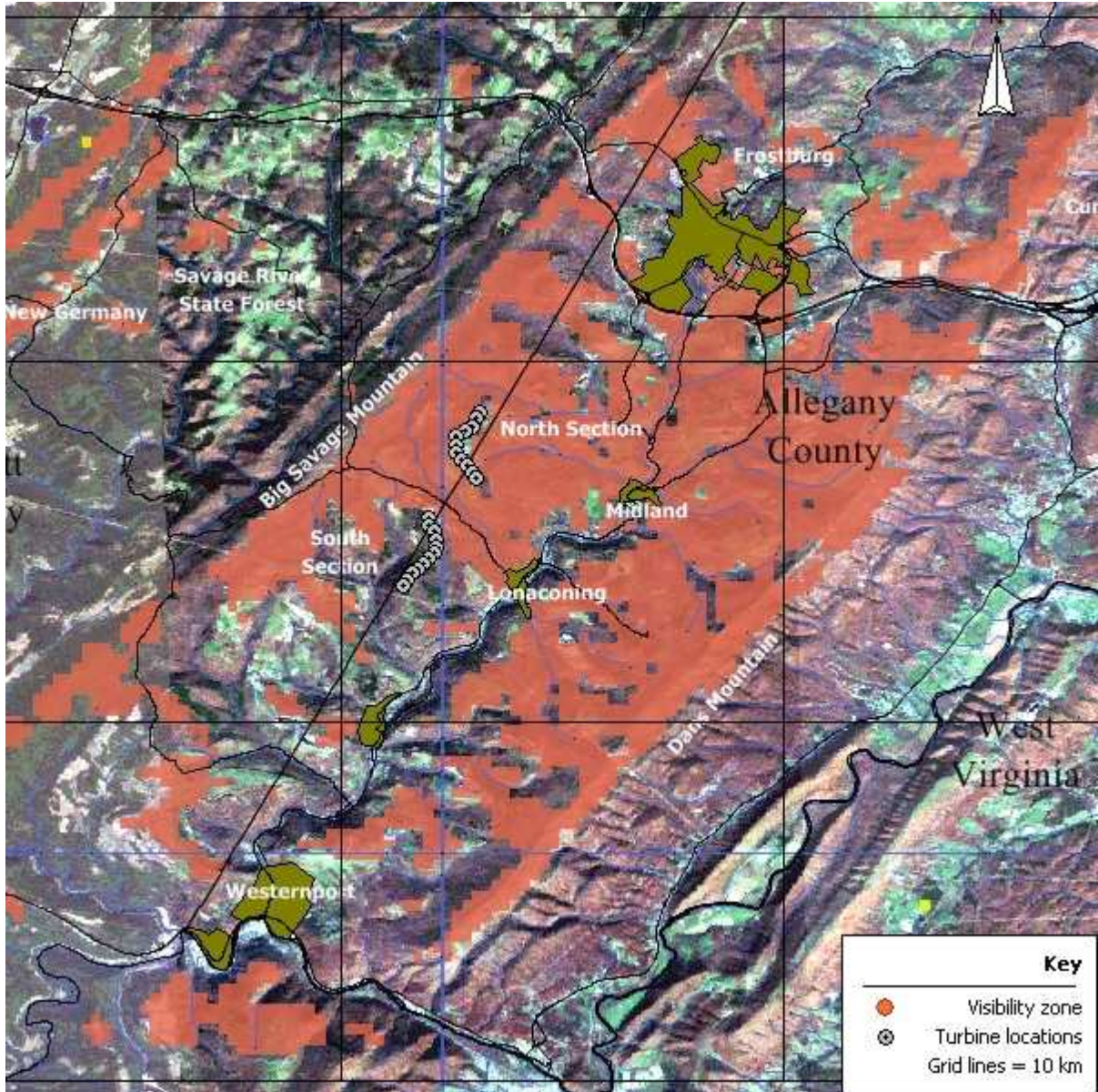
Coal mining has compromised scenic quality in western Allegany County. Strip mining activity is evident from both major and minor highways that run through the county. Even reclaimed areas are relatively easy to distinguish from the county's natural setting.

Scenery is an integral part of the recreational experience. Attitudinal surveys associated with proposed wind farm projects in New England suggest that scenic views are important components of recreation, although the importance of scenery varies by activity (Planning Decisions Inc. 1998). Although most groups surveyed indicated overall support for wind energy and the acceptance of some visual degradation of the landscape for wind energy facilities, the data indicate that the perceived attractiveness of a view is reduced by wind turbines and most respondents expressed a preference for the landscape prior to development.

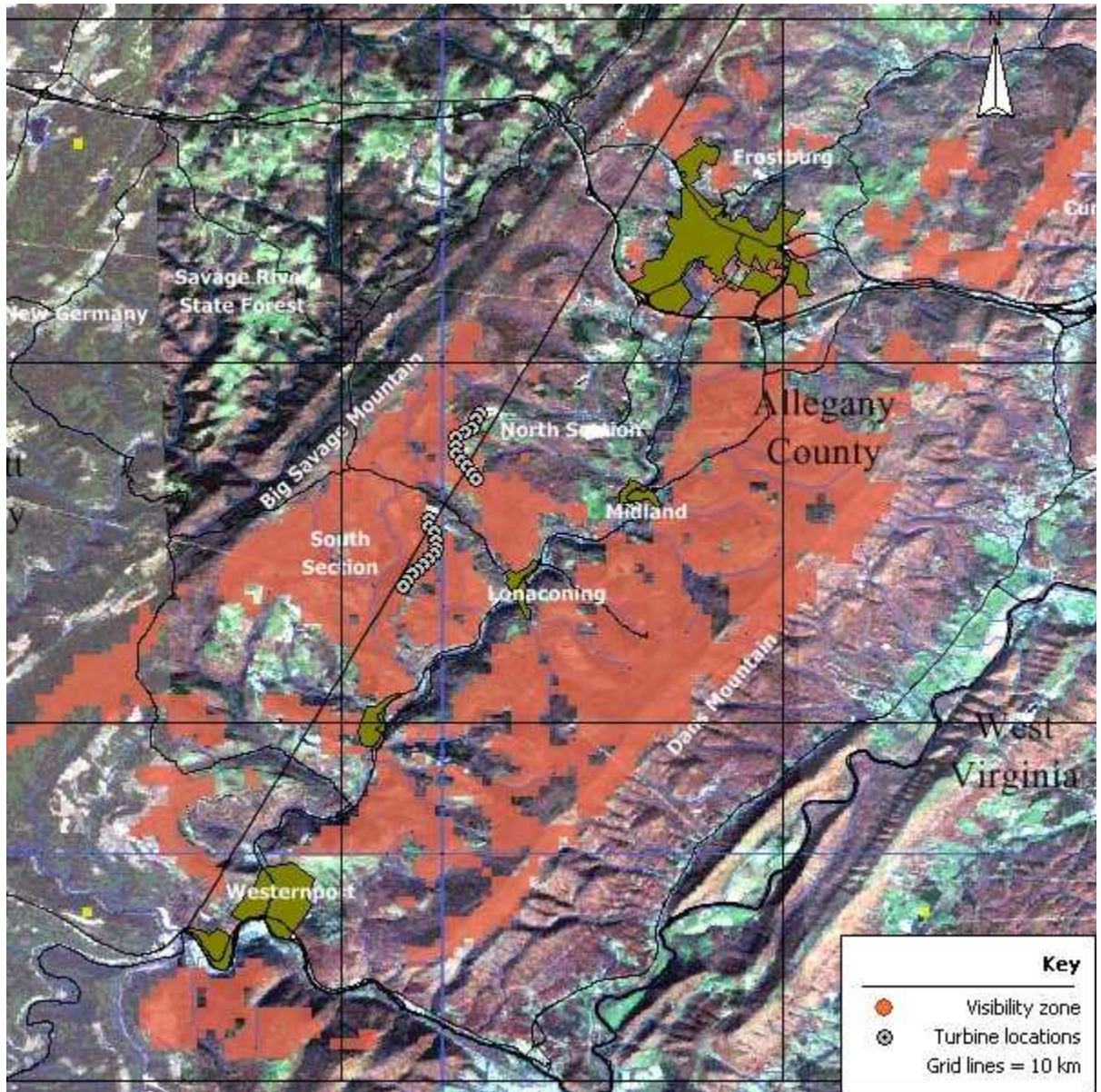
Construction of up to 25 wind turbines would add views of industrial structures along the ridgeline of the Big Savage Mountain to create a less than natural setting. Figures 3-1 and 3-2 illustrate the largest possible viewshed - i.e., those areas from which some portion of the wind turbine towers may be visible.

Because of the terrain of western Allegany County, where several parallel mountain ridges run in a northeasterly direction, most views would be confined within Big Savage Mountain and Dans Mountain. Recreational and natural areas to the west, including New Germany State Park and the Savage River State Forest, would have limited views of parts of the north section of the project. Part of the project area would also be visible from

**Figure 3-1 Estimated Visibility of North Section of Project**



**Figure 3-2 Estimated Visibility of South Section of Project**



I-68 near the Midlothian Road interchange, where the view toward Big Savage Mountain is elevated, and from parts of the greater Frostburg area down to Midland.

Most views of the wind farm would be “far” views since river valleys distance most viewing areas. One attitudinal survey associated with proposed wind farm projects in New England suggest a mild tendency for the visual impact to be less severe for the far view than for the near view (Palmer 1997). Furthermore, some views, such as that from Dans Mountain, are already severely compromised by communications towers. Given the far views from most recreational areas, views of existing communications towers on ridgelines, and the current backdrop of a landscape scarred by strip mining, visual impacts from the proposed wind farms are less likely to invoke strong negative reactions from visitors to the area.

Visual impacts from the wind turbines upon local residents are expected to be largely mitigated by terrain. Much of the nearby population resides in the Georges Creek Valley, from which few sightlines to the project area exist. Intermittent views from the greater Frostburg area near I-68 are distant and compromised by I-68 in the foreground and evidence of strip mining in the background. The facility would be visible to residents along roads near the ridgeline of Big Savage Mountain. The applicant noted the presence of several houses on MD 657 from which the facility might be visible, but found that intervening vegetation often blocked views when terrain did not. Attitudinal studies suggest a lower valuation of scenic views by local residents than by visitors. If so, visual impacts actually perceived by the few residents most severely affected by views of the wind turbines may be mitigated somewhat by attitudes.

Visual impacts in the form of light trespass would also be associated with the facility, although the magnitude of the impact on the surrounding landscape at night will depend upon lighting requirements. All structures more than 200 feet in height must have aircraft warning lights in accordance with requirements specified by the Federal Aviation Administration (FAA), and lighting requirements are determined by the regional FAA Obstruction Hazard Analyst (AWEA 2002b). Since requirements vary widely from region to region, visual impacts from lighting are currently unknown. To the extent possible, U.S. Windforce should avoid undue glare from aircraft warning lights onto adjoining properties.

Allegheny County, with Cumberland as its seat, was formed from Washington County in 1789 by the Maryland legislature in response to petitions from settlers that complained of the distance to court in Elizabeth Town (now Hagerstown). Although the area was home to Native Americans prior to the 18<sup>th</sup> century, and county history is associated with transportation along the Potomac River, much of the historical association of the project area is with coal and related industry. Some of the richest beds of bituminous coal in America were found in the Georges Creek region between Dans Mountain and Big Savage, leading to the rapid exploitation of the resource.

Part of the project is also less than two miles from a National Register listed Historic District in Lonaconing. Lonaconing's beginnings are associated with the Georges Creek Coal and Iron Company, a syndicate that built a furnace complex to manufacture pig iron. The Lonaconing iron furnace was the first in the United States to successfully use bituminous coal and coke in making pig iron (Meyers, undated). Lonaconing is also the birthplace of Lefty Grove, one of the greatest pitchers to play major league baseball.

The Maryland Historical Trust (MHT) reviewed the proposed project for effects on historic and archeological properties (MHT 2002). MHT records indicated numerous historic structures and one archeological site within or adjacent to the proposed project area.

Although only one historic structure was recorded to be within the project boundaries, others are within an area of potential effect, which is defined as a two-mile radius. The only recorded archeological site is an early 19<sup>th</sup> century farm complex, also within the project boundaries.

Subsequent investigation by the applicant found no evidence of onsite archeological sites or historical structures, probably the result of strip mining activities. Field observations from identified historical structures in the Georges Creek Valley and from the iron furnace in the Lonaconing Historic District indicated no visual impact from these locations due to terrain shielding.

One historical property located on MD 657 in Garrett County (G-I-C-088) has partial views of the project site, although some views are blocked by vegetation. In addition, it is unclear whether the structure still retains sufficient architectural integrity to make it eligible for the National Register of Historic Places. Field observations by the applicant identified two other historic properties that had partial views of the project area (G-

I-C-068, AL-VI-C-117). In both cases, high voltage overhead transmission lines already compromise views. In addition, it is unclear whether the structures retain the architectural integrity to make them eligible for the National Register of Historic Places.

However, MHT cannot concur with the determination of effect on historic structures with full or partial views of the project area until Determination of Eligibility evaluations for those properties are received for evaluation. A Memorandum of Agreement will be a condition of this proceeding.

### 3.3 SOCIOECONOMICS

#### 3.3.1 *Employment and Income*

Employment and income effects from construction of the proposed facility would benefit Allegany County and the state, but would be relatively minor. U.S. Windforce estimates that construction of the facility would employ no more than 100 person-years of construction labor that would earn about \$1 million over the construction period (2002 dollars). Using multipliers from the Maryland Department of Business and Economic Development (DBED), the stimulus to the economy would result in the creation of about 114 additional indirect person-years of employment over the construction period and \$900,000 of indirect income in Allegany County and surrounding counties.

Local purchases totaling one million dollars outside the construction industry for goods and services would generate an additional \$720,000 of sales (output) from supplying industries over the construction period. Not all economic impacts would remain in Maryland due to the proximity of the site to West Virginia and Pennsylvania. However, there is a moderately large construction labor force in Allegany County. Average annual construction employment in 2001 was 1,268, 4.2 percent of total employment (Maryland Department of Labor, Licensing and Regulation 2002). In addition, the county is accessible from Maryland counties to the east via I-68.

Once the facility is operational, employment requirements of the facility would be smaller – six employees – with an average annual compensation of \$250,000. DBED multipliers suggest that the total economic benefit from project operations would be eight new jobs (including the six O&M jobs) and a total earnings stimulus of \$354,000.

### 3.3.2 *Population and Housing*

The proposed project would not perceptibly affect population or the demand for housing in Allegany County. With a construction labor force that is expected to commute on a daily basis to the project site, no population effects are expected from construction of the facility. The small size of the O&M contingent means that even if workers were recruited from outside the area to work at the facility, the effects from in-migration on population and housing would be minimal.

### 3.3.3 *Transportation*

Access to the project site for construction workers and component deliveries would be from local roads off MD 36, which runs through the Georges Creek valley from Frostburg to Westernport. MD 36 is a minor two-lane rural arterial highway that varies in width from 22 to 48 feet between I-68 and Westernport. Posted speed limits vary from 25 to 50 mph. The average annual daily traffic in 2001 on MD 36 was 8,750 at its intersection with I-68, and 8,364 in Lonaconing.

U.S. Windforce did not identify proposed routes to the project area, but the northern section of the project is accessible from Klondike Road, off Georges Creek Road, and likely from MD 657 (Skids Hill Road), which intersects MD 36 in Lonaconing. The southern section of the project is accessible from MD 657 from the north and Laurel Run Cemetery Road from the south. The county roads are primarily residential access roads of varying width and quality, but many are currently used by heavy trucks associated with coal mining activity on Savage Mountain. MD 657 is a narrow two-lane highway with 18-foot lanes at the Garrett County line. The posted speed limit is 25 mph outside of the Lonaconing corporate limits, and 15 mph within.

With an employment peaking at no more than 200, traffic impacts associated with construction worker traffic are expected to be minor, even though the road network is less than ideal. Savage Mountain has long been the focus of coal mining activities, and many of these roads have been used to carry commuter traffic into active mining areas.

Construction would require the transport of turbine components over local roads that would periodically disrupt traffic for brief periods of time. Components would be transported on trailers up to 90 feet in length. Maximum sizes and loads for motor carriers for commercial travel on Maryland highways are specified in the Maryland Motor Carrier Handbook published by the Maryland Department of Transportation State Highway Administration (MDOT 2000), and are the same standards

used by the Allegany County Public Works Roads Division. Transporters would therefore require permits from both the State and Allegany County to travel on interstate, federal and state highways and on county roads to the site.

Although the routes to the site are unknown at this time, major components would be transported into the county on I-68 and would subsequently travel south to the site. There are currently no route restrictions on Maryland highways in Allegany County. However, it is unclear whether trucks could negotiate the turn from MD 36 onto MD 657 in Lonaconing. Furthermore, it is presently unknown whether the weight of vehicles carrying wind turbine components would exceed the weight limits of any bridges along the transport route. Road and bridge restrictions on state and federal highways and county roads would be reviewed prior to the issuance of permits. A designated route for transporting wind turbine components to the proposed site will be determined through consultations with the Maryland State Highway Administration and the Allegany County Department of Roads.

Transport of wind turbine components to Savage Mountain would temporarily disrupt traffic on state and county roads. Roads could be subject to temporary closure, particularly at the intersection with project area access roads. However, the durations of these closures are expected to be brief and intermittent.

U.S. Windforce would be required to obtain an access permit from the Maryland State Highway Administration if new temporary or permanent access roads intersect MD 657 or any other state highway. Allegany County would require an access permit for any new access roads off county roads. Right-of-way permits may be required for any construction staging activities in rights-of-way of state highways or county roads.

As only six permanent employees would be required to operate the turbines, no significant impact to the state highway system or local roads is expected from the operation of the project.

### 3.3.4 *Land Use*

The project would be constructed on private land between Carlos Junction and Seldom Seen Road that is currently part of an active strip mine in the Georges Creek Basin. The basin is outside existing urban or planned urban development. Allegany County's comprehensive plan policy calls for the area to be protected from non-mineral resources development until the coal is removed (Allegany County Commissioners 2002a). Parts of the site and been reclaimed or are in the process of being reclaimed.

The site is located in the Georges Creek Region of Allegany County on land designated as Forest in the county Land Use Plan and is zoned Agriculture, forestry, mining - A. An amendment to the Code of Allegany County to include development of a wind farm as a principally permitted activity in both the A & C (Conservation) zoning districts was proposed in August 2002. On October 10, 2002, the County Commissioners voted to enact the amendment effective November 24, 2002 (Allegany County Commissioners 2002b). Land use in nearby Midlothian, Carlos, Klondike, and along the Georges Creek valley floor is designated Urban Mixed, and there is some prime agricultural land south of I-68 between Frostburg and Midland.

Population growth in the western part of Allegany County is expected to be concentrated in the greater Frostburg region, particularly north of I-68 because of Frostburg State University, a major industrial-commercial complex to the east, and continued mining and energy development throughout the Georges Creek Basin. Population in the Georges Creek and Upper Potomac regions (including Westernport), on the other hand, is expected to continue to decline. New development in the Georges Creek and Upper Potomac regions is limited by water and sewer constraints and a shortage of developable land, with much of the area having slopes over 25 percent.

The project area is a 1,052-acre site, straddling the Allegany County and Garrett County boundary, that would host up to 25 wind turbines in two arrays, with one array north of MD 657 and the other to the south. Within the project area, the facility would preempt no more than 108 acres for turbine pads, the access road and cable trench. All facilities would be within Allegany County. The closest communities are Lonaconing and Klondike, both of which are within two miles of the project area. Single-family residences are scattered along MD 657 and several county roads near the project area.

Because the project area includes an active strip mine, land use impacts from construction and operation of the facility are expected to be negligible. Wind turbines would be located on reclaimed land that would occupy only a portion of the site.

The Smart Growth Areas Act of 1997 requires the State to direct funding for "growth-related" projects to Priority Funding Areas (PFAs), where growth-related projects are defined in the legislation to include most State programs that encourage or support growth and development, such as highways, sewer and water construction, economic development assistance, State leases, and construction of new office facilities. The Act designated all municipalities as of January 1, 1997 as Priority Funding

Areas, and permitted PFA designation for industrially zoned land outside of municipalities. After this date, industrially classified land could be designated as a PFA if it is served by a public or community sewer system and is within a locally designated growth area. PFAs are areas zoned or classified for employment uses, are located within locally designated growth areas, and are within existing or planned public or community sewer service areas. Priority funding areas in Allegany County are concentrated in the greater Cumberland and Frostburg areas, and intermittently within the Georges Creek basin and Upper Potomac regions.

Although the project would be outside the PFA, construction and operation of the facility would require no growth-related funds from the State. Use of the land for wind turbines is consistent with the Mineral Resources Element of the Allegany County Comprehensive Plan, which seeks to protect the area from urban type uses. Given its existing designation and constraints on alternative uses, the facility utilizes the land to a greater extent than would otherwise be the case.

### 3.3.5 *Fiscal*

During construction, fiscal impacts associated with the proposed facility would be beneficial to Allegany County and the State of Maryland. In this period, tax revenues would accrue mainly to the State through sales taxes levied upon the purchases of construction materials and services by U.S. Windforce and its contractors, and the consumption expenditures of construction workers. State tax revenues would also accrue from income taxes on construction worker and indirect earnings, associated with the project, estimated to be \$1.0 million and \$0.9 million, respectively. Furthermore, although the wind turbines would be produced out-of-state, PPRP estimates that up to \$1.0 million of materials and services would be purchased in Maryland or nearby states during facility construction.

The primary source of revenues to Allegany County from the project over the construction period would be from the county personal income tax, which is currently 2.93 percent. Income tax revenues would be highly dependent on the proportion of the construction and indirect labor residing in Allegany County and would be about \$32,000 if 80 percent of Maryland construction jobs are held by county residents.

Once operational, the facility would be a major revenue source for Allegany County. The State would also benefit in the operational era, primarily from corporate income taxes, sales taxes from O&M expenditures, and personal income taxes on O&M worker incomes. U.S. Windforce did not estimate corporate income tax payments to Maryland

in its application. However, if the facility became operational before 2004, Maryland corporate tax revenues would be reduced by federal tax credits on wind energy production. The Job Creation and Worker Assistance Act of 2002 extended the renewable electricity production credit to include electricity produced by facilities placed in service after 2001 and before 2004. The credit is 1.8 cents per kilowatt-hour (kWh) for the sale of electricity produced by the taxpayer from qualified energy resources at a qualified facility during the credit period. As Maryland income tax is based on federal taxable income after state modifications, Maryland corporate income tax revenues would be affected by the credit. Sales tax revenues to the state would be about \$33,000 per year (direct and indirect), based on estimated annual O&M expenditures of \$400,000. Personal income taxes on O&M worker incomes would be about \$10,000 per year. Including revenues from indirect sources, annual tax revenues to the State are projected to be slightly more than \$50,000.

The primary tax revenue source for Allegany County would be from property taxes. Property tax revenues are based on real property and personal property components of the market value of the generator's property. The real property tax component is the tax on land and buildings. Most personal property associated with electric generation is classified under Category G assets, which have an allowable depreciation rate of 5 percent per year. Section 7-236 of the Tax-Property Article of the Annotated Code of Maryland gives generating facilities a 50 percent exemption for personal property that is machinery or equipment used to generate electricity for sale. All personal property is subject to a minimum assessment of 25 percent of the original cost. Real property is assessed at a rate of 0.9838 percent, while personal property is assessed at the rate of \$2.46 per \$100 valuation in Allegany County (Maryland Department of Assessments and Taxation 2002).

U.S. Windforce estimated that the proposed facility would increase the personal and real property tax base in Allegany County by \$40 million, but did not estimate personal and real property tax bases separately (U.S. Windforce Inc. Response to DNR Data Request No. 1-14, PSC Case No. 8939). Assuming that most of the investment would be subject to personal property tax, and assuming 80 percent of personal property would be subject to the 50 percent exemption, the project would generate more than \$500,000 in property tax revenues in the first year of production, declining to about \$240,000 after assets were fully depreciated.

Regardless of actual tax revenues from the facility, net revenue benefits to both the State and Allegany County are expected to be significant since no major expenditures for public services would be required if the project were developed as planned.

While the facility is under construction, state and local police services might be required during the transport of turbine components over public roads, although these costs would be recovered. Escort by private or Maryland State Police personnel is determined under Title 11 of the Code of Maryland Regulations (COMAR) when carriers make application to the SHA Hauling Permits Section for oversize or overweight vehicle use. The permittee is responsible for the costs of such escort as indicated in COMAR 11.04.01.07, while the hauler is responsible for assuring the safety and rights of the public (MDOT 2000).

During construction and operation, the facility would rely on county emergency services, such as fire and police. Emergency management and 911 operations are coordinated through the Allegany County Emergency Management Office. The area is patrolled by the Allegany County Sheriffs Department, based in Cumberland. The Patrol Division is staffed by 17 officers and operates three shifts, providing 24-hour protection. The Maryland State Police provide road patrol services and is the primary agency for all incidents in the county that occur on I-68. Both Lonaconing and Westernport operate municipal police departments. Twenty-four volunteer fire departments, one career fire department, and a volunteer hazardous materials team protect Allegany County. The closest fire and rescue services to the Windforce site are in Lonaconing, comprising the Good Will Volunteer Fire Department (Company 20) and the Georges Creek Ambulance Service (Company 55). Additional fire and rescue services are in nearby Frostburg and Westernport. A Maryland State Police aviation helicopter, stationed at the Cumberland Regional Airport, is available for transporting trauma victims to Cumberland Memorial Hospital, the regional trauma center.

The Western Maryland Health System operates two hospitals in Cumberland - Memorial Hospital and Medical Center of Cumberland and Sacred Heart Hospital - both of which provide emergency medical services. A Level III trauma center is located within the emergency department. Closer to the project area, the Frostburg Health Center offers walk-in medical and diagnostic care.

This licensing review incorporates an evaluation of noise impacts to ensure compliance with Maryland regulations. The analysis of potential noise impacts focuses on the potential for generating equipment to exceed numerical limitations at the Savage Mountain Wind Energy Project. Information provided by U.S. Windforce was utilized to estimate noise levels at the nearest residence, compared to relevant State limits.

Noise generally consists of many frequency constituents of varying loudness. Three decibels (dB) is approximately the smallest change in sound intensity that can be detected by the human ear. A tenfold increase in the intensity of sound is expressed by an additional 10 units on the dB scale, a 100-fold increase by an additional 20 dB. Because the sensitivity of the human ear varies according to the frequency of sound, a weighted noise scale is used to determine impacts of noise on humans. This A-weighted decibel (dBA) scale weights the various components of noise based on the response of the human ear. For example, the ear perceives middle frequencies better than low or very high frequencies; therefore, noise composed predominantly of the middle frequencies is assigned a higher loudness value on the dBA scale. Typical A-weighted sound levels for various noise sources are shown in Table 4-1.

Because sound levels are expressed as relative intensities, multiple sound sources are not directly additive. Rather, the total noise is primarily a result of the source of highest intensity. For example, two sources, each having a noise rating of 50 dBA, will together be heard as 53 dBA; a source of 65 dBA combined with a source of 85 dBA will result in a noise level of 85.1 dBA. As the intensity difference between the two sources increases, the effects of the lower sound sources become negligible.

**Table 4-1** *Typical Sound Levels for Common Sources*

Noise Source	Typical Sound Pressure Level (dBA)
Lowest sound audible to human ear	10
Soft whisper in a quiet library	30-40
Light traffic, refrigerator motor, gentle breeze	50
Air conditioner at 6 meters, conversation	60
Busy traffic, noisy restaurant, freight train moving 30 mph at 30 meters	70
Subway, heavy city traffic, factory noise	80
Truck traffic, boiler room, lawnmower	90
Chain saw, pneumatic drill	100
Rock concert in front of speakers, sand blasting, thunder clap	120
Gunshot, jet plane	140

**4.1** *SUMMARY OF REGULATORY REQUIREMENTS*

Maryland State noise regulations specify maximum allowable noise levels, shown in Table 4-2 (COMAR 26.02.03). The maximum allowable noise levels specified in the regulations vary with zoning designation and time of day. Maximum allowable noise levels for residential areas are 55 dBA (A-weighted decibel scale) for nighttime hours and 65 dBA for daytime hours. A noise source may not produce sound pressure levels exceeding these standards at the nearest residential property boundary. A source also may not produce discernible vibrations (caused by low-frequency components of noise).

**Table 4-2** *Maximum Allowable Noise Levels (dBA) for Receiving Land Use Categories*

	Zoning Designation		
	Industrial	Commercial	Residential
Day	75	67	65
Night	75	62	55

Source: COMAR 26.02.03

Note: Day refers to the hours between 7 AM and 10 PM; night refers to the hours between 10 PM and 7 AM.

The State regulations also specify a guideline of 55 dBA measured as a day-night average ( $L_{dn}$ ). The  $L_{dn}$  calculation adds a 10-dBA penalty to nighttime noise. A 24-hour constant noise of 48.6 dBA would result in an  $L_{dn}$  of 55 dBA. Therefore, for noise sources that may operate continuously for a 24-hour period, the resulting noise levels at nearby receptors should remain below 48.6 dBA. While this goal is not used as an enforcement criterion, exceeding the goal may indicate that noise levels could be a source of complaints by persons living on property exposed to those levels.

Noise from construction activities may not exceed 90 dBA at any receiving property line during daytime hours under the State regulations. Construction activities must comply with the nighttime limits listed in Table 4-2.

## 4.2 **IMPACT EVALUATION**

The construction phase of the Savage Mountain Wind Energy Project is expected to take approximately six months. The noise generated by project construction activities will comply with the daytime limit of 90 dBA for construction activities under the State's noise regulations. There will be no significant nighttime construction activities.

The applicant provided information indicating that, at full operation, each of the wind turbines would generate a sound power level of 104 dBA. The applicant also stated that the turbines would be constructed with a minimum buffer distance of 1,800 feet to the nearest residence. PPRP evaluated the potential noise impacts under worst-case scenario conditions, looking at a theoretical nearby residence that would be

maximally affected by turbine noise (see Figure 4-1). The cumulative noise impacts associated with multiple nearby wind turbines were also calculated.

Noise impacts at varying distances were calculated using the following formula (Kurze and Beranek 1980):

$$L_p = L_w + DI - 20\log(R) - A_e - 11$$

where:

$L_w$  is the known sound power level of each turbine (104 dBA in this case);

$DI$  is a source directivity factor (we assumed hemispherical spreading,  $DI = 3$ );

$R$  is the distance from the source to the receptor location (a minimum of 1,800 feet or 550 meters in this case); and

$A_e$  is the excess attenuation due to absorption in air (we conservatively assumed no excess attenuation,  $A_e = 0$ ).

Based on these calculations and the noise specifications provided, the wind turbines are expected to produce noise levels no higher than 49 dBA at the closest residences. This estimated maximum was calculated assuming the closest turbine spacing possible and the shortest possible distance (1,800 feet) to a residence. Furthermore, this method of calculating noise attenuation is somewhat conservative in that it does not take into account absorption by vegetation or molecular attenuation in air. Because of these factors, actual noise levels experienced by any residential receptor will likely be much lower than 49 dBA. It should also be noted that, due to the variability of wind speed, the turbines will generally not operate continuously for any 24-hour period.

Based on available data, it can be concluded that construction and operation of the proposed units will comply with all applicable noise requirements.

## US Windforce Wind Power Turbines Noise Estimates

Rotor Diameter = 101.6 m

$L_w$  = Sound Power Level = 104 dBA per turbine

DI = 3

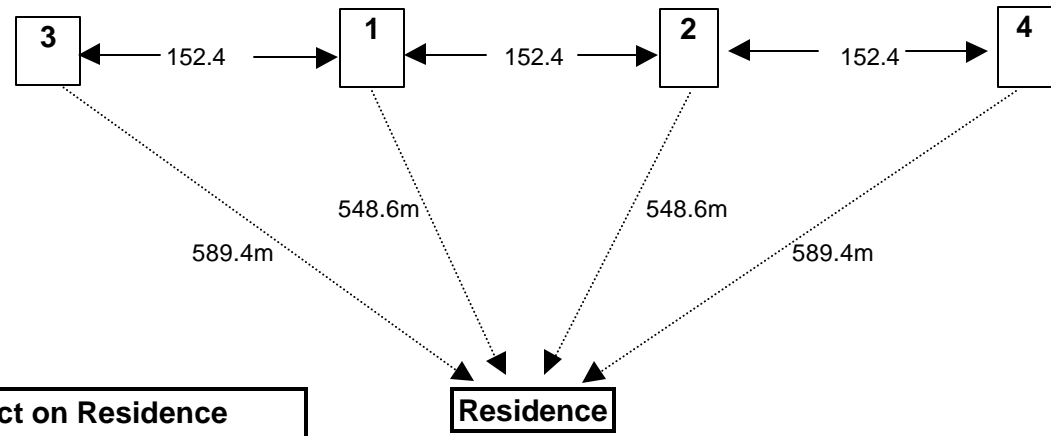
$A_e$  = 0

$$L_p = L_w + DI - 20\log(R) - A_e - 11$$

$$R_1 = R_2 = 548.6 \text{ m}$$

$$R_3 = R_4 = 589.4 \text{ m}$$

$$R_5 = R_6 = 663.6 \text{ m}$$



$L_p$ :	Turbine's effect on Residence	
$L_{p1=p2} =$	41.2 dBA	Sum : $L_{p1} + L_{p2} =$ 44.2 dBA
$L_{p3=p4} =$	40.6 dBA	Sum : $L_{p1}$ thru $L_{p4} =$ 46.9 dBA
$L_{p5=p6} =$	39.6 dBA	Sum : $L_{p1}$ thru $L_{p6} =$ 48.3 dBA

Figure 4-1 Noise Evaluation of Theoretical Turbine Layout

PPRP has coordinated a comprehensive review of potential environmental and socioeconomic impacts from the proposed Savage Mtn. Windforce facility. The project is recognized as having air quality benefits by virtue of the fact that wind energy is an emissions-free alternative for meeting electricity demand. The State agencies that have participated in the evaluation of the proposed project plans are the Departments of Agriculture, Business and Economic Development, Environment, Natural Resources, Planning, and Transportation, the Maryland Energy Administration, and the Office of Smart Growth.

To ensure that any potential for adverse impacts is minimized, the State agencies recommend that the Maryland PSC place the following conditions on the CPCN for the proposed facility.

*INITIAL RECOMMENDED CONDITIONS - PSC Case No. 8939*

1. Except as otherwise provided for in the following provisions, the application for the Certificate of Public Convenience and Necessity (CPCN) is considered to be part of this CPCN (certificate) for the Savage Mtn. Wind Energy Project (Project). The application consists of the original application filed with the Maryland Public Service Commission (PSC) on August 29, 2002 by Savage Mtn. Windforce LLC (Savage Mtn. or Applicant) and supplemental information submitted to the PSC. Construction and operation of the Project shall be undertaken in accordance with these conditions. The Turbines shall be constructed within the numerical parameters as to the number of Turbines, dimensions of Turbines, and total acreage of the Project site found in the Application and amendments thereto incorporated in the CPCN. Changes to these specifications are not covered by the CPCN and must be reviewed and approved by the PSC and the Power Plant Research Program (PPRP). If there are any inconsistencies between the certificate conditions specified below and the application, the conditions in this certificate shall take precedence.
2. If any provision of this certificate shall be held invalid for any reason, the remaining provisions shall remain in full force and effect, and such invalid provision shall be considered severed and deleted from this certificate.
3. Construction and operation of the Turbines and all associated facilities shall be undertaken in accordance with this certificate and shall comply with all applicable local, State, and Federal regulations, including but not limited to the following:

- Nontidal Wetlands – to the extent any nontidal wetlands exist on the Project site, and will be impacted by Project construction, COMAR 26.23.01 through 26.23.06 will apply to activities conducted in those areas.
  - Water Quality and Water Pollution Control - COMAR 26.08.01 through COMAR 26.08.04 applies to discharges to surface water and maintenance of surface water quality.
  - Erosion and Sediment Control - COMAR 26.17.01 applies to the preparation, submittal, review, approval, and enforcement of erosion and sediment control plans.
4. Construction of the Turbines must be completed within five years of issuance of this CPCN.
  5. Applicant shall provide as-built details on the following to PPRP, Maryland Department of the Environment (MDE) and the PSC in accordance with COMAR 20.80.04: engineering and construction plans for the Turbines including total acreage of the Project site; Turbine structure and foundation type, dimensions, and locations; and distance between Turbines. Where the as-built details are identical to those submitted with the certificate application, Applicant should provide a statement to this effect and not resubmit the information.
  6. Prior to construction of the Project, Applicant will identify any off-site roads, road expansions, right-of-way use, or access points that will need to be built for construction or operation of the Project and will work with the State Highway Administration, the Allegany County Public Works Road Division, and the Garrett County Roads Department to develop a plan to govern any such improvements. Applicant will obtain all permits required for such improvements. In addition, prior to construction, Applicant shall work with the above agencies to plan the routes and appropriate safety and traffic-flow measures, and obtain permits for delivery of large-load equipment to the Project site. Applicant shall also provide advance notification to these agencies of the actual deliveries.
  7. All portions of the Project site disturbed during construction shall be stabilized immediately after the cessation of construction activities within that portion of the Project site, followed by seed application, except in actively cultivated lands, in accordance with the best management practices presented in the MDE document 1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control, and as approved by Allegany County. To the extent there is any conflict between this condition and the

- requirements of an applicable State-approved, active reclamation plan, the latter shall take precedence.
8. At the time of issuance of this certificate, a state-approved reclamation plan exists for the site of the Savage Mtn. Project. However, implementation of the plan is in abeyance. During the period from issuance of the certificate to the completion of construction, Savage Mtn. shall report to PPRP and the PSC material non-confidential information that comes to Savage Mtn.'s attention pertaining to the assumption of responsibility for implementing the reclamation plan by a mining company.
  9. During the period from issuance of the certificate to the completion of construction, Savage Mtn. shall report to PPRP and the PSC material non-confidential information concerning the landowner's plans to conduct logging operations on the site of the Savage Mtn. Project.
  10. Prior to construction, Applicant shall submit to the Maryland Historical Trust (MHT) a copy of training programs, or guidelines provided to Applicant inspectors or contractors, to identify and/or protect unforeseen archeological sites that may be revealed during construction of the project. If such relics are identified in the project area, Applicant, in consultation with and as approved by MHT, shall develop and implement a plan for avoidance and protection, data recovery, or destruction without recovery of the properties adversely affected by the project.
  11. Before the start of construction, Applicant will submit to MHT Determination of Eligibility evaluations for the following historical properties: G-I-C-088, G-I-C-068, and AL-VI-C-117 to allow MHT to determine their eligibility for the National Register of Historic Places.
  12. Applicant shall submit a Project-specific sedimentation and erosion control plan to the Allegany County Soil Conservation District. Sediment control during construction of all aspects of the Project will include some or all of the following Best Management Practices: construction of earth dikes in appropriate locations, sediment traps, use of silt fences, stabilizing disturbed areas as quickly as possible, and converting silt traps to permanent features as soon as practicable. The Plan will be developed consistent with Allegany County requirements. The plan shall also be provided to the PSC and PPRP prior to construction. The plan must be on site during all phases of construction. To the extent there is any conflict between this condition and the requirements of an applicable State-approved, active reclamation plan, the latter shall take precedence.
  13. Representatives of the Department of Natural Resources (DNR), MDE and the PSC shall be afforded access to the property at any reasonable time to

conduct inspections and evaluations necessary to ensure compliance with the CPCN. Applicant shall provide such assistance as may be necessary to conduct these inspections and evaluations effectively and safely, which may include but need not be limited to the following:

- inspecting construction authorized by this CPCN;
- having access to or copying any records required to be kept by Applicant pursuant to this CPCN or applicable regulations;
- obtaining any photographic documentation and evidence; and
- determining compliance with the conditions and regulations specified in the CPCN.

14. Applicant shall construct and operate the project in compliance with all applicable State and local noise regulations.
15. Prior to putting the Project in service, Applicant shall file with the Commission a listing of the interconnection requirements imposed by the interconnecting transmission owner or regional transmission organization, as may be the case, in the Facilities Study, and certification that these interconnection requirements have been met.
16. Decommissioning of Turbines will be undertaken by the Applicant at private expense. The Applicant will establish a bond or similar mechanism to ensure that future funds are available to support decommissioning. In the event that any Turbine does not operate for a period of one year, the Applicant shall remove that Turbine assembly unless the Applicant obtains an extension from the PSC. If the Applicant requests an extension of the one-year period, the request must be in the form of a written motion to the PSC describing the operational difficulty and describing the steps that the Applicant is taking to resolve it.
17. To reduce the potential for avian and visual impacts, and only as consistent with the lighting and other safety requirements imposed on the Project by the Federal Aviation Administration (FAA), lighting on the turbines shall be minimized by (a) installing lighting on the fewest possible number of turbines; and (b) installing red strobes, as opposed to white strobes, with frequency cycles no shorter than 24 per minute. In the event the FAA requirements conflict with the avian and visual impact-related requirements imposed by this condition, the FAA requirements shall govern.
18. The Applicant shall undertake a post-construction study of bird and bat mortality associated with the operation of the turbines. The study protocol

shall be submitted to the DNR Natural Heritage Program for approval, and to PPRP for informational purposes, no later than 30 days after issuance of the CPCN, which approval shall be forthcoming within 30 days of receipt so long as the Applicant substantially and in good faith complies with the following minimum requirements:

- (a) At a minimum, monitoring shall be conducted for three years and cover three each of spring and fall migration periods.
- (b) More intense monitoring will be required during the spring and fall migration periods.
- (c) Monitoring data shall be reported to the Natural Heritage Program, PPRP and the PSC on a quarterly basis and shall include both observed and estimated mortality by observation date and turbine.
- (d) Species impacted and weather conditions should also be reported.

In the event that a catastrophic mortality event occurs, the Applicant shall notify the DNR Natural Heritage Program and PPRP within one working day. For the purpose of this condition, a catastrophic mortality event is one in which more than 200 birds or bats of any combination of species are killed in a 24-hour period at a single turbine.

19. DNR, based on monitoring and other scientific information, and after consultation with the Applicant and other interested parties, may make a determination that one or more wind turbines are collectively causing significant bird or bat mortalities. DNR shall submit any such determination to the PSC. The PSC shall direct the Applicant to prepare and submit to DNR for approval a plan for reducing the mortality to an acceptable level. The plan may include such actions as moving or curtailing the operation of one or more towers. The level of curtailment will not exceed 450 turbine-hours per year (or 18 times the number of turbines constructed, if the Project consists of fewer than 25 turbines). The plan may also include provisions for a period, not to exceed two years, during which tests may be conducted, such as varying the operating parameters of one or more towers, changing the tower lighting scheme, or other measures, to determine how best to reduce the mortality. Following approval of the plan by DNR, the PSC shall direct the company to implement the plan. For purposes of this condition, the term "significant mortalities" means a number or rate of mortalities that could result in an ecologically significant population decline in federal or state rare, threatened or endangered species, or bird or bat species protected by the Migratory Bird Treaty Act.

20. Prior to the start of operation, Savage Mtn. will submit documentation to PPRP demonstrating compliance with local site planning and setback requirements applicable to wind energy projects. In accordance with Allegany County ordinance, the distance between any turbine and any residential structure must be at least two times the height of that turbine tower, measured from ground level to the top of the nacelle.
21. All towers constructed on the property, to include meteorological data collection towers as well as wind turbines, shall be free-standing structures with no guy wires or similar supports.
22. Except as otherwise provided herein, Savage Mtn. Windforce shall not transfer ownership or control of the Project so as to divest Savage Mtn. of its ability to control the construction or operation of the Project without the written consent of the PSC. In the event of any such proposed transfer, Savage Mtn. shall notify the proposed successor of the existence of the requirements of this CPCN by letter and shall send a copy of that letter to the Secretary of the PSC and the Director of PPRP. Any such successor shall be subject to the CPCN and all applicable requirements and obligations therein. Prior to the commencement of its operations of the Project, any such successor shall provide any assurances required by the PSC that the facility will be operated in compliance with this CPCN and its conditions. The approval of the PSC shall not be required if (i) Applicant transfers a collateral security interest in the Project, or (ii) Applicant sells its interest in the Project to a person or entity that becomes a passive owner of the facility solely for financing purposes, nor shall such transferee or purchaser be subject to the CPCN and the requirements and obligations therein solely by virtue of acquiring and holding such interests. In the event that an entity holding a collateral security interest in the Project or passive ownership for financing purposes acquires ownership or control of the Project so as to divest Savage Mtn. of its ability to control the construction or operation of the Project, such entity shall be subject to this CPCN and its conditions.

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*Appendix A*  
*Agreement of Stipulation*  
*and Settlement*



**BEFORE THE  
PUBLIC SERVICE COMMISSION  
OF MARYLAND**

IN THE MATTER OF: )

THE APPLICATION OF SAVAGE MTN. WIND FORCE, LLC )  
FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND )  
NECESSITY TO CONSTRUCT A 40-MW GENERATING )  
FACILITY IN ALLEGANY AND GARRETT )  
COUNTIES, MARYLAND )

Case No. 8939

**AGREEMENT OF  
STIPULATION AND SETTLEMENT**

Savage Mtn. Wind Force, LLC, (“Savage Mtn.”), the Power Plant Research Program of the Department of Natural Resources (“PPRP”), the Office of People’s Counsel, the Staff of the Public Service Commission of Maryland (“Staff”), by their undersigned counsel, and Mr. Daniel Boone and Ms. Ajax Eastman (the “*pro se* Intervenors”) (collectively, the “Settling Parties”) agree as follows:

**I.  
BACKGROUND**

On August 29, 2002, Savage Mtn. filed an application for a Certificate of Public Convenience and Necessity (“CPCN”) with the Public Service Commission of Maryland (“Commission”) for the construction of a wind-powered electric generating station to be located in Allegany and Garrett counties near the town of Lonaconing (the “Project”). The application consisted of a 10-page “pro forma” application and an *Environmental Review Document* (“ERD”). These documents constitute a completed and final application (the “Application”) which forms the basis for this Agreement of Stipulation and Settlement.

A pre-hearing conference was held on October 8, 2002. At this conference, Savage Mtn. requested a waiver of the two-year notice requirement found in §7-208(b) of the Public Utility Companies Article of the ANNOTATED CODE OF MARYLAND. The Hearing Examiner granted the waiver request by an order dated October 17, 2002. On November 15, 2002, Savage Mtn. filed written direct testimony.

On December 6, 2002, the State agencies charged with reviewing the Application for a CPCN submitted their recommendations to the Commission in accordance with Section 3-306(b) of the Natural Resources Article of the Maryland Code. The transmittal letter accompanying that filing, which was signed by the Secretaries of the Departments of Agriculture, Business and Economic Development, Planning, Transportation, Natural Resources, and the Environment, and by the Directors of the Maryland Energy Administration and Office of Smart Growth, states that “we have concluded that the site is suitable and that the plant can be constructed and operated in accordance with all applicable environmental regulations provided the Certificate incorporates the attached recommendations as conditions to the CPCN.” The letter is attached hereto as Attachment “A”. On December 6, 2002, PPRP also filed, on behalf of the reviewing State Agencies, written direct testimony on the Project. Along with its testimony, PPRP filed a draft *Environmental Review Document* (“PPRP ERD”). PPRP recommended that the Commission approve the Project subject to a set of initial recommended conditions contained in PPRP’s ERD. On December 6, 2002, written direct testimony was also filed by the Commission’s Staff.

Following a series of discussions and negotiations, on January 3, 2003, Savage Mtn., PPRP, the Office of People’s Counsel, and Staff, by counsel, entered into among themselves and submitted in this proceeding A Non-Unanimous Agreement Of Stipulation and Settlement. The

*pro se* Intervenor did not enter into the Non- Unanimous Agreement of Stipulation and Settlement.

Following a series of additional discussions and negotiations among all of the parties to this proceeding, including the *pro se* Intervenor, agreement has now been reached among the Settling Parties on a set of conditions (the "Settlement Conditions") that they agree are appropriate for the Project and upon the basis of which the Commission should issue the CPCN. The Settlement Conditions are set forth at Attachment "B." The Settling Parties intend that the Settlement Conditions will serve as the State's final recommendations and that they will be incorporated into the CPCN in this proceeding, as further set forth below.

The Applicant accepts the Settlement Conditions, agrees to abide by those Conditions, and agrees not to seek further Commission review of those Conditions. All of the Settling Parties, with the exception of the *pro se* Intervenor, are in agreement that the issuance of a CPCN for the Project, subject to the recommended Conditions, will be in the public interest. The *pro se* Intervenor does not concur in this statement, but joins in the remainder of this Stipulation and Settlement.

## II. AGREEMENT

**NOW, THEREFORE,** the Settling Parties do hereby stipulate and agree as follows:

1. The Settling Parties recommend that the Commission issue a CPCN for the Project, subject to the Settlement Conditions. As described above, with the exception of the *pro se* Intervenor, the Settling Parties stipulate and agree that the issuance of a CPCN that incorporates the Settlement Conditions will be in the public interest and will serve the public convenience and necessity. In making this recommendation, the Settling Parties have taken into

account each and all of the factors and considerations listed in Section 7-207(e) of the Public Utility Companies Article of the ANNOTATED CODE OF MARYLAND.

2. The Settling Parties stipulate and agree that the construction and operation of the Project in accordance with the Settlement Conditions will be in compliance with all currently applicable environmental laws and regulations. Accordingly, the Settling Parties stipulate and agree that the Settlement Conditions are an integral part of the CPCN and that Condition No. 23 shall apply to transfers of the facility.

3. The Settling Parties recognize and agree that the provisions of the Settlement Conditions are interrelated and that those provisions, taken as a whole, constitute a comprehensive scheme for the mitigation of any adverse environmental effects and other adverse impacts that might otherwise result from the construction or operation of the Project. The provisions of the Settlement CPCN Conditions are interdependent, in that a change or addition made to address a concern in one aspect (*e.g.*, visual impact) could well have an unanticipated adverse effect or other unintended consequence with respect to another aspect (*e.g.*, avian safety). The Settling Parties accordingly agree, and enter into this Agreement with the understanding, that the Commission should accept the Settlement Conditions without further change, addition, or alteration of any kind.

4. The Settling Parties view the Settlement Conditions and this Agreement as a package, with all of the parts interrelating to each other. If the Settlement Conditions are not adopted *verbatim* (and without any additions) so as to constitute the State's final recommendations, or if they are changed, supplemented or rejected by the Commission, the Settling Parties and the Commission shall deem this Agreement withdrawn, and this Agreement shall not constitute any part of the record in this proceeding or be used for any other purpose

whatsoever. In the event the Settlement Conditions are not adopted *verbatim* (and without any additions) as the State's final recommendations in this proceeding, or the Commission decides not to accept and approve the Settlement Conditions and this Agreement in their entirety, the Settling Parties respectfully request that the Commission provide them an opportunity to (i) negotiate a modified Agreement to address the Commission's concerns or a contested settlement agreement representing the terms of settlement that remain acceptable to some of the Parties, or (ii) withdraw their support for this Agreement, prepare and file briefs, and proceed with further litigation of the issues.

5. The Settling Parties stipulate and agree that the Settlement Conditions, if finally adopted by the Commission in a CPCN issued for the Project, shall be enforceable by the Commission.

**WHEREFORE**, the Settling Parties have caused their signatures to be affixed to this Agreement through and by their respective counsel.

Respectfully submitted,

STAFF OF THE MARYLAND PUBLIC SERVICE  
COMMISSION

SAVAGE MTN. WIND FORCE, L.L.C.

By: Michael A. Dean  
Assistant Staff Counsel 1/14/03

By: [Signature]  
Counsel 1/14/03

POWER PLANT RESEARCH PROGRAM OF THE  
MARYLAND DEPARTMENT OF NATURAL  
RESOURCES

MARYLAND PEOPLE'S COUNSEL

By: *Russ E. Davis 1/14/03*  
Assistant Attorney General

By: *Cynthia Green-Wayne*  
Assistant People's Counsel  
1/14/03

MR. DANIEL BOONE

By: *Daniel Boone*

MS. AJAX EASTMAN

By\*\*:

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\*\* As indicated in the attached e-mail, Ms. Eastman has read and approves the agreement which was sent to her via e mail by Mr. Daniel Boone. According to Ms. Eastman's e mail, she "wish[es] to have [her] agreement entered into the record." See Attachment "C."

**Dated: January 14, 2003**

# **ATTACHMENT “A”**



STATE OF MARYLAND

December 6, 2002

The Honorable Catherine I. Riley  
Chairman  
Public Service Commission  
6 St. Paul Center  
Baltimore, Maryland 21202

Re: Case No. 8939

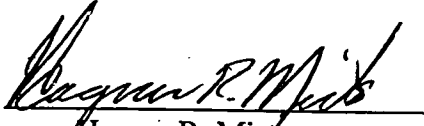
Dear Chairman Riley:

In accordance with Section 3-306(b) of the Natural Resources Article and the process described in Section 7-207 and 7-208 of the Public Utility Companies Article, we are enclosing our preliminary recommendation in Case Number 8939 on behalf of the Departments of Natural Resources, Environment, Agriculture, Transportation, Business and Economic Development, and Planning, the Maryland Energy Administration and the Office of Smart Growth. Our recommendation and proposed conditions relate to the application for a Certificate of Public Convenience and Necessity (CPCN) for Savage Mt. Windforce, LLC (Windforce) to build a windpower facility with a generation capacity up to 40 megawatts on the Savage Mountain range near the town of Lanaconing in Allegany County, Maryland.

As set forth more fully in Windforce's application, the project is possible due to the favorable wind conditions in the area of the proposed project and the efficiency of the current generation of wind turbines. Up to twenty five turbines will be installed to provide the generation capacity. The electricity generated from the turbines will be delivered to the PJM system. Potential buyers of the project output include energy marketing firms and electric utilities. The project provides a significant source of renewable electricity generation.

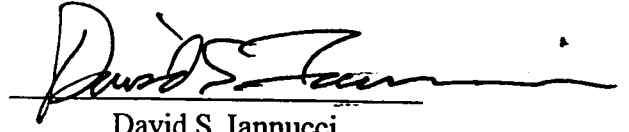
Based on our review of the application and associated environmental information available to date, we have concluded that the site is suitable and that the plant can be constructed and operated in accordance with all applicable environmental regulations provided the Certificate incorporates the attached recommendations as conditions to the CPCN. Our preliminary evaluation of the environmental impacts associated with the proposed facility is summarized in the document titled "Environmental Review Report for the Savage Mountain Wind Energy Project" which has been supplied as an exhibit in this proceeding. At the conclusion of the hearing process and close of the record, should these recommendations need to be modified, we will provide our final recommendation and conditions for the project.

Sincerely,



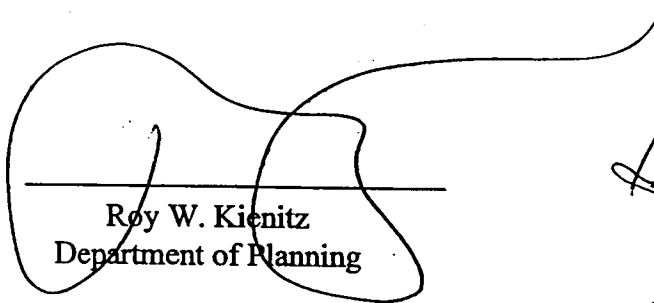
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Hagner R. Mister  
Department of Agriculture




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David S. Iannucci  
Department of Business and  
Economic Development



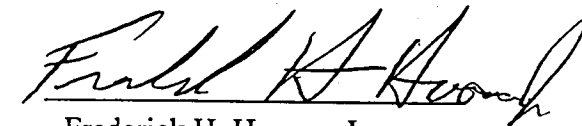
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Roy W. Kienitz  
Department of Planning



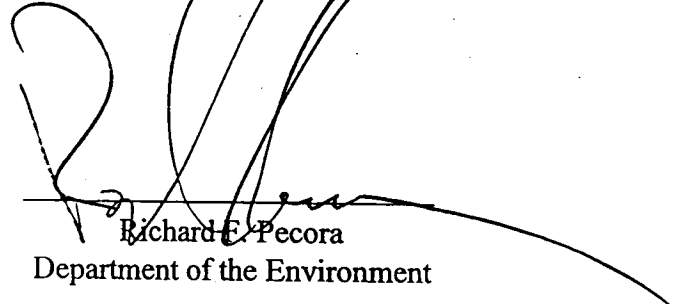
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John D. Porcari  
Department of Transportation



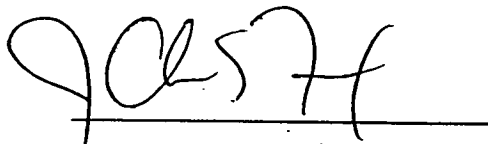
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Frederick H. Hoover, Jr.  
Maryland Energy Administration



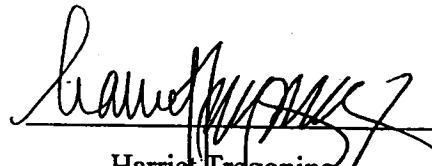
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Richard E. Pecora  
Department of the Environment



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J Charles Fox  
Department of Natural Resources



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Harriet Tregoning  
Office of Smart Growth

# **ATTACHMENT “B”**

# ATTACHMENT "B"

## **CONDITIONS PURSUANT TO JANUARY 14, 2003 STIPULATION AND SETTLEMENT**

### **Case No. 8939 Savage Mtn. Windforce, LLC**

1. Except as otherwise provided for in the following provisions, the application for the Certificate of Public Convenience and Necessity (CPCN) is considered to be part of this CPCN (certificate) for the Savage Mtn. Wind Energy Project (Project). The application consists of the original application filed with the Maryland Public Service Commission (PSC) on August 29, 2002 by Savage Mtn. Windforce LLC (Savage Mtn., Applicant or Company) and supplemental information submitted to the PSC. Construction and operation of the Project shall be undertaken in accordance with these conditions. The Turbines shall be constructed within the numerical parameters as to the number of Turbines, dimensions of Turbines, and total acreage of the Project site found in the Application and amendments thereto incorporated in the CPCN. Changes to these specifications are not covered by the CPCN and must be reviewed and approved by the PSC and the Power Plant Research Program (PPRP). If there are any inconsistencies between the certificate conditions specified below and the application, the conditions in this certificate shall take precedence.

2. If any provision of this certificate shall be held invalid for any reason, the remaining provisions shall remain in full force and effect, and such invalid provision shall be considered severed and deleted from this certificate.

3. Construction and operation of the Turbines and all associated facilities shall be undertaken in accordance with this certificate and shall comply with all applicable local, State, and Federal regulations, including but not limited to the following:

- Nontidal Wetlands – to the extent any nontidal wetlands exist on the Project site, and will be impacted by Project construction,

COMAR 26.23.01 through 26.23.06 will apply to activities conducted in those areas.

- Water Quality and Water Pollution Control - COMAR 26.08.01 through COMAR 26.08.04 applies to discharges to surface water and maintenance of surface water quality.
- Erosion and Sediment Control - COMAR 26.17.01 applies to the preparation, submittal, review, approval, and enforcement of erosion and sediment control plans.

4. Construction of the Turbines must be completed within five years of issuance of this CPCN.

5. Applicant shall provide as-built details on the following to PPRP, Maryland Department of the Environment (MDE) and the PSC in accordance with COMAR 20.80.04: engineering and construction plans for the Turbines including total acreage of the Project site; Turbine structure and foundation type, dimensions, and locations; and distance between Turbines. Where the as-built details are identical to those submitted with the certificate application, Applicant should provide a statement to this effect and not resubmit the information.

6. Prior to construction of the Project, Applicant will identify any off-site roads, road expansions, right-of-way use, or access points that will need to be built for construction or operation of the Project and will work with the State Highway Administration, the Allegany County Public Works Road Division, and the Garrett County Roads Department to develop a plan to govern any such improvements. Applicant will obtain all permits required for such improvements. In addition, prior to construction, Applicant shall work with the above agencies to plan the routes and appropriate safety and traffic-flow measures, and obtain permits for delivery of large-load equipment to the Project site. Applicant shall also provide advance notification to these agencies of the actual deliveries.

7. All portions of the Project site disturbed during construction shall be stabilized immediately after the cessation of construction activities within that portion of the Project site, followed by seed application, except in actively cultivated lands, in accordance with the best management practices presented in the MDE document 1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control, and as approved by Allegany County. To the extent there is any conflict between this condition and the requirements of an applicable State-approved, active reclamation plan, the latter shall take precedence.

8. At the time of issuance of this certificate, a state-approved reclamation plan exists for the site of the Savage Mtn. Project. However, implementation of the plan is in abeyance. During the period from issuance of the certificate to the completion of construction, Savage Mtn. shall report to PPRP and the PSC material non-confidential information that comes to Savage Mtn.'s attention pertaining to the assumption of responsibility for implementing the reclamation plan by a mining company.

9. During the period from issuance of the certificate to the completion of construction, Savage Mtn. shall report to PPRP and the PSC material nonconfidential information concerning the landowner's plans to conduct logging operations on the site of the Savage Mtn. Project.

10. Prior to construction, Applicant shall submit to the Maryland Historical Trust (MHT) a copy of training programs, or guidelines provided to Applicant inspectors or contractors, to identify and/or protect unforeseen archeological sites that may be revealed during construction of the project. If such relics are identified in the project area, Applicant, in consultation with and as approved by MHT, shall develop and implement a plan for avoidance and protection, data recovery, or destruction without recovery of the properties adversely affected by the project.

11. Before the start of construction, Applicant will submit to MHT Determination of Eligibility evaluations for the following historical properties: G-I-C-088, GI-C-068, and AL-VI-C-117 to allow MHT to determine their eligibility for the National Register of Historic Places. If the determinations of eligibility result in the identification of eligible properties that would be adversely affected by the project, then the Applicant, in consultation with and as approved by MHT, shall develop and implement a plan for mitigating or minimizing adverse effects.

12. Applicant shall submit a Project-specific sedimentation and erosion control plan to the Allegany County Soil Conservation District. Sediment control during construction of all aspects of the Project will include some or all of the following Best Management Practices: construction of earth dikes in appropriate locations, sediment traps, use of silt fences, stabilizing disturbed areas as quickly as possible, and converting silt traps to permanent features as soon as practicable. The Plan will be developed consistent with Allegany County requirements. The plan shall also be provided to the PSC and PPRP prior to construction. The plan must be on site during all phases of construction. To the extent there is any conflict between this condition and the requirements of an applicable State-approved, active reclamation plan, the latter shall take precedence.

13. Representatives of the Department of Natural Resources (DNR), MDE and the PSC shall be afforded access to the property at any reasonable time to conduct inspections and evaluations necessary to ensure compliance with the CPCN. Applicant shall provide such assistance as may be necessary to conduct these inspections and evaluations effectively and safely, which may include but need not be limited to the following:

- inspecting construction authorized by this CPCN;
- having access to or copying any records required to be kept by Applicant pursuant to this CPCN or applicable regulations;
- obtaining any photographic documentation and evidence; and
- determining compliance with the conditions and regulations specified in the CPCN.

14. Applicant shall construct and operate the project in compliance with all applicable State and local noise regulations.

15. Prior to putting the Project in service, Applicant shall file with the Commission a listing of the interconnection requirements imposed by the interconnecting transmission owner or regional transmission organization, as may be the case, in the Facilities Study, and certification that these interconnection requirements have been met.

16. Decommissioning of Turbines will be undertaken by the Applicant at private expense. The Applicant will establish a bond or similar mechanism to ensure that future funds are available to support decommissioning. In the event that any Turbine does not operate for a period of one year, the Applicant shall remove that Turbine assembly unless the Applicant obtains an extension from the PSC. If the Applicant requests an extension of the one-year period, the request must be in the form of a written motion to the PSC describing the operational difficulty and describing the steps that the Applicant is taking to resolve it.

17. To reduce the potential for avian and visual impacts, and only as consistent with the lighting and other safety requirements imposed on the Project by the Federal Aviation Administration (FAA), lighting on the turbines shall be minimized by (a) installing lighting on the fewest possible number of turbines; and (b) installing red strobes, as opposed to white strobes, with frequency cycles no shorter than 24 per minute. In the event the FAA requirements conflict with the avian and visual

impact-related requirements imposed by this condition, the FAA requirements shall govern.

18. Subject to subparagraph (f) of this condition, the Applicant shall undertake a post-construction study of bird and bat mortality associated with the operation of the turbines. The study protocol shall be submitted to the DNR Natural Heritage Program for approval, and to PPRP for informational purposes, no later than 30 days after issuance of the CPCN, which approval shall be forthcoming within 30 days of receipt so long as the Applicant substantially and in good faith complies with the following minimum requirements:

(a) At a minimum, monitoring shall be conducted for three years and cover three each of spring and fall migration periods.

(b) More intense monitoring will be required during the spring and fall migration periods.

(c) Monitoring data shall be reported to the Natural Heritage Program, PPRP and the PSC on a quarterly basis and shall include both observed and estimated mortality by observation date and turbine.

(d) Species impacted and weather conditions should also be reported. In the event that a catastrophic mortality event occurs, the Applicant shall notify the DNR Natural Heritage Program and PPRP within one working day. For the purpose of this subparagraph, a "catastrophic mortality event" is one in which more than 100 birds or bats of any combination of species are killed in a 24-hour period at the turbines comprising the Project.

(e) As stated above, the DNR Natural Heritage Program shall have the right to approve or disapprove the study protocol. However, an Advisory Committee selected by DNR and consisting of the intervenors in this case, representatives of the U.S. Geological Survey's Biological Resources Division and other interested persons shall consult with DNR Natural Heritage in connection with its consideration of the study protocol and shall have the opportunity to submit comments as to the protocol.

(f) The study shall be conducted by an independent entity. An "independent entity" is one that has not previously had a financial, economic or consulting relationship with the Applicant or with any affiliate of the Applicant. The Applicant shall enter into a contract with a qualified independent entity and shall compensate the entity for its services, but in no event shall such compensation

exceed a reasonable cost. If it is necessary for the independent entity or its employees or agents to be trained, the training will be conducted at the direction of the Applicant and monitored by DNR.

19. Within 30 days after the issuance of a CPCN for the Project, and subject to the availability of private funding by a person or entity other than the Applicant, the Applicant and Mr. Daniel Boone, a *pro se* intervenor in this proceeding, shall enter into a contract for the performance of a study to perform acoustic monitoring of overflights of birds in the airspace above the Project site. The study shall be conducted by a suitable consultant or consulting firm to be selected by mutual agreement of the Applicant and Mr. Daniel Boone. The consulting agreement for the study shall, at a minimum, include the following basic terms and conditions:

(a) the assumptions, methodology, analysis and results of the study shall be maintained by the consultant or consulting firm as confidential and shall not be disclosed to any person or entity, including the Applicant and Mr. Boone, until after the Project enters into commercial operation;

(b) the study results shall not at any time be used in connection with the Project;

(a) Within 30 days after the commencement of commercial operations, the Applicant shall contribute up to \$20,000 on a one-time basis to Mr. Daniel Boone for the sole purpose of reimbursing the consultant or consulting firm contractually obligated to perform the study, or to reimburse the person or entity that contributed the initial private funding described in the first paragraph of this condition. A contribution of less than \$20,000 shall be made only if the actual cost of the study is less than \$20,000.

20. After consultation with the Company and other interested parties, DNR may make a determination that one or more wind turbines are individually or collectively causing significant bird or bat mortalities, as defined below. The determination shall be based on the monitoring data and other scientific information. DNR shall submit any such determination to the Company and, simultaneously, to the PSC. If and when such a determination is made, DNR may require the Company to prepare and submit to DNR a plan for reducing the mortality to an acceptable level. The plan may include such actions as moving or curtailing the operation of one or more towers or provisions for a period, not to exceed two years, during which tests may be conducted, such as varying the operating parameters of one or more towers, changing the

tower lighting scheme, or other measures, to determine how best to reduce the mortality. In no event (whether in connection with curtailments or testing) shall the level of curtailments for the Project as a whole exceed 450 turbine-hours per year (or 18 times the number of turbines constructed, if the Project consists of fewer than 25 turbines). Following the applicant's submission of the plan to DNR, DNR shall submit the plan to the PSC and prepare a recommendation to the PSC. The PSC shall review the DNR's determination that the wind turbines are individually or collectively causing significant bird or bat mortalities and shall also either accept, reject or modify the plan. For purposes of this condition, the term "significant mortalities" means a number or rate of mortalities that could result in an ecologically significant population decline in federal or state rare, threatened or endangered bird or bat species, or bird species protected by the Migratory Bird Treaty Act.

21. Prior to the start of operation, Savage Mtn. will submit documentation to PPRP demonstrating compliance with local site planning and setback requirements applicable to wind energy projects. In accordance with Allegany County ordinance, the distance between any turbine and any residential structure must be at least two times the height of that turbine tower, measured from ground level to the top of the nacelle.

22. All towers constructed on the property, to include meteorological data collection towers as well as wind turbines, shall be free-standing structures with no guy wires or similar supports.

23. Except as otherwise provided herein, Savage Mtn. Windforce shall not transfer ownership or control of the Project so as to divest Savage Mtn. of its ability to control the construction or operation of the Project without the written consent of the PSC. In the event of any such proposed transfer, Savage Mtn. shall notify the proposed successor of the existence of the requirements of this CPCN by letter and shall send a copy of that letter to the Secretary of the PSC and the Director of PPRP. Any such successor shall be subject to the CPCN and all applicable requirements and obligations therein. Prior to the commencement of its operations of the Project, any such successor shall provide any assurances required by the PSC that the facility will be operated in compliance with this CPCN and its conditions. The approval of the PSC shall not be required if (i) Applicant transfers a collateral security interest in the Project, or (ii) Applicant sells its interest in the Project to a person or entity that becomes a passive owner of the facility solely for financing purposes, nor shall such transferee or purchaser be subject to the CPCN and the requirements and obligations therein solely by virtue of acquiring and holding such interests. In the event that an entity holding a collateral security interest in the Project or passive ownership for

financing purposes acquires ownership or control of the Project so as to divest Savage Mtn. of its ability to control the construction or operation of the Project, such entity shall be subject to this CPCN and its conditions.

# ATTACHMENT "C"



[Close Window](#)

**From:** "ajaxeast" <ajaxeast@msn.com>

**To:** "Dan Boone" <ddanboone@yahoo.com>

**Subject:** Re: documents

**Date:** Tue, 14 Jan 2003 14:56:36 -0500

To: Allen M. Freifeld, Hearing Examiner

Re: Agreement of Stipulation and Settlement for Case #. 8939,

I have read and approve of the Agreement which I received by email. As an intervenor, I wish to have my agreement entered into the record.

Ajax Eastman

----- Original Message -----

**From:** "Dan Boone" <ddanboone@yahoo.com>

**To:** "ajaxeast" <ajaxeast@msn.com>

**Sent:** Tuesday, January 14, 2003 2:27 PM

**Subject:** documents

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*Appendix B*  
*Proposed Order of*  
*Hearing Examiner*



IN THE MATTER OF THE APPLICATION \*  
OF SAVAGE MOUNTAIN WIND FORCE, \*  
LLC FOR A CERTIFICATE OF PUBLIC \*  
CONVENIENCE AND NECESSITY TO \*  
CONSTRUCT A 40 MW GENERATING \*  
FACILITY IN ALLEGANY AND GARRETT \*  
COUNTIES, MARYLAND. \*

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BEFORE THE  
PUBLIC SERVICE COMMISSION  
OF MARYLAND

\_\_\_\_\_  
CASE NO. 8939  
\_\_\_\_\_

**PROPOSED ORDER OF HEARING EXAMINER**

This matter comes before the Commission upon the Application of Savage Mountain Wind Force, LLC, for a Certificate of Public Convenience and Necessity ("CPCN") to construct a wind energy project (the "Savage Mountain Wind Energy Project" or "Project") in Allegany and Garrett Counties, Maryland. As explained more fully below, I conclude that a Certificate of Public Convenience and Necessity should be granted, subject to a set of conditions designed to mitigate any potential adverse impacts that might result from construction or operation of the Project.

Pursuant to §§ 7-207 and 7-208 of the Public Utility Companies Article ("PUC Article") of the *Annotated Code of Maryland* and Title 20, Subtitle 79 of the Code of Maryland Regulations ("COMAR"), Savage Mountain Wind Force, LLC ("Savage Mountain" or the "Applicant") filed an Application for a Certificate of Public Convenience and Necessity ("Application") on August 29, 2002. The Applicant is a wholly owned subsidiary of US Wind Force, LLC, an independent, privately held developer of renewable energy projects,

currently active in the mid-Atlantic region with projects under development in Maryland, Pennsylvania, and West Virginia.

The Savage Mountain Wind Energy Project is a proposed 40 megawatt ("MW") renewable energy electric generating facility near the town of Lonaconing, in western Allegany and eastern Garrett Counties, Maryland. The site for the Savage Mountain Wind Energy Project is an approximately 1,052 acre parcel along the Allegany-Garrett County line, just west and northwest of the town of Lonaconing and approximately 15 miles southwest of the city of Cumberland.

Clise Coal Company currently uses the site (which is part of a somewhat larger tract controlled by a number of different coal companies) for coal strip-mining. Much of the site has already been mined, and other portions of the site are in active mining at the present time. A number of existing haul roads provide access to the site at several locations. There are also several mining-related storage sheds and vehicle fueling areas on the site. The area surrounding the site is hilly and rural and is largely unoccupied and unused.

The primary power generation equipment for the Savage Mountain Wind Energy Project will include up to 25 state-of-the-art, commercial wind turbine generators. Each turbine will have a rated nameplate capacity of up to 2,000 kilowatts ("kW"). The electricity produced by the Project's wind turbines will be interconnected through a new onsite substation to an existing 138 kilovolt ("kV") electric transmission line connected with the

Allegheny Power Carlos Junction Substation, which is located east of the Project site.

The electricity produced by the Project wind turbine generators will be delivered into the PJM Interconnection, LLC system ("PJM"), the largest centrally dispatched control area in North America. PJM controls in excess of 60,000 MW of generating capacity in Maryland, Pennsylvania, New Jersey, Delaware, and the District of Columbia. Potential customers for the Project's output include large wholesale purchasers such as energy marketing firms and electric utilities, as well as the PJM-operated spot market pool for ultimate usage within the region.

Construction of generating stations in Maryland is governed by Public Utility Companies Article, §§ 7-207 and 7-208 and by various provisions of the Natural Resources and Environment Articles. Public Utility Companies Article, § 7-207(b) provides that a person may not begin construction of a generating station in Maryland unless a Certificate of Public Convenience and Necessity is first obtained from the Commission. Section 7-207(e) provides that the Commission shall take final action on an Application for a CPCN after due consideration of:

- (1) The recommendation of the governing body of each county or municipal corporation in which any portion of the construction of the generating station is proposed to be located; and
- (2) the effect of the generating station on:
  - (i) The stability and reliability of the electric system;

- (ii) Economics;
- (iii) Esthetics;
- (iv) Historic sites;
- (v) Aviation safety as determined by the Maryland Aviation Administration and the administrator of the Federal Aviation Administration;
- (vi) Where applicable, air and water pollution; and
- (vii) The availability of means for the required timely disposal of wastes produced by any generating station.

At a pre-hearing conference held in this matter on October 8, 2002, the appearances of the Power Plant Research Program, People's Counsel, and the Staff of the Public Service Commission were noted.<sup>1</sup> Permission to intervene was granted to D. Daniel Boone and Ajax Eastman, concerned citizens.

By Ruling dated October 17, 2002, I granted the Applicant's request that the Commission waive the requirements of Public Utility Companies Article, § 7-208(b), which requires a two-year waiting period between the filing of an Application for a CPCN and commencement of construction of a generating station. As noted

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<sup>1</sup> Under Maryland's Power Plant Siting Act of 1971, the Department of Natural Resources Power Plant Research Program ("PPRP") is directed to coordinate among various State Agencies a detailed program of power plant site evaluation, including related environmental and land use considerations. Consistent with this direction, PPRP coordinated a comprehensive review of the potential environmental and socioeconomic impacts from the proposed Savage Mountain Windforce Project. The State Agencies that participated in evaluation of the Project included the Departments of Agriculture, Business and Economic Development, Environment, Natural Resources, Planning and Transportation, the Maryland Energy Administration, and the Office of Smart Growth. PPRP noted the air quality benefits associated with the emissions-free nature of wind energy. The State Agencies recommended that a CPCN be granted to the Project but also recommended that several conditions be imposed as part of the Certificate to insure that any potential adverse impacts are minimized.

in that Ruling, a thorough evaluation of the environmental, ecological, and other impacts of the Project can be completed in less than two years, and that consequently, there is no public policy reason to enforce a "two-year waiting period." As also noted in the Ruling, the potential loss of federal production tax credits, if the Project were not placed in service by December 31, 2003, also constituted good cause for the waiver of § 7-208(b)(1).

Hearing was held on January 14, 2003. The pre-filed testimony of the Applicant, PPRP, and Staff was received in evidence and was subject to cross-examination at the hearing. A summary of the testimony is appended hereto as Appendix A. An evening session of the hearing was also held, at which a number of concerned citizens expressed their views regarding the Project. All of the citizens who commented on the Project at the hearing supported it. They noted attributes of the Project such as its use of renewable windpower, the jobs that will be created, and the minimal impact of the Project on the environment compared to alternatives such as strip-mining.<sup>2</sup>

A non-unanimous Settlement Agreement between the Applicant, the Power Plant Research Program, Office of People's Counsel, and the Staff of the Public Service Commission was submitted on January 3, 2003. The Settling Parties recommended that the Commission issue a CPCN for the Project, subject to

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<sup>2</sup> The Commission received two letters concerning the Project. One letter opposed the Project due to its potential impact on migratory songbirds. The second letter was from a resident of the Commonwealth of Virginia and contained an analysis of the economic costs and benefits of wind farms in West Virginia.

various conditions which constitute a comprehensive scheme for mitigation of any potential adverse impacts that might result from construction or operation of the Project. The Settling Parties are in agreement that construction and operation of the Project, in accordance with these conditions, will be in the public interest and that the Project will comply with all applicable environmental laws and regulations.

Subsequently, on January 14, 2003, a unanimous Agreement of Stipulation and Settlement was submitted by all parties to this proceeding: the Applicant, the Power Plant Research Program, Office of People's Counsel, the Staff of the Public Service Commission, and the two intervenors, D. Daniel Boone and Ajax Eastman. This Agreement contains a revised set of conditions which the parties consider appropriate. The parties recommend that the Commission issue a CPCN for the Project, subject to the proposed conditions. These conditions are similar to those proposed on January 3, 2003, with the addition of provisions designed to assure the objectivity of future studies concerning avian impacts and provisions regarding the performance of an acoustic monitoring study of overflights of birds at the Project site.

The conditions proposed by the Settling Parties will be adopted and are attached hereto as Appendix B. These conditions impose a variety of requirements which insure that the impacts of Project construction and operation are minimized and that the Project conforms to Maryland's environmental laws. The conditions encompass a variety of subjects including impacts to water quality,

transportation resources, historical sites, erosion control, noise regulations, interconnection requirements, decommissioning of the turbines, avian impacts, and transfer of ownership of the Project. The latter two subjects are of particular significance. There are a number of conditions relating to avian impacts. These conditions provide that the Commission can order measures to mitigate bird mortality if significant bird mortality occurs. The measures that can be imposed include curtailing the operations of one or more towers or moving the towers. Moreover, so as to reduce the potential for avian impacts the conditions also provide that lighting requirements should be minimized. The conditions also require that objective, post-construction studies of bird mortality be conducted at the site for three years. The conditions insure that the intervenors shall be included in development of the study protocol. As previously noted, there is also a condition requiring the Applicant and an intervenor to enter into a contract, within 30 days of issuance of a CPCN, for performance of acoustic monitoring of overflights at the Project site. The condition relating to transfer of ownership insures that a subsequent owner of the Project will be subject to this CPCN and the conditions adopted in Appendix B.

#### **DISCUSSION OF STATUTORY CRITERIA**

As previously noted, the Commission is directed to take final action on an Application for a CPCN after due consideration of the recommendation of the governing body of each county in which

any portion of the construction of the generating station is proposed to be located. It should be noted with respect to this criterion that the Board of Garrett County Commissioners has expressed support for the Project and has urged the Commission to approve the Project. The Board has indicated that it views the Project as a great benefit and an economic value to Garrett County.<sup>3</sup> While the County Commissioners of Allegany County have not sent any correspondence to the Commission commenting upon the Application, they did adopt an amendment to the Allegany County zoning regulations, effective November 24, 2002, explicitly allowing wind energy facilities to be operated in areas zoned for Agricultural, Forestry, and Mining uses, and in Conservation zoning districts. Since the Project area encompasses areas zoned for Agricultural, Forestry, and Mining uses, and Conservation zoning districts, the passage of the zoning amendment appears to reflect the support of the County Commissioners for the Project.

The Commission is also directed to consider the effect of the proposed generating station on the stability and reliability of the electric system. The record establishes, with respect to this criterion, that the Project will not adversely affect the stability and reliability of the electric system. Before coming on line, the Project will be required to sign interconnection agreements with PJM Interconnection, LLC (the Regional Transmission Operator for Maryland and other States) and with Allegheny Power

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<sup>3</sup> Letter from Board of Garrett County Commissioners to Chairman, Public Service Commission, dated September 26, 2002.

System, the owner of the local transmission facilities. These agreements will specify the system enhancements, if any, required for the physical and electrical interconnection of the generators to the grid. The agreements may also specify requirements related to the operation and maintenance of the system enhancements and will ensure the safety and reliability of the electric system. These agreements will incorporate the reliability criteria established by the East Central Area Reliability Coordination Agreement ("ECAR"), the regional reliability council which establishes reliability standards for this geographic area.

The effect of the proposed Project on economics is the next criterion specified in § 7-207 which must be considered. The record establishes in this regard that the Project will have a positive, albeit small, economic effect. The Project will create a small number of temporary construction jobs and permanent operations and maintenance jobs. The Project will also produce some tax revenue for both the State and Allegany County. No State or County expenditures are required for infrastructure improvements to support the Project. No significant impacts are expected on any public services and facilities.

The effect of the proposed Project on esthetics is the next criterion to be considered. The record indicates in this regard that the proposed turbines will be visible from some vantage points. However, views of the turbines will be screened from most of the more populated areas or will be far enough away to minimize the impact. The record establishes that the Project will not

impose significant additional visual impacts to developed uses in the area.

Most views of the wind farm would be "far" views since river valleys distance most viewing areas. Furthermore, some views are already severely compromised by communications towers and previous strip-mining activity. Visual impacts from the wind turbines upon local residents are expected to be largely mitigated by terrain. Much of the nearby population resides in the Georges Creek Valley, from which few sightlines to the project area exist. Views from the more populated areas nearby are obstructed to a great degree by terrain, trees, vegetation, and other structures. Intermittent views from the greater Frostburg area near I-68 are distant and compromised by I-68 in the foreground and evidence of strip-mining in the background.

The Commission is also required to consider the effect of the proposed Project on historic sites. The record indicates in this regard that the Maryland Historical Trust ("MHT") reviewed the proposed Project for effects on historic and archeological properties. MHT records indicated numerous historic structures and one archeological site within or adjacent to the proposed project area. Subsequent investigation by the Applicant found no evidence of onsite archeological sites or historical structures, probably due to strip-mining activities. Field observations from identified historical structures in the Georges Creek Valley and from the historic iron furnace in the Lonaconing Historic District indicated no visual impact from these locations due to terrain shielding.

One historical property located on MD 657 in Garrett County (G-I-C-088) has partial views of the project site. It is unclear whether the structure retains sufficient architectural integrity to make it eligible for the National Register of Historic Places. Field observations by the Applicant identified two other historic properties that had partial views of the project area (GI-C-068, AL-VI-C-117). It is unclear whether these structures retain the architectural integrity to make them eligible for the National Register of Historic Places. Given the existence of these three sites which may have historic significance, the CPCN granted herein will include a condition requiring the Applicant to submit Determination of Eligibility evaluations for these three sites so that MHT can determine their eligibility for the National Register of Historic Places. If the determinations of eligibility result in the identification of eligible properties that would be adversely affected by the Project, then the Applicant, in consultation with MHT, shall develop and implement a plan for mitigating or minimizing adverse effects. In addition, the CPCN shall contain another condition requiring the Applicant to develop training materials to be provided to Applicant's personnel to enable them to identify and protect unforeseen archeological sites that may be revealed during construction.

The Commission is also required to consider the effect of the proposed Project on aviation safety, as determined by the Maryland Aviation Administration and the administrator of the Federal Aviation Administration. While neither of these agencies

has commented on the Application, the Maryland Department of Transportation (of which the Maryland Aviation Administration is a part) participated in the development of PPRP's list of proposed conditions for the Project. The Department of Transportation has not proposed any aviation-related conditions or indicated that there is any objection to the Project. The record establishes in this regard that the Project is located 13 miles from the nearest public airport and is not in the landing pattern for any airport. Moreover, the Applicant is in the process of applying for permits from the Federal Aviation Administration ("FAA") and has consulted with the FAA regarding the lighting requirements for the Project. Finally, the Applicant is also required to provide Notice of Construction to the Maryland Aviation Administration, prior to starting construction, pursuant to the terms of COMAR 11.03.05.05.

The next matter to be considered is the effect of the proposed generating station on air and water pollution. The Project will produce no air emissions because it uses the energy of the wind to produce electricity rather than burning fossil fuels for this purpose. Indeed, not only does the Project produce no emissions, it allows the avoidance of significant pollutants (CO<sub>2</sub>, NO<sub>x</sub>, and SO<sub>2</sub>) which would be produced by a conventional fossil-fuel burning plant of comparable capacity. The record also establishes that the Project will cause no significant impacts to surface or groundwaters. Stormwater management systems, sediment control facilities, and spill control features will be installed to accommodate construction activities. The record establishes that

groundwater impacts will also be minimal. There will be no discharges to groundwater or appropriations of groundwater.

The final factor which must be considered pursuant to § 7-207(e) is the availability of means for the required timely disposal of wastes produced by the generating station. The record establishes in this regard that the Project will generate minimal amounts of solid waste, such as mixed office waste and general refuse. These wastes will be disposed of at a licensed offsite landfill. The Project will generate small quantities of hazardous wastes such as oily rags. When hazardous wastes are generated they will be properly manifested and disposed of according to State requirements. Oil on the site is limited to that contained in the transformers. Each individual transformer will be equipped with a standard, internal containment system.

Upon consideration of the record developed in this proceeding and the criteria set forth in Public Utility Companies Article, § 7-207(e), I find that a Certificate of Public Convenience and Necessity should be granted to Savage Mountain Wind Force, LLC, for the construction of a 40 MW wind energy facility in Allegany and Garrett Counties, Maryland, subject to the conditions set forth on Appendix B hereto. The Project will add to the diversity of fuel sources used to meet Maryland's growing electric load and will produce electricity with no air emissions or negative impacts to air or water quality.

IT IS THEREFORE, this 4th day of February, in the year Two Thousand Three,

ORDERED: (1) That a Certificate of Public Convenience and Necessity for the construction of a 40 MW wind energy electric generation facility in Allegany and Garrett Counties, Maryland, is issued to Savage Mountain Wind Force, LLC.

(2) That the Certificate of Public Convenience and Necessity is issued subject to the conditions set forth on Appendix B hereto.

(3) That this Proposed Order will become a final order of the Commission on March 7, 2003, unless before that date an appeal is noted with the Commission by any party to this proceeding as provided in Section 3-113(d)(2) of the Public Utility Companies Article, or the Commission modifies or reverses the Proposed Order or initiates further proceedings in this matter as provided in Section 3-114(c)(2) of the Public Utility Companies Article.

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Allen M. Freifeld  
Hearing Examiner  
Public Service Commission of Maryland

Case No. 8939  
Proposed Order of Hearing Examiner  
Appendix A

**Witnesses for Savage Mountain Windforce, LLC.**

1. Jeffrey L. Meling, Vice President and Principal Engineer, Environmental Consulting & Technology, Inc. (Savage Mountain Exhibits 4-7, 18-19)

Mr. Meling sponsors the entire Environmental Review Document, which was attached as an Exhibit to his testimony.

There is a fair amount of noise at the site at the present time, coming from mining activities such as operation of excavation machinery and truck movements. Project construction will have minimal noise impacts. The noise from Project construction will always be in compliance with state noise regulations that limit daytime noise to 90 dBA.

There will be no noise impacts associated with operation of the Project. Sound from the wind turbines will not reach residences in the area. There are no residences within 1,800 feet of the turbines and noise from the turbines is virtually imperceptible from more than 850 feet away. The Project will be in compliance with state noise regulations by a significant margin.

The land use on the Project site is industrial, a coal strip-mining operation. The land in the immediately surrounding area is undeveloped or in agricultural use. Most of the Allegany County portion of the site is zoned "Agricultural, Forestry, and Mining", with a small section zoned "Conservation." The Project is compatible with Allegany County zoning ordinances, which list wind

energy conservation farms as a permitted use, provided that specified setback, and buffer requirements are met. The Project site is not addressed by any Garrett County zoning ordinances.

Construction of the Project will have minor, short-term impacts, such as increased noise and traffic during construction. The Project will have no significant impact on the existing industrial and agricultural land uses. Savage Mountain will comply with all state and local traffic regulations, obtain all necessary permits, and work with state and local officials to determine the best routes and methods for transporting materials to the site.

The Project is located 13 miles from the nearest airport and is not in a landing pattern for the airport. Savage Mountain is applying for permits and determining lighting requirements with the Federal Aviation Administration.

Operation of the Project will produce small quantities of non-hazardous solid wastes. These wastes will be disposed of at a licensed landfill offsite.

The Project will generate minimal quantities of hazardous wastes such as oily rags. These wastes will be managed according to federal and state requirements. The presence of oil on the site will be limited to that contained within the electrical substation's transformers. Individual transformers will be equipped with a standard, internal containment system.

If the Project is constructed with an operations building with a washroom, a septic system will be constructed to

treat sanitary wastewater in accordance with Allegany County requirements.

There will be no air quality impacts from operation of the project because wind turbines emit no air pollutants. Construction impacts will be limited to emissions from construction equipment and vehicles. These impacts will be similar to those from any construction activity. Savage Mountain will implement several mitigation measures. See Section 4.1 of the Environmental Review Document.

The project will have little impact on the surface waters of the site because it will create no wastewater and will require no water intake. The only impacts will come from stormwater flows. Savage Mountain will develop a stormwater management system that complies with all local, state, and federal requirements. The system will be designed to maintain the existing run-off characteristics of the site and to minimize stream channel erosion, pollution, siltation, sedimentation, and local flooding. The stormwater management system will also protect the project and its surrounding area from accidental spills of oil stored at the substation.

Condition No. 18 requires Savage Mountain to conduct a post-construction study of bird and bat mortality associated with turbine operation. The condition requires Savage Mountain to submit a plan of study to the DNR natural heritage program for approval, and to the PPRP for informational purposes. Savage Mountain agrees to monitor the site for three years, covering three

each of the spring and fall migrations, with more intense monitoring during these migrations. Savage Mountain will report the results of its monitoring to the DNR quarterly.

If monitoring reveals that a catastrophic event has occurred (meaning more than 200 birds or bats of any combination of species were killed at a single turbine within a 24-hour period), Savage Mountain must notify the DNR Natural Heritage Program and PPRP within one working day. (But see Appendix B, Condition 18(d), which redefines a catastrophic event as one in which 100 birds are killed in a 24-hour period at the turbines comprising the project.) According to Condition No. 19, DNR may also determine that one or more turbines are causing significant bird or bat mortalities. "Significant mortalities" means a number or rate of mortalities that could result in an ecologically significant population decline in federal or state rare, threatened, or endangered species, or bird species protected by the Migratory Bird Treaty Act. If DNR so finds, it will simultaneously submit this finding to the Commission and Savage Mountain. PPRP may require Savage Mountain to prepare a plan for reducing mortality to an acceptable level. The Commission will review both the plan and the DNR's determination that one or more turbines are causing significant mortality.

The plan may include provisions such as moving or curtailing the operation of one or more towers. The plan may also provide for a period, not to exceed two years, during which tests may be conducted to determine how best to reduce mortality. These

tests could include varying the operating parameters of towers, changing the tower lighting scheme, or other measures.

Other conditions designed to reduce bird mortality include Condition No. 17 which provides that Savage Mountain shall, as far as allowed by the Federal Aviation Administration, install lighting on the fewest number of turbines possible and install red strobes with frequency cycles no shorter than 24 strobes per minute. Condition No. 21 requires Savage Mountain to construct all towers, including meteorological towers, without guy wires or similar supports. These conditions are designed to reduce factors thought to contribute to the risk of avian fatalities at wind farms.

Condition No. 11, which addresses historical properties, requires Savage Mountain to submit Maryland Historical Trust ("MHT") Determination of Eligibility evaluations for three specified properties before beginning construction. During the preparation of its *Environmental Review Document*, Savage Mountain requested a list of historic properties within the Project vicinity that could be adversely affected by the Project. When evaluating potential impacts to these sites, Savage Mountain found three sites that could potentially have limited views of the Project. All of these sites, however, seemed to be of minimal resource value. Condition No. 11 provides a method of determining the resource value of these sites by examining their eligibility for inclusion on the National Register of Historic Places. If MHT decides that these properties are eligible and could be adversely affected by

the Project, Savage Mountain will develop a plan to mitigate or minimize adverse impacts to these sites.

2. G. Thomas Matthews, President and Chief Operating Officer, U.S. Wind Force, LLC (Savage Mountain Exhibits 8-10, 18-19)

The Project is located in western Allegany and eastern Garrett Counties, Maryland. The Project is located at a site which is currently used for strip-mining operations. The site was chosen because of its topography, wind characteristics, and status as a previously disturbed surface mining site. Construction at the site will include partial reclamation of the site, including grading and planting grasses to conceal the effects of strip-mining.

The Project is a 40 MW wind-powered, renewable energy facility. It will include up to 25 wind turbine generators. Each turbine will consist of a three blade rotor of between 65 and 82 meters attached to a fiberglass enclosure mounted on a tubular steel tower. The structure will stand between 98 and 141 meters high.

The Project will be interconnected with the PJM Interconnection through an existing Allegheny Power transmission line that traverses the site. Power from each turbine will be transported to an onsite substation to be constructed by Savage Mountain. An initial Feasibility Study performed by PJM indicates that no system reinforcements will be required and that the Project will not have an adverse impact on the transmission system. The Project will comply with all PJM requirements that will be set forth in the subsequent System Impact and Facilities Studies to be

performed by PJM. These requirements are designed to insure that the project does not adversely impact the stability and reliability of the transmission system.

The Project will have no significant impact on cultural or historical resources. Although, the Maryland Historic Trust has identified one potential archeological site within the 1,052 acre Project site, previous mining activity has disturbed this site.

The visual attributes of the site include the effects of strip-mining and the presence of transmission lines and towers that traverse the site. Due to the topography of the region and the presence of forested areas, the site is not visible from many vantage points in the area, including the most populated areas. Savage Mountain performed a line of sight analysis for each of the 24 sites identified by the Maryland Historic Trust as having potential cultural or historic value, including the Lonaconing Historic District (Iron Furnace). The turbines will not be visible from the entire Historic District or the Iron Furnace because they will be obscured by the topographical features of the area. The Project will not have a significant visual impact on any of the other 23 sites identified by MHT. Some locations had limited sight lines to the Project, others had no sight lines to the Project, and other locations provided a view of the rotor tips only.

The Project will be visible from some vantage points but will be hidden from view from most other locations by topographic features and forest. Most of the locations from which the turbines will be visible are located a considerable distance from the site.

The turbines will appear small from these locations. The turbines will be barely visible to the naked eye from populated areas in the vicinity of the Project.

The Project will create approximately 150 to 200 construction jobs with a construction payroll of more than \$1 million and total payments to local construction companies of \$3 million. These expenditures will generate approximately \$500,000 in federal, state, and local taxes. Operation of the project will generate \$250,000 in annual full-time employee wages and benefits; \$125,000 in annual payments to landowners; and \$400,000 in annual purchases of ancillary materials and services.

The conditions which the Settling Parties have proposed cover a variety of topics including avian risk, lighting requirements, decommissioning, erosion and sediment control, logging, electric system reliability, cultural resources, transportation, and compliance with applicable environmental, noise, and land use regulations.

3. Lisa R. Goldfarb, Senior Associate Scientist, Environmental Consulting & Technology, Inc. (Savage Mountain Exhibits 11-13)

The Project will have insignificant ecological impact. The Project will not have an adverse impact on the vegetation, wildlife, or water quality of the area. The Project will produce no air pollutants during operation nor will it discharge any waste into local waters.

The site is currently heavily impacted by mining operations. Land uses and ecosystems on the site include active,

inactive, and restored mining sites; meadow, shrubland, pond, stream/wetland, Christmas tree plantation, secondary growth forest, and a water treatment facility. However, the majority of the forested area on the site is scheduled to be logged, based upon preexisting plans of the landowner.

There are no known records of federal or state rare, threatened, or endangered plants or animals in the Project area.

The Project could impact 0.05 acres of wetland, where the communications and power collection lines cross Koontz Creek. The technique proposed for the crossing will prevent direct impacts to the creek and will minimize secondary impacts.

Construction of the Project will have little impact on important vegetation because at least half of the construction will occur on previously disturbed mined or logged land. Thirty-four percent of construction will involve clearing meadow, which is reclaimed mining land in the early stages of succession. Similar habitat will remain both onsite and nearby.

The Project will create little additional impact to non-avian wildlife given the prior mining operations. Most of the habitat is of relatively low quality in terms of food resources and cover. The impacts caused by construction noise and traffic will be temporary.

4. Paul Kerlinger, Principal, Curry and Kerlinger, LLC, Environmental Consultants (Savage Mountain Exhibits 14-16)

The Project is unlikely to pose a significant risk to birds. There are no listings of federal or state rare, threatened,

or endangered bird species in U.S. Fish and Wildlife Service and Maryland Department of Natural Resources records. There were no federally listed endangered species present in the ten-year period of National Audubon Society Christmas Bird Counts. The Breeding Bird Atlas does list several Maryland endangered species within several miles of the site. The Project will have no impact on these species because the site has no suitable habitat for these species.

Wind power projects can pose a risk of death or injury to birds due to collision with turbines. However, collisions have only been shown to be a significant risk at one site in North America, the Altamont Pass Wind Resource Area in California. Large numbers of raptors have collided with wind turbines at that site. The factors that contributed to the avian fatalities at Altamont are not present at the Savage Mountain site. Whereas the Altamont Pass site consists of 5,400 turbines, the Savage Mountain site will have no more than 25 turbines. Unlike the lattice towers of Altamont, Savage Mountain will utilize tubular steel towers, eliminating perches that could attract birds. The Altamont site is located in a valley, which makes it more likely to pose risks to birds than the Savage Mountain facility, which will be built on a ridge. The blades of Savage Mountain's turbines are slow-rotating; fast-rotating blades like those at Altamont have been shown to increase risk. Additionally, the Savage Mountain turbines will be spaced over 650 feet apart. This is much greater than the 80 to 100 feet between turbines at Altamont Pass, thus decreasing the

risk of avian fatalities. Finally, the Savage Mountain site, unlike the Altamont Pass area, has a minimal prey base and only low to moderate use of the area by susceptible species. Overall, the factors that create high avian risk at wind power projects are not present at the Savage Mountain Project.

The risk of habitat disturbance at the site is expected to be minimal and not significant. The Project will be constructed almost entirely in degraded habitat, and the amount of area required to construct each turbine will only be about one acre (and that land will be restored to brush and grassland after construction). There is little risk of habitat degradation.

Avian mortality has been studied extensively at modern (*i.e.*, post-1995) wind power facilities in the United States. At sites in the Eastern United States, few to no bird fatalities have been found. Studies done in the Midwest have yielded similar results. Wind power facilities have not been demonstrated to have an adverse impact on bird populations. Even at the Altamont Pass site, it has not been determined that the number of collisions has significantly impacted the area's raptor population.

Appendix III of Dr. Kerlinger's Report provides a summary of the number of fatalities documented at modern turbine sites in North America.

The Project will not have an impact on migrating hawks. While hawks do migrate along the ridges in the area of the Project, these migrations probably consist of only hundreds of birds a year, as is typical of ridges in western Maryland. This number is in

contrast with the tens of thousands of hawks found at important migration sites. A survey of hawk migration literature suggests that the area in the vicinity of the Project attracts only a small number of inconsistent migrations. Furthermore, while hawk migration does occur along the Big Savage Mountain formation, it usually follows the top of the ridge. Since the Savage Mountain Project is slightly to the east of the of the main spine of Big Savage Mountain, it should not be a site of significant migration.

Western Maryland is not known for large concentrations of migrating birds. While birds migrate through the area, they seem to be spread over a wide geographic area with few locations where large numbers concentrate. This phenomenon may be because there is little near the Project site to attract or concentrate migrants that are dependent on water or wetlands. While the ridges at Dan's Rock and Big Savage Mountain undoubtedly attract some migrants, the Project site will not be built at the top of these ridges.

Night migrating songbirds have been demonstrated to collide with wind turbines in small numbers at some sites. It is likely that some morning flight of night migrants occurs over ridges near the Savage Mountain Project. However, reviews of literature concerning avian deaths caused by communication towers indicate that towers less than 500 feet tall kill few nocturnally migrating birds. Since the Savage Mountain Project will not exceed 500 feet, the Project does not pose a large risk to night migrating songbirds.

The combination of cold temperatures, strong winds, and snow cover makes the Project site inhospitable for most wintering birds. The number and diversity of birds likely to be present on the site during the winter is small. There will be a relatively low number of birds in the area; there will be even fewer at the higher elevations of the Project site where food is scarcer and the weather is harsher.

The only Audubon Society Designated Important Bird Area ("IBA") in Garrett County and western Allegany County is the Finzel Swamp Preserve. This IBA is so designated because of its wetland and bog-fen type habitats, neither of which are present on the Savage Mountain site. This IBA is more than five miles from the Project site.

Although the Project will pose minimal risk to most birds, and at most moderate risk to some night-migrating songbirds, certain practices can ensure that the Project will pose the least risk possible. These measures include running all electrical lines underground, leaving meteorological towers free-standing and unguyed, ensuring that roads and turbine pads are minimal in size, and lighting the towers with white strobes on the fewest number of towers possible and with the longest off cycle permissible.

Risks from wind turbines are small compared to other sources of avian mortality. For example, most wind turbines kill zero to several birds every year, whereas glass windows kill between 100 million and 900 million birds annually.

Witnesses for the Department of Natural Resources, Power Plant Research Program

The Agencies have concluded that the site is suitable and that the Project can be constructed and operated in accordance with all applicable environmental regulations provided that the Certificate of Public Convenience and Necessity incorporates the conditions proposed by the Agencies.

1. John Sherwell, Administrator for Atmospheric Sciences, Department of Natural Resources, Power Plant Research Program (DNR Exhibit 1-3)

PPRP is responsible for coordinating the review of projects requiring a CPCN with other units within the Department of Natural Resources, and with the Departments of the Environment, Agriculture, Business and Economic Development, Planning, and Transportation, and the Maryland Energy Administration and the Office of Smart Growth. The PPRP review process begins well before an application is filed and continues through the entire CPCN process, culminating with the submission of PPRP's proposed findings and with conditions to be attached to the CPCN. PPRP's evaluation of the Project included an assessment of potential impacts to terrestrial, ecological, ground water, surface water, socioeconomic, aesthetic, cultural resources, noise and air quality. The environmental assessment conducted by PPRP establishes that the Project will comply with all applicable regulatory standards.

The potential for terrestrial and ecological impacts were given the highest priority. Because the Project is located on a strip-mine undergoing reclamation and is adjacent to active strip-mines, impacts to most rare, threatened, and endangered species are unlikely. The issue of greatest concern has been that of avian impacts.

Both diurnal and nocturnal migrants are known to traverse the Appalachian Range during their fall and spring migrations. Details of their use of the proposed site are not known. However, the expert opinion of DNR's Heritage group, Versar (DNR's consultant for this Project), and Dr. Michael Morrison, University of California, and a consultant for the U.S. Department of Energy, is that the risk to migrating birds is small, but not zero. PPRP has proposed a number of conditions to be placed on the Project which minimize this risk and also provide surety for the Applicant so that it may proceed with Project financing.

In addition to these conditions, PPRP has initiated a study of avian populations in western Maryland so as to improve the understanding of the avian risk associated with windpower and to develop a base of information to guide future windpower development in Maryland.

There will be no impacts to surface or groundwater associated with the Project since there will be no surface water withdrawals or discharges from the Project.

The socioeconomic, aesthetic, and cultural resource impacts were assessed by PPRP through visual observations at the site and assessment of the location. Visual impacts were studied in detail, as described in PPRP's Environmental Review Document. No adverse impacts are predicted.

The Project will not produce air emissions and is considered a source of green power. In contrast, fossil fueled power plants of comparable capacity would emit nitrogen oxide and carbon dioxide.

An evaluation of the noise levels generated by the Project was conducted and PPRP evaluated the Applicant's ability to operate the unit in compliance with state noise regulations. Conditions have been proposed to assure compliance.

PPRP has concluded that the Project can be constructed and operated so as to cause no unacceptable environmental or socio-economic impacts. With the adoption of the proposed conditions, it will comply with all applicable environmental regulations.

The Agencies recommend that a CPCN be issued for the Project subject to the conditions proposed in the Agencies' Letter of Recommendation.

2. Mark Southerland, Senior Ecologist, Versar, Inc. (contractor to Department of Natural Resources, Power Plant Research Program) (DNR Exhibit 4)

The effects of wind turbines on birds has been studied since the late 1980s in the U.S. and earlier in Europe. After more

than a decade of study, there is evidence that the number of fatalities at windpower facilities is small. Bird fatalities resulting from wind turbines are known to be much smaller than that resulting from other human activities, such as driving, buildings with windows, and communication towers.

Several factors contribute to bird fatalities at wind power sites, most importantly, the presence of turbine-related perching sites, guy wires, tower height, blade speed, and lighting. Wind turbine towers without perching sites and guy wires are now the industry standard. Research has shown that strobe lights with long dark cycles reduce disorientation of birds better than solid lights.

Resident birds in the habitat around wind turbines are unlikely to collide with the structures as they nest and forage in their home range. The bird density is small in the Project's immediate area. The area is not a primary feeding ground for raptors. However, migratory birds do pass through the general vicinity of the Project in high numbers, although it is unknown whether significant migrations occur within the Project site or adjacent areas. Specifically, information from bird surveys conducted during the 1940s and 1950s indicates that substantial numbers of hawks migrate along Maryland's mountain ridges. Less extensive surveys also indicate the possibility that migratory songbirds may migrate at night in the project area. In general, most migratory birds fly at heights higher than wind turbine height, except in bad weather. Birds tend to fly at lower

altitudes than usual on nights with more cloud cover. There are similar concerns about possible impacts to migrating bats.

Based on studies of existing windpower projects in the U.S. and Europe, the species (type and number of individuals) that frequent the project site, literature searches, site visits, and interviews, the state believes that the risk of large-scale deaths of birds at the project site is likely to be low. However, given that there remains uncertainty regarding potential bird mortality from these projects, the state recommended that Wind Force undertake a post-construction study of bird and bat mortality associated with the operation of the turbines. At a minimum, monitoring would be conducted for three years and cover three each of spring and fall migration periods. More intensive monitoring would be required during these migration periods. Monitoring data would be reported on a quarterly basis and would include both observed and estimated mortality by observation date and turbine. Species affected and specific weather conditions should be noted.

The State further recommended that tower configurations and lighting be designed to minimize bird fatalities (in accordance with the Migratory Bird Treaty Act). First, the newer, industry-standard wind turbine technology (without lattices structures, guy wires, or fast rotating blades) would be used, with heights not to exceed 460 feet. Second, subject to FAA approval, lighting on the turbines should be minimized by lighting the least number of turbines, using red strobes with a frequency cycle no shorter than 24 flashes per minute.

PPRP is undertaking an independent monitoring program in western Maryland to improve the understanding of potential impacts to birds from windpower facilities.

There will be no significant ecological impacts associated with Project construction given that the site has been largely disturbed through mining and logging activity; the absence of unique wildlife or vegetation; the presence of few wetlands; and the absence of threatened or endangered species.

The construction of the project will cover approximately 108 acres of land, with at least half of the disturbance located in disturbed mined or logged lands. Specifically, approximately 24 acres of mined land and 30 acres of logged forest will be cleared and used for the project. Given the low habitat quality of these communities resulting from previous impacts, development of these areas will not significantly affect the area's overall ecological health. Approximately 37 acres of meadow will be cleared, most of which were previously strip-mined. After construction, the remaining area within the 300-foot construction corridor will be maintained in a natural grassy state, similar to the current meadow community. Construction impacts to the remaining communities will be relatively minor and include ten acres of shrubland, five acres of forest, and three acres of Christmas tree farm. The percentages of shrubland and forest communities that will be cleared for the project are minimal compared to what are present both onsite and in the surrounding areas. Therefore, project construction will not

significantly affect the functions or values these communities provide to the surrounding ecosystem.

An estimated 0.05 acre of stream/wetland at Koontz Run will be crossed by construction of communications and power collection lines. Because the construction will be by jack-and-bore or overhead lines, there will be no need to clear land or dig a trench through the wetland and creek. Therefore the direct impacts to the soils, vegetation, hydrology, and wildlife community, as well as secondary impacts such as erosion and sedimentation downstream, will be minimal.

The primary impacts of project construction activities on local wildlife will be temporary in nature and include the displacement of species in the immediate area due to noise, traffic, and human presence during construction. The presence of humans and noise during project operation could also affect surrounding wildlife, but these impacts are expected to be minimal given that only a few permanent employees will be required to operate the plant and that human presence associated with the coal mining operation has been ongoing for many years.

The State Agencies recommend that Wind Force be required to undertake a post-construction study of bird and bat mortality associated with the operation of the turbines. Should DNR, based on monitoring and other scientific information, and after consultation with the Applicant and other interested parties, make a determination that one or more wind turbines are collectively

causing significant bird or bat mortalities, DNR will submit any such determination to the PSC. DNR recommends that the PSC then direct the Applicant to prepare and submit for approval a plan for reducing the mortality to an acceptable level. The plan may include such actions as moving or curtailing the operation of one or more towers. The level of curtailment will not exceed 450 turbine-hours per year (or 18 times the number of turbines constructed, if the project consists of fewer than 24 turbines). The plan may also include provisions for a period, not to exceed two years, during which tests may be conducted, such as varying the operating parameters of one or more towers, changing the tower lighting scheme, or other measures, to determine how best to reduce the mortality. For purposes of this condition, the term "significant mortalities" means a number or rate of mortalities that could result in an ecologically significant population decline in federal or state rare, threatened or endangered species, or species protected by the Migratory Bird Treaty Act.

Other conditions were proposed to minimize adverse impacts to the site during construction. In the opinion of the State Agencies, the proposed conditions provide a reasonable basis for the Project to go forward. The conditions implement mechanisms to identify, evaluate, and mitigate potential threats to the resources which may be affected by the Project.

3. Peter D. Hall, President, Metametrics, Inc. (contractor to Department of Natural Resources, Power Plant Research Program) (DNR Exhibit 5)

The project would be constructed on private land between Carlos Junction and Seldom Seen Road that is part of an active strip-mine in the Georges Creek Basin. The basin is outside existing urban or planned urban development. Parts of the site have been reclaimed or are in the process of being reclaimed. The site is located in the Georges Creek Region of Allegany County on land designated as Forest in the county's Land Use Plan and is zoned Agriculture, Forestry, Mining - A. An amendment to the Code of Allegany County to include development of a wind farm as a principally permitted activity in both the A and C (Conservation) zoning districts was proposed in August 2002. On October 10, 2002, the County Commissioners voted to enact the amendment effective November 24, 2002.

Because the Project area includes an active strip-mine, land use impacts are expected to be negligible. Use of the land for wind turbines is consistent with the Mineral Resources Element of the Allegany County Comprehensive Plan, which seeks to protect the area from urban uses. Given its existing designation and constraints on alternative uses, the facility utilizes the land to a greater extent than would otherwise be the case.

The economic impact of the Project will be positive for Allegany County and the State, but the impact will be minor. Savage Mountain Wind Force estimates that construction would require no more than 100 person-years of construction labor,

producing about \$1 million in earnings over the construction period. This level of stimulus to the economy would result in the creation of about 114 person-years of additional employment and \$900,000 of additional income. Not all economic impacts would remain in Maryland due to the proximity of the site to West Virginia and Pennsylvania.

Once operational, employment requirements of the facility would be small -- six employees -- with an average annual compensation of \$250,000. Indirect employment and income benefits would be relatively insignificant.

During construction, fiscal impacts associated with the proposed facility would be beneficial to the State and Allegany County. Tax revenue sources for the State would be from sales taxes on construction materials and services, sales taxes on consumption expenditures of construction workers, and income taxes on construction workers and indirect earnings. The primary revenue source for Allegany County over the construction period would be personal income taxes, which would depend on the proportion of jobs that would go to Allegany County residents.

Once operational, the State would collect corporate income taxes, sales taxes from O&M expenditures and personal income taxes on O&M worker incomes. Savage Mountain Wind Force did not estimate corporate income tax payments to Maryland in its application. However, if the facility becomes operational before 2004, Maryland corporate tax revenues would be reduced by federal tax credits on wind energy production. Including revenues from indirect

sources but excluding corporate income taxes, annual tax revenues to the State are projected to be slightly more than \$50,000.

The primary tax revenue source for Allegany County would be from property taxes. Savage Mountain Wind Force estimated that the proposed facility would increase the personal and real property tax base in Allegany County by \$40 million. PPRP estimates that the project would generate more than \$500,000 in property tax revenues in the first year of production, declining to about \$240,000 after assets were fully depreciated.

Net revenue benefits to both the State and Allegany County are expected to be positive since no major expenditures for public services would be required if the project is developed as planned.

Construction of up to 25 wind turbines will add views of industrial structures along the ridgeline of the Big Savage Mountain to create a less than natural setting. However, the scenic quality of western Allegany County has been compromised by strip-mining activity, which is evident from both major and minor highways that run through the county. Even reclaimed areas are relatively easy to distinguish from other natural areas.

Because of the terrain of western Allegany County, most views would be confined within Big Savage Mountain and Dans Mountain. Recreational and natural areas to the west, including New Germany State Park and the Savage River State Forest would have limited views of parts of the north section of the project. Part of the project area would also be visible from I-68 near the

Midlothian Road interchange, where the view toward Big Savage Mountain is elevated, and from parts of the greater Frostburg area down to Midland. However, most views of the facility would be "far" views since river valleys distance most viewing areas. Furthermore, communications towers already compromise some views, such as that from Dans Mountain.

Visual impacts from the wind turbines upon local residents are expected to be largely mitigated by terrain. Much of the nearby population resides in the Georges Creek Valley, from which few sightlines to the project area exist. Intermittent views from the greater Frostburg area near Interstate Highway 68 ("I-68") are distant and compromised by the four-lane highway in the foreground and evidence of strip-mining in the background. The facility would be visible to residents along roads near the ridgeline of Big Savage Mountain. The Applicant noted the presence of several houses on MD 657 from which the facility might be visible, but found that intervening vegetation often blocked views when terrain did not.

The Maryland Historical Trust ("MHT") reviewed the proposed project for effects on historic and archeological properties. MHT records indicated numerous historic structures and one archeological site within or adjacent to the proposed project area. Subsequent investigation by the Applicant found no evidence of on-site archeological sites or historical structures, probably the result of strip-mining activities. Field observations from identified historical structures in the Georges Creek Valley and

from the iron furnace in the Lonaconing Historic District indicated no visual impact from these locations due to terrain shielding.

One historical property located on MD 657 in Garrett County has partial views of the project site, although some views are blocked by vegetation. In addition, it is unclear whether the structure still retains sufficient architectural integrity to make it eligible for the National Register of Historic Places. Field observations by the Applicant identified two other inventoried historic properties that had partial views of the project area. In both cases, high voltage overhead transmission lines already compromise views. In addition, it is unclear whether the structures retain the architectural integrity to make them eligible for the National Register of Historic Places.

The State Agencies propose a condition requiring Savage Mountain to perform Determination of Eligibility evaluations for those properties. A determination of adverse effect on eligible properties would require the Applicant to develop and implement a plan for mitigating or minimizing the adverse effects. The State recommends that preparation of these Determination of Eligibility evaluations be made a condition of the CPCN in this case.

With employment peaking at no more than 200, traffic impacts associated with construction worker traffic are expected to be minor. Savage Mountain has long been the focus of coal mining activities, and many of these roads have been used to carry commuter traffic into active mining areas. Construction would require the transport of turbine components over local roads that

would periodically disrupt traffic for brief periods of time. Components would be transported on trailers up to 90 feet in length. Transporters would require permits from the State to travel on interstate, federal and state highways and from Allegany County to transport permit loads on county roads to the site. Designated routes for transporting heavy wind turbine components to the proposed site will be determined through consultations with the Maryland State Highway Administration and the Allegany County Department of Roads.

**Witness for the Staff of the Maryland Public Service Commission**

1. S. Craig Taborsky, Electric Generation/Transmission Engineer, Maryland Public Service Commission (Staff Exhibit 1)

Mr. Taborsky's testimony addressed the reliability and stability of the electric system with the addition of the 40 MW of generation being proposed by Savage Mountain Wind Force, LLC.

The CPCN should contain the following two conditions:

1. Prior to putting any portion of the project in service, the Applicant shall file with the Commission a listing of the transmission system improvements required by PJM Interconnection, LLC, and certification that the improvements have been completed; and
2. Prior to putting any portion of the project in service, the Applicant shall file with the Commission a listing of the

interconnection requirements required by the interconnecting transmission line owner and certification that the interconnection requirements have been met.

The effects of proposed generators on the reliability and stability of the electric system in Maryland are determined by PJM, which is the provisional Regional Transmission Operator for Pennsylvania, New Jersey, Maryland, Delaware, and part of Virginia as established by the Federal Energy Regulatory Commission ("FERC"). Upon the receipt of an interconnection request, PJM conducts sequential studies to determine what system enhancements and interconnection facilities are necessary in order for the project to interconnect without degrading the reliability and stability of the transmission system. PJM models compliance with East Central Area Reliability Coordination Agreement ("ECAR") reliability and stability criteria. ECAR is the regional reliability council which establishes reliability standards for this geographic area.

Savage Mountain will be required to sign an Interconnection Agreement with PJM prior to interconnection. The Interconnection Agreement must be executed and filed with FERC. The Interconnection Agreement will identify the interconnection facilities and the rights of the interconnection customer to participate in the PJM markets.

The Interconnection Agreement also assigns cost responsibility for electric system enhancements required for the interconnection.

Savage Mountain will also be required to sign an Interconnection Agreement with Allegheny Power, the owner of the local transmission facilities. This agreement will specify the system enhancements required for the physical and electrical interconnection of the generators to the grid. The agreement may also specify requirements related to the operation and maintenance of the system enhancements. This agreement ensures the safety and reliability of the local area electric system.

Case No. 8939  
Proposed Order of Hearing Examiner  
Appendix B

**CONDITIONS INCORPORATED INTO THE  
CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY**

1. Except as otherwise provided for in the following provisions, the application for the Certificate of Public Convenience and Necessity ("CPCN") is considered to be part of this CPCN ("certificate") for the Savage Mountain Wind Energy Project ("Project"). The application consists of the original application filed with the Maryland Public Service Commission ("PSC") on August 29, 2002 by Savage Mountain Windforce, LLC, ("Savage Mountain," "Applicant," or "Company") and supplemental information submitted to the PSC. Construction and operation of the Project shall be undertaken in accordance with these conditions. The turbines shall be constructed within the numerical parameters as to the number of turbines, dimensions of turbines, and total acreage of the Project site found in the application and amendments thereto incorporated in the CPCN. Changes to these specifications are not covered by the CPCN and must be reviewed and approved by the PSC and the Power Plant Research Program ("PPRP"). If there are any inconsistencies between the certificate conditions specified below and the application, the conditions in this certificate shall take precedence.
2. If any provision of this certificate shall be held invalid for any reason, the remaining provisions shall remain in full force and effect, and such invalid provision shall be considered severed and deleted from this certificate.
3. Construction and operation of the turbines and all associated facilities shall be undertaken in accordance with this certificate and shall comply with all applicable local, State, and Federal regulations, including but not limited to the following:
  - a. Nontidal Wetlands - to the extent any nontidal wetlands exist on the Project site, and will be impacted by Project construction, COMAR 26.23.01 through 26.23.06 will apply to activities conducted in those areas.
  - b. Water Quality and Water Pollution Control - COMAR 26.08.01 through COMAR 26.08.04 applies to discharges to surface water and maintenance of surface water quality.

- c. Erosion and Sediment Control - COMAR 26.17.01 applies to the preparation, submittal, review, approval, and enforcement of erosion and sediment control plans.
4. Construction of the turbines must be completed within five years of issuance of this CPCN.
  5. Applicant shall provide as-built details on the following to PPRP, Maryland Department of the Environment ("MDE") and the PSC in accordance with COMAR 20.80.04: engineering and construction plans for the turbines including total acreage of the Project site; turbine structure and foundation type, dimensions, and locations; and distance between turbines. Where the as-built details are identical to those submitted with the certificate application, Applicant should provide a statement to this effect and not resubmit the information.
  6. Prior to construction of the Project, Applicant will identify any off-site roads, road expansions, right-of-way use, or access points that will need to be built for construction or operation of the Project and will work with the State Highway Administration, the Allegany County Public Works Road Division, and the Garrett County Roads Department to develop a plan to govern any such improvements. Applicant will obtain all permits required for such improvements. In addition, prior to construction, Applicant shall work with the above agencies to plan the routes and appropriate safety and traffic-flow measures, and obtain permits for delivery of large-load equipment to the Project site. Applicant shall also provide advance notification to these agencies of the actual deliveries.
  7. All portions of the Project site disturbed during construction shall be stabilized immediately after the cessation of construction activities within that portion of the Project site, followed by seed application, except in actively cultivated lands, in accordance with the best management practices presented in the MDE document 1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control, and as approved by Allegany County. To the extent there is any conflict between this condition and the requirements of an applicable state-approved, active reclamation plan, the latter shall take precedence.
  8. At the time of issuance of this certificate, a state-approved reclamation plan exists for the site of the Savage Mountain Project. However, implementation of the plan is in abeyance. During the period from issuance of the certificate to the completion of construction, Savage Mountain shall report to PPRP and the PSC material non-confidential information that comes to Savage Mountain's attention pertaining to the assumption of responsibility for implementing the reclamation plan by a mining company.

9. During the period from issuance of the certificate to the completion of construction, Savage Mountain shall report to PPRP and the PSC material nonconfidential information concerning the landowner's plans to conduct logging operations on the site of the Savage Mountain Project.
10. Prior to construction, Applicant shall submit to the Maryland Historical Trust ("MHT") a copy of training programs, or guidelines provided to Applicant inspectors or contractors, to identify and/or protect unforeseen archeological sites that may be revealed during construction of the project. If such relics are identified in the project area, Applicant, in consultation with and as approved by MHT, shall develop and implement a plan for avoidance and protection, data recovery, or destruction without recovery of the properties adversely affected by the project.
11. Before the start of construction, Applicant will submit to MHT Determination of Eligibility evaluations for the following historical properties: G-I-C-088, GI-C-068, and AL-VI-C-117 to allow MHT to determine their eligibility for the National Register of Historic Places. If the determinations of eligibility result in the identification of eligible properties that would be adversely affected by the project, then the Applicant, in consultation with and as approved by MHT, shall develop and implement a plan for mitigating or minimizing adverse effects.
12. Applicant shall submit a Project-specific sedimentation and erosion control plan to the Allegany County Soil Conservation District. Sediment control during construction of all aspects of the Project will include some or all of the following Best Management Practices: construction of earth dikes in appropriate locations, sediment traps, use of silt fences, stabilizing disturbed areas as quickly as possible, and converting silt traps to permanent features as soon as practicable. The Plan will be developed consistent with Allegany County requirements. The plan shall also be provided to the PSC and PPRP prior to construction. The plan must be on site during all phases of construction. To the extent there is any conflict between this condition and the requirements of an applicable state-approved, active reclamation plan, the latter shall take precedence.
13. Representatives of the Department of Natural Resources ("DNR"), MDE and the PSC shall be afforded access to the property at any reasonable time to conduct inspections and evaluations necessary to ensure compliance with the CPCN. Applicant shall provide such assistance as may be necessary to conduct these inspections and evaluations effectively and safely, which may include but need not be limited to the following:

- a. Inspecting construction authorized by this CPCN;
  - b. Having access to or copying any records required to be kept by Applicant pursuant to this CPCN or applicable regulations;
  - c. Obtaining any photographic documentation and evidence; and
  - d. Determining compliance with the conditions and regulations specified in the CPCN.
14. Applicant shall construct and operate the project in compliance with all applicable state and local noise regulations.
  15. Prior to putting the Project in service, Applicant shall file with the Commission a listing of the interconnection requirements imposed by the interconnecting transmission owner or regional transmission organization, as may be the case, in the Facilities Study, and certification that these interconnection requirements have been met.
  16. Decommissioning of turbines will be undertaken by the Applicant at private expense. The Applicant will establish a bond or similar mechanism to ensure that future funds are available to support decommissioning. In the event that any turbine does not operate for a period of one year, the Applicant shall remove that turbine assembly unless the Applicant obtains an extension from the PSC. If the Applicant requests an extension of the one-year period, the request must be in the form of a written motion to the PSC describing the operational difficulty and describing the steps that the Applicant is taking to resolve it.
  17. To reduce the potential for avian and visual impacts, and only as consistent with the lighting and other safety requirements imposed on the Project by the Federal Aviation Administration ("FAA"), lighting on the turbines shall be minimized by (a) installing lighting on the fewest possible number of turbines; and (b) installing red strobes, as opposed to white strobes, with frequency cycles no shorter than 24 per minute. In the event the FAA requirements conflict with the avian and visual impact-related requirements imposed by this condition, the FAA requirements shall govern.
  18. Subject to subparagraph f of this condition, the Applicant shall undertake a post-construction study of bird and bat mortality associated with the operation of the turbines. The study protocol shall be submitted to the DNR Natural Heritage Program for approval, and to PPRP for informational purposes, no later than 30 days after issuance of the CPCN, which

approval shall be forthcoming within 30 days of receipt so long as the Applicant substantially and in good faith complies with the following minimum requirements:

- a. At a minimum, monitoring shall be conducted for three years and cover three each of spring and fall migration periods.
  - b. More intense monitoring will be required during the spring and fall migration periods.
  - c. Monitoring data shall be reported to the Natural Heritage Program, PPRP and the PSC on a quarterly basis and shall include both observed and estimated mortality by observation date and turbine.
  - d. Species impacted and weather conditions should also be reported. In the event that a catastrophic mortality event occurs, the Applicant shall notify the DNR Natural Heritage Program and PPRP within one working day. For the purpose of this subparagraph, a "catastrophic mortality event" is one in which more than 100 birds or bats of any combination of species are killed in a 24-hour period at the turbines comprising the Project.
  - e. As stated above, the DNR Natural Heritage Program shall have the right to approve or disapprove the study protocol. However, an Advisory Committee selected by DNR and consisting of the intervenors in this case, representatives of the U.S. Geological Survey's Biological Resources Division and other interested persons shall consult with DNR Natural Heritage in connection with its consideration of the study protocol and shall have the opportunity to submit comments as to the protocol.
  - f. The study shall be conducted by an independent entity. An "independent entity" is one that has not previously had a financial, economic or consulting relationship with the Applicant or with any affiliate of the Applicant. The Applicant shall enter into a contract with a qualified independent entity and shall compensate the entity for its services, but in no event shall such compensation exceed a reasonable cost. If it is necessary for the independent entity or its employees or agents to be trained, the training will be conducted at the direction of the Applicant and monitored by DNR.
19. Within 30 days after the issuance of a CPCN for the Project, and subject to the availability of private funding by a person or entity other than the Applicant, the Applicant and Mr. D. Daniel Boone, a *pro se* intervenor in this proceeding, shall enter into a contract for the performance of a study to

perform acoustic monitoring of overflights of birds in the airspace above the Project site. The study shall be conducted by a suitable consultant or consulting firm to be selected by mutual agreement of the Applicant and Mr. D. Daniel Boone. The consulting agreement for the study shall, at a minimum, include the following basic terms and conditions:

- a. The assumptions, methodology, analysis and results of the study shall be maintained by the consultant or consulting firm as confidential and shall not be disclosed to any person or entity, including the Applicant and Mr. Boone, until after the Project enters into commercial operation;
  - b. The study results shall not at any time be used in connection with the Project;
  - c. Within 30 days after the commencement of commercial operations, the Applicant shall contribute up to \$20,000 on a one-time basis to Mr. D. Daniel Boone for the sole purpose of reimbursing the consultant or consulting firm contractually obligated to perform the study, or to reimburse the person or entity that contributed the initial private funding described in the first paragraph of this condition. A contribution of less than \$20,000 shall be made only if the actual cost of the study is less than \$20,000.
20. After consultation with the Company and other interested parties, DNR may make a determination that one or more wind turbines are individually or collectively causing significant bird or bat mortalities, as defined below. The determination shall be based on the monitoring data and other scientific information. DNR shall submit any such determination to the Company and, simultaneously, to the PSC. If and when such a determination is made, DNR may require the Company to prepare and submit to DNR a plan for reducing the mortality to an acceptable level. The plan may include such actions as moving or curtailing the operation of one or more towers or provisions for a period, not to exceed two years, during which tests may be conducted, such as varying the operating parameters of one or more towers, changing the tower lighting scheme, or other measures, to determine how best to reduce the mortality. In no event (whether in connection with curtailments or testing) shall the level of curtailments for the Project as a whole exceed 450 turbine-hours per year (or 18 times the number of turbines constructed, if the Project consists of fewer than 25 turbines). Following the Applicant's submission of the plan to DNR, DNR shall submit the plan to the PSC and prepare a recommendation to the PSC. The PSC shall review the DNR's determination that the wind turbines are individually or collectively causing significant bird or bat mortalities and shall also either accept, reject

or modify the plan. For purposes of this condition, the term "significant mortalities" means a number or rate of mortalities that could result in an ecologically significant population decline in federal or state rare, threatened or endangered bird or bat species, or bird species protected by the Migratory Bird Treaty Act.

21. Prior to the start of operation, Savage Mountain will submit documentation to PPRP demonstrating compliance with local site planning and setback requirements applicable to wind energy projects. In accordance with Allegany County ordinance, the distance between any turbine and any residential structure must be at least two times the height of that turbine tower, measured from ground level to the top of the nacelle.
22. All towers constructed on the property, to include meteorological data collection towers as well as wind turbines, shall be free-standing structures with no guy wires or similar supports.
23. Except as otherwise provided herein, Savage Mountain Windforce shall not transfer ownership or control of the Project so as to divest Savage Mountain of its ability to control the construction or operation of the Project without the written consent of the PSC. In the event of any such proposed transfer, Savage Mountain shall notify the proposed successor of the existence of the requirements of this CPCN by letter and shall send a copy of that letter to the Secretary of the PSC and the Director of PPRP. Any such successor shall be subject to the CPCN and all applicable requirements and obligations therein. Prior to the commencement of its operations of the Project, any such successor shall provide any assurances required by the PSC that the facility will be operated in compliance with this CPCN and its conditions. The approval of the PSC shall not be required if (i) Applicant transfers a collateral security interest in the Project, or (ii) Applicant sells its interest in the Project to a person or entity that becomes a passive owner of the facility solely for financing purposes, nor shall such transferee or purchaser be subject to the CPCN and the requirements and obligations therein solely by virtue of acquiring and holding such interests. In the event that an entity holding a collateral security interest in the Project or passive ownership for financing purposes acquires ownership or control of the Project so as to divest Savage Mountain of its ability to control the construction or operation of the Project, such entity shall be subject to this CPCN and its conditions.

*Appendix C*  
*PSC Order*



**ORDER NO. 78337**

IN THE MATTER OF THE APPLICATION OF SAVAGE MOUNTAIN WINDFORCE, L.L.C., FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO CONSTRUCT A 40 MW GENERATING FACILITY IN ALLEGANY AND GARRETT COUNTIES, MARYLAND.	* * * *	BEFORE THE PUBLIC SERVICE COMMISSION OF MARYLAND <hr style="width: 100%;"/> CASE NO. 8939 <hr style="width: 100%;"/>
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This matter comes before the Commission as the result of a Commission determination, pursuant to Public Utility Companies ("PUC") Article §3-114(c)(2)(ii), to conduct further review on its own motion in this matter.

An Agreement of Stipulation and Settlement ("Settlement") in this matter was filed on January 14, 2003, by Savage Mountain Windforce, L.L.C. ("Savage Mountain" or "Applicant"), the Maryland Energy Administration and the Department of Natural Resources, Power Plant Research Program ("MEA"), D. Daniel Boone, Ajax Eastman, the Maryland Office of People's Counsel ("OPC"), and the Staff of the Maryland Public Service Commission ("Staff"), collectively, the "Parties." Evidentiary and public hearings on the complete application were held on January 14, 2003. A Proposed Order of the Hearing Examiner accepting the unanimous Settlement was issued on February 4, 2003, and was scheduled to become a final order on March 6, 2003. The Proposed Order is appended to this Order; a comprehensive discussion of the entire matter is contained in that Proposed Order.

During the Commission's review of the Proposed Order, questions arose regarding the detailed implementation of the decommissioning condition, Condition 16, included in the Settlement. The Commission issued a Letter Order on February 27, 2003, in order to obtain answers to these questions. Savage Mountain filed a response to the Commission's Letter Order on March 5, 2003. The Maryland Office of People's Counsel requested the right to comment on responses received, by letter filed on March 4, 2003. In reviewing Savage Mountain's response, the Commission determined that it had several follow-up questions and that it needed additional time to ensure a complete review of the response. Consequently, on March 6, 2003, the Commission issued a second Letter Order to the Parties. This Letter Order notified the Parties of the Commission's decision to conduct further review on its own motion in this matter, pursuant to PUC §3-114(c)(2)(ii). The March 6<sup>th</sup> Letter Order asked the follow-up questions generated by the Applicant's response to the Commission's first set of questions, and also afforded Parties the opportunity to comment on responses received. Savage Mountain filed a response to the second set of Commission questions on March 11, 2003. OPC filed a letter on March 12, 2003, stating that it had no additional comments to offer with regard to the clarification of Condition 16. The filings made in response to the Commission's two Letter Orders are part of the official record in this case, and the clarifications and commitments made in those responses have been relied upon by the Commission in reaching the decision made in this Order.

## DISCUSSION

Condition 16 of the Settlement provides as follows:

16. Decommissioning of turbines will be undertaken by the Applicant at private expense. The Applicant will establish a bond or similar mechanism to ensure that future funds are available to support decommissioning. In the event that any turbine does not operate for a period of one year, the Applicant shall remove that turbine assembly unless the Applicant obtains an extension from the PSC [Public Service Commission]. If the Applicant requests an extension of the one-year period, the request must be in the form of a written motion to the PSC describing the operational difficulty and describing the steps that the Applicant is taking to resolve it.

The two sets of questions that the Commission asked with respect to this condition were intended to elicit clarifying responses to enable the Commission to understand how the condition would be implemented on a detailed, practical level. The underlying concern is that no "rusting hulks" be left on the landscape once the useful life of any equipment expires or the financial viability of the project or any portion of the project ends. The responses provided by the Applicant to the Commission's two sets of questions have clarified the implementation of Condition 16. The Commission finds that the commitments made by the Applicant in its two sets of responses satisfy its underlying concern. While the Applicant's complete responses are part of the record and form the basis for this finding, the Commission notes particularly the following clarifications and commitments made by the Applicant:

1. In its March 11, 2003, response the Applicant stated a very strong preference for employing a fully cash-funded escrow account as the mechanism for

assuring that funds to completely dismantle and remove the entire physical plant are available when needed. The Commission shares that preference. The escrow account would contain an escalation clause to adjust for inflation. (March 11, 2003, Applicant Response, p. 2, response to (4)).

2. The agreement containing the terms of the escrow account (or bond or other "similar mechanism," collectively hereinafter, the "financial instrument") will be filed with the Commission. (March 11, 2003, Applicant Response, p. 2, response to (3)).

3. The financial instrument will be put into place prior to construction of the turbine assemblies, with the expectation that the mechanism will be put into place at the closing of the construction loan transaction. (March 11, 2003, Applicant Response, p. 1, response to (1)).

4. The dollar amount of the financial instrument will be based upon estimated third-party costs to complete the decommissioning process for this particular project. The Applicant offered to submit estimates of these costs, prepared by a certified contractor, to the Commission before the dollar amount of the financial instrument is determined. (March 11, 2003, Applicant Response, p. 1, response to (2)). The Commission accepts the Applicant's offer and intends to carefully review the provided estimate. The Applicant provided a "very rough" estimate of the decommissioning cost per turbine of \$23,000, based upon contractor estimates for a West Virginia wind farm project; the stated intention of providing this estimate was to convey the "orders of magnitude involved." (March 11, 2003, Applicant Response, p. 1, response to (2), footnote 1). In its review of the estimate provided by the Applicant prior to the determination of the dollar amount of the financial

instrument, the Commission will use this "very rough" estimate as a guide for the appropriate "order of magnitude" of the estimate. The amount of the financial instrument will be adequate to accomplish the removal of the physical plant and to leave the landscape in good condition. (March 5, 2003, Applicant Response, pp. 5-6, response to (d)).

5. The beneficiary of the financial instrument will be the landowner (March 5, 2003, Applicant Response, p. 5, response to (b) and March 5, 2003, Applicant Response, p. 6, response to (e)). In order to ensure that the burden of decommissioning is not shifted to taxpayers, funds disbursed from the financial instrument will be applied solely to accomplish the removal of the physical plant and the restoration of the land if the Applicant fails to complete the decommissioning itself. This limitation is consistent with the purpose for which the financial instrument will be established. (March 5, 2003, Applicant Response, pp. 3-4, (2<sup>nd</sup> full paragraph on p. 3 and 3<sup>rd</sup> paragraph carrying over to the top of p. 4)).

6. The financial instrument will be administered by an insurance company, surety company or commercial bank, as appropriate. (March 5, 2003, Applicant Response, p. 5, response to (b)).

7. The financial instrument will be structured to isolate and protect it from the Applicant's bankruptcy estate should a bankruptcy occur. (March 5, 2003, Applicant Response, p. 7, response to (h)).

8. The Applicant will make an annual filing detailing the status of the financial instrument. (March 11, 2003, Applicant Response, p. 2, response to (5)).

9. Condition 16 covers the removal of the entire assembly, with nothing left behind. (March 5, 2003, Applicant Response, p. 7, response to (i)). The term "decommissioning" includes the removal of the structures and the restoration of the land to good condition. (March 5, 2003, Applicant Response, pp. 7-8, response to (j)).

A complete discussion of the remainder of the provisions of the Settlement is contained in the Hearing Examiner's Proposed Order. The Hearing Examiner thoroughly examined the Settlement and the evidence in this matter, and properly concluded that the applicable statutory requirements, contained in PUC §§7-207 and 7-208, have been satisfied. Consequently, the Commission accepts the Settlement in its entirety, as clarified with respect to Condition 16 in the Applicant's March 5, 2003, and March 11, 2003, responses to the Commission's February 27, 2003, and March 6, 2003, Letter Orders. The Commission supports the addition of this renewable resource to the State's generation assets in furtherance of the goals and requirements of PUC §7-516(b).<sup>1</sup> The Commission accepts the clarifications and commitments made by the Applicant in its March 5, 2003 and March 11, 2003, responses.

IT IS, THEREFORE, this 20<sup>th</sup> day of March, in the year Two Thousand and Three, by the Public Service Commission of Maryland,

ORDERED: That the Commission hereby adopts the Proposed Order of the Hearing Examiner issued on February 4, 2003, and accepts the Agreement of Stipulation and Settlement filed by the Parties on January 14, 2003, together with the clarifications and

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<sup>1</sup> PUC §7-516(b) provides that: "An investor-owned electric company shall continue to provide at least the same percentage of electricity from available renewable energy resources, at a reasonably comparable cost, as the electric company provided in 1998." The Savage Mountain project adds to the amount of "available renewable energy resources."

commitments made by the Applicant, with respect to Condition 16 of that Settlement, in the letters the Applicant filed on March 5, 2003, and March 11, 2003.

By Direction of the Commission,

Donald P. Eveleth  
Assistant Executive Secretary

DPE:nrm