



Visual Assessment Report

Proposed Rocky Forge Wind Energy Project
North Mountain
Botetourt County, Virginia

Updated:
October 8, 2019
Prepared by:
Hill Studio



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Introduction

The Rocky Forge Wind project was approved in February 2016 with a Special Exception Permit (SEP). The 2015 Visual Assessment Report was a part of the SEP application. The 2015 report evaluated the installation of 25 wind turbines at a height of 550 feet. The developer of the project is now requesting an amendment to the SEP to reduce the number of wind turbines to 22 and increase the height of those turbines to 680 feet. This 2019 update of the original 2015 report has been composed to describe and predict potential changes to the visual quality of northern Botetourt County and surrounding areas based on the proposed changes. This work was commissioned as an independent assessment by Rocky Forge Wind, to provide information for the proposed SEP, addressing the visual impact analysis of Botetourt County Ordinance 25-446 Wind Energy Systems. Segments of this report are formatted to address Sections 8(d) and parts of 8(f) of the ordinance. This work was produced by a team of landscape architects and planning professionals at Hill Studio in Roanoke, Virginia.

Proposed Action

According to the Rocky Forge Wind website, “the Rocky Forge Wind project provides an opportunity to help address Virginia’s growing electricity demand with clean, homegrown energy, while diversifying Botetourt County’s economy and supporting jobs in the local community. Apex Clean Energy of Charlottesville, Virginia, is actively developing Rocky Forge Wind, which is expected to generate enough energy to power up to 20,000 homes annually. Located in rural Botetourt County, adjacent to existing transmission lines on private land, the area under consideration is suitable for a wind energy project based on local wind data and these attributes:

- Verified wind resource
- Existing high-voltage power lines
- Expansive private land
- Proximity to state highways

The wind turbines are proposed to be placed in a formation that occupies two parallel and converging ridgetops on North Mountain in Northern Botetourt County. The wind turbines are proposed to be white in color, per requirements by the Federal Aviation Administration. Sited on monopole towers, approximately 16’ diameter at the base, they rise 425’ to the hub, and will have blades that may reach up to 680’ from the ground, measured from the tower base.

The visual quality studies and assessments included herein are based on these dimensions, provided by Rocky Forge Wind. These are meant to show the maximum scale of turbines under consideration for the project:

- Base Height: 425’
- Base Width (at the bottom) : 16’
- Base Width (at the top): 12’
- Base Offset (from the Blades) : 10’
- Nacelle length: 71’
- Nacelle Radius: 7’
- Blade Length: 255’
- Blade Width (at widest point) : 13’

The turbine modelled in the visual simulations is model 5.5-158 manufactured by General Electric. The final wind turbine model may vary, therefore simulations were scaled to a maximum 680’ blade tip height. Manufacturer’s literature with illustrations was supplied to Hill Studio for use in the visual representations.

Existing Visual Environment

Northern Botetourt County—the proposed location of the Rocky Forge Wind project—is characterized by agricultural and forestry land uses. This predominantly rural environment features the historically-tilled floodplain and lowlands at the upper reaches of the James River, set against pastured valleys and steep wooded mountains, which rise in the vicinity of the proposed project from elevations of about 1000’ near the riverside to above 3000’ at the peaks of the mountains. Several miles north and west of the proposed site, mountains align in a long NE-SW range to form the eastern slope of the Alleghenies, which bound the western edge of the viewshed and rise to elevations of 3200’ in the immediate area. The municipalities of Clifton Forge, Covington, and New Castle are aligned in this formation to the north and west. South and east of the site, the rolling terrain of Botetourt features hill towns and small farms in a pattern that stretches several hundred miles to the north and east in Virginia’s Great Valley. Located 15 miles from the site, Fincastle is the nearest example of a Great Valley county-seat, as is Lexington, 14 miles northeast of the site. Bounding the viewshed from about 11 miles southeast of the proposed project site are the Blue Ridge Mountains, which host nationally-significant tourism destinations, such as the Blue Ridge Parkway and the Appalachian Trail.



GIS Mapping

AREA OF POTENTIAL VISUAL EFFECT

Viewers and Change in the Landscape

This visual quality study is formatted to be compatible with both state and national visual quality methodologies currently in place and operating in the region. The George Washington and Jefferson National Forests, the Blue Ridge Parkway, and Virginia Department of Conservation and Recreation assess their lands according to visual quality methods or objectives. These agencies use these methods to prioritize scenic resources for status and protection. To relate with their methodologies, our study of visual quality and change in the landscape bases change upon several fundamental assumptions. Our methodology considers:

1. Number of viewers who will experience the change
2. Relative distance from the viewer to the change in the landscape
3. Potential sensitivity of the viewer to the change

Each of these dimensions in perception is considered to predict the relative impact of the change in the landscape to people's visual experience of the region. These dimensions are defined and discussed below:

1. Number of viewers who will experience the change:

When considering a change in the existing landscape, the number of viewers who will experience the change affects the magnitude of the impact. For example—all other factors being equal—a change in the landscape visible to only a few people will have a lesser impact than a change that would be seen by tens of thousands of people per day.

2. Relative distance from the viewer to the change in the landscape:

Generally, the closer the change is to the viewer, the more it is realized, because it occupies more of the viewer's view. For example, a new warehouse built 5 miles away might not be readily perceived by a nearby homeowner. However, the warehouse built just a few feet away from the house may be a big concern to the very same homeowner. A warehouse built 5 miles away would only be a speck on the horizon. However, one built adjacent would occupy a much greater percentage of the view from the house window. Therefore, the distance to the object is an important measure of the potential impact.

Landscape architects typically subdivide distance from the viewer into three different categories: foreground, middleground and background. These can be

compared by discussing how one perceives something as simple as trees. In the foreground we can see individual leaves on the branches. The tree in the middleground can be differentiated from neighboring trees, but it is impossible to distinguish individual leaves. In the background, a single tree cannot be distinguished from neighboring trees. The trees are seen as a forest.

There are many factors that affect where the dividing line is drawn between the foreground, middleground, and background. As professionals' opinions vary, there is no absolute consensus on where these boundaries are drawn. To correspond with the USFS methodology for Federal lands near the proposed wind turbine site, we have set the dividing lines as follows:

Foreground 0 – 2000'

Middleground 2000' – 5 miles

Background More than 5 miles

With regard to impact, the foreground view is considered to have greater visual impact than a middleground view. A middleground view is considered to have greater visual impact than a background view.

3. Potential sensitivity of the viewer to the change:

The third topic deals with the fact that some viewers may have a higher sensitivity to change than others. For example, when people quest for experiences in areas away from visible signs of mankind, they may be particularly sensitive to views of a windfarm. Viewers are likely to be more sensitive to views of the windfarm from natural or cultural sites than views from other non-designated lands. A windfarm seen from an area defined as sacred or important—like national parks or monuments—would be more subject to viewer sensitivity than a windfarm seen from a traditional junkyard. The relationship between the windfarm and viewers while visiting some of these pristine resources is discussed in the map discussions below.

Geospatial Analysis Modeling

A geographic information system (GIS)—a powerful tool used to assist in understanding the general patterns of the visual landscape— was used by Hill Studio to assist in the prediction of potential windfarm visibility. The Spatial Analysis program was used to generate a Digital Elevational Model (DEM) in the computer, resulting in a three-dimensional model simulating the topography in the study area. This virtual landscape is represented by a series of cells or pixels, 100' x 100' in size. The proposed wind turbines were then placed in the model. Cells at the proposed wind turbine locations were elevated to proposed wind turbine height. Two height studies were performed measuring from the tip of the blade at its highest point above the ground; one with the updated turbines specifications (680') and one with the originally approved specifications (550').

The computer was then queried to report which cells in the study area were potentially visible from each of the elevated locations. The computer performed a radial scan from the elevated cell representing the wind turbine height. The query resulted in a color map of the cells that are potentially visible, due to terrain. The query was repeated for each of the 22 proposed wind turbines, then all cells potentially visible from all the wind turbines were processed into a composite montage.

Considerations

The analysis model is very useful at the regional scale, but it is a simple model. Its coarse overview should be supplemented with field verification for specific sites. In discussion of the potential issues of elevation models, consider several additional complexities not addressed:

1. First, the model assumes that if cells on the ground can be seen from the top of the wind turbine, then the top of the wind turbine can be seen from the cells. We have found no evidence to suggest this fundamental assumption is not always correct.
2. Secondly, the 100'x 100' cell size assumes the cell is entirely the same elevation. Although this size has become much more refined in recent years, there is still terrain variation within the cell that is not accounted for in the model. Rocks, gullies, berms and other detailed modifications may further obscure or provide for views beyond the limits of the analysis.
3. Third, for decades since the invention of this medium, it has been standard practice for analysis models to be created and studied without the tree cover being a part of the visual analysis. The Rocky Forge analysis considers only terrain and its relationship to visibility. The Botetourt County landscape provides a number of forests, buildings, and other objects that help to buffer and mitigate the views beyond the bare-earth scenario depicted on the analysis. When considering the detail level of potential cells that

can view the wind turbines, one might additionally consider site-specific groves of trees or forests or buildings between the viewer and the wind turbines, which can obscure views and further reduce the visibility of the wind turbines from the viewer.

Especially due to forest cover (page 14) , the field experience of visibility of the wind turbines can be predicted to be somewhat less than the area of potential visual effect shown in the other GIS maps, particularly in the summer months.

550' Map

The first GIS map, on page 11, shows the area of potential visual effect of the for the original proposed turbine height, relative to a viewer standing on the study area terrain. This answers the question "In the study area, where does the terrain allow for views to the tip of the wind turbines?" The tips are placed at 550' above the ground as a maximum case scenario for turbine selection.

On the map, a viewer in almost all the terrain within the 2000' foreground (99%+) can see one or more of the blade tips. Substantial amounts (58%+) of the middle-ground (2000' to 5 miles) can also see the tips. In the background (beyond 5 miles), terrain allows for views to the tips from higher ground, especially higher ground with a foreground valley. Nearby mountains obscure the views when they are between the viewer and the windfarm. The 550' height was the proposed turbine height approved in 2016."

680' Map

The second map, on page 12, shows the area of potential visual effect of the tip of the blade, at its highest point, relative to a viewer. This answers the question "In the study area, where does the terrain allow for views to the tip of the wind turbines?" The tips are placed at 680' above the ground as a maximum case scenario for turbine selection.

On the map, a viewer in almost all the terrain within the foreground (99%+) can see one or more of the blade tips. Substantial lands of the middleground (62%+) can also see the tips. In the background (beyond 5 miles), terrain allows for views to the tips from higher ground, especially higher ground with a foreground valley. Nearby mountains obscure the views when located between the viewer and the windfarm.

The 680' height is the updated wind turbine tip height, so this model was used as a base for further analysis.

680' Map Enlarged

The third map, on page 13, shows the 10-mile area surrounding the turbines with the potential visual effect of the highest point relative to the viewer. This provides a more detailed version of the area closest to the wind turbines.

Overlay Maps

To correspond with Botetourt County Wind Ordinance, Section 8f, a series of overlay maps was created to demonstrate the potential visual effect on natural and cultural resources within a 5-mile radius of the proposed wind turbines. The following pages illustrate maps showing potential visual effect on the special-status lands in conservation categories.

National Landcover Database

Page 14, National Landcover Database, shows various vegetation cover over the entire study area. The forested areas are shown in green tones, and open fields and crops are in the yellow and lighter green tones. The area within the 5-mile study area is overwhelmingly forested, with only 10% of the area in open field categories. For the purposes of visibility studies, the taller vegetation types are separated out for analysis, as they better mitigate views. Combined, deciduous forests (52%), evergreen forests (7%), mixed forests (30%) cover approximately 90% of the area within 5 miles. When the viewer is beneath the canopy of these trees, the overhead forested landscape provides cover to mitigate the visibility of the windfarm.

Archaeological and Historic Resources

The data collected and analyzed by Dutton + Associates verified the presence of two National Register of Historic Places (NRHP) and Virginia Landmarks Register (VLR)-listed archaeological sites within the buffer area. The Bessemer and Gala Archaeological Sites are pre-historic Native American villages located in the floodplain of the James River. These archaeological sites are located on private lands and are not tourist sites. While one of the sites appears to be in the area of potential visual effect, it is not anticipated that the wind turbines will impact its NRHP/VLR listing since their existence will not compromise the archeological site's potential to yield information important in history.

Page 15, the Historic Architectural Resources Map illustrates the area of potential visual effect as it relates to the previously recorded historic resources within 5 miles of the proposed wind turbines. Emmanuel Episcopal Church was also identified as a potentially eligible historic resource within the buffer area. The analysis does not show Emmanuel Episcopal Church in the area of potential visual effect. The bulk of the previously recorded historic resources (defined as being over 50 years old) identified within the 5-mile buffer area have not been formally evaluated for listing in the NRHP or VLR. The Historic Architectural Resources Map shows these approximately 218 individual resources spread throughout the 5-mile buffer area, at varying distances from the proposed wind turbines. While the analysis indicates that the wind turbines will be in the area of potential visual effect for a limited number of these historic resources, it is not anticipated that the wind turbines will impact their potential individual eligibility for listing in the NRHP and/or VLR.

Protected and Conserved Lands

Page 16, protected and conserved lands, includes lands owned by the George Washington and Jefferson National Forests, Virginia State Parks, Virginia Wildlife Management Areas and State Forests, and privately-held lands known to be in conservation easements. Within the 5-mile study area boundary, the following conservation lands are in the area of potential visual effect:

Within the Boundary

1.6% of the land within 2000' of the windfarm is in the protected and conserved lands category. All of this land belongs to the Forests.

28.8% of the land within 5 miles of the windfarm belongs in the protected and conserved lands category. This includes land in the Forests, Anthony's Knobs and Blue Suck Barren special biological areas, Moore's Creek State Forest, and land in conservation easements belonging to Virginia Outdoors Foundation and Blue Ridge Land Conservancy.

There are no privately owned conservation easements within 2000' of the windfarm.

4.8% of the land within 5 miles of the windfarm is in the private conservation easement category. These easements are held by Blue Ridge Land Conservancy and Virginia Outdoors Foundation.

Within Area of Potential Visual Effect*

All of the protected and conserved lands within 2000' are within the area of potential visual effect. All of these lands belong to the Forests.

Approximately half (45.9%) of the protected and conserved lands within 5 miles are within the area of potential visual effect.

There are no privately owned conservation easements within 2000' of the windfarm.

Approximately half (53.7%) of the private conservation easements within 5 miles of the windfarm is in the area of potential visual effect. These easements are held by Blue Ridge Land Conservancy and Virginia Outdoors Foundation.

**The 2015 report calculated the conservation land in the visual effect area as a percentage of the total land as opposed to the percentage of the total conservation land. This description was updated to provide a more detailed explanation.*

Recreation Opportunity Spectrum

Page 17 shows lands owned by the George Washington and Jefferson National Forests, using their Recreation Opportunity Spectrum overlay system. This system delineates the recreational priority of their lands. One way the USFS categorizes their lands, is according to their availability for access and recreation, ranging from the most-accessible paved area to the most remote wilderness. According to the USFS (Tonto National Forest website), “The Recreation Opportunity Spectrum (ROS) is a classification tool used by Forest Service managers since the 70s to provide visitors with varying challenges and outdoor experiences. The ROS (U.S. Forest Service 1982) classifies forest service lands into six management class categories defined by setting and the probable recreation experiences and activities it affords including: urban; rural; roaded natural; semi-primitive motorized; semi-primitive non-motorized; and primitive. The setting characteristics that define ROS include physical, social and managerial. “Physical” setting characteristics include type of access, remoteness, and size of the area while “social” is based on the number of people encountered. Visitor management, level of development, and naturalness (evidence of visitor impacts and / or management activities) are setting characteristics for “managerial”.”

The USFS Recreational Opportunity Map indicates that within the 5-mile study area boundary, the analysis indicates following lands are in the area of potential visual effect:

Semi-Primitive Motorized (SPM):

Roaded Natural (RN):

The analysis indicates the more pristine land categories do not fall within the 5-mile boundary:

Semi-Primitive Non-Motorized Areas (SPNM)

Wilderness Areas

Scenery Management System

Page 18 shows lands owned by the George Washington and Jefferson National Forests, using their Scenery Management System, defining maps in a Scenic Integrity Objective overlay system. This is another system used by the Forest Service, developed to show the scenic priority of their lands. According to the USFS website (Tonto National Forest), “... The Scenery Management System provides a systematic approach for determining the relative value and importance of scenery in National Forest lands. Ecosystems provide the environmental context for the scenery management system. Ecosystems as recreational settings greatly affect the quality and effectiveness of the recreation experience. A key attribute of recreation settings is the quality of aesthetics. The SMS is to be used in the context of ecosystem management to inventory and

analyze scenery on National Forest lands, to assist in establishment of overall resource goals and objectives, to monitor scenic resources and to ensure high quality scenery for future generations.... The process for scenery management system involves identifying scenic components as they relate to people, mapping these components and assigning a value for aesthetics.”

From pdf maps that are available online for the GW&JNF master planning process, study area lands have been examined in the Scenic Integrity Objectives categories. Within the 5-mile study area boundary, the analysis indicates lands in these categories are in the area of potential visual effect:

Medium

Low

Within the 5-mile study area boundary, the analysis indicates lands in these higher-priority categories are not in the area of potential visual effect:

Very High

High

Scenic Rivers and Roads

Page 19, shows Scenic Rivers and Scenic Roads designated in the Virginia Outdoors Plan, hosted by Virginia Department of Conservation and Recreation. This state agency designates and maintains a program of Scenic Roads, Scenic Rivers, and Potential Scenic Rivers categories.

Scenic Rivers

According to the Virginia Outdoors Plan (see dcr.virginia.gov), the “Virginia Scenic Rivers Program’s intent is to identify, designate and help protect rivers and streams that possess outstanding scenic, recreational, historic and natural characteristics of statewide significance for future generations...The program’s focus is on enhancing the conservation of scenic rivers and their corridors. State and federal agencies must take into consideration how projects and programs affect state scenic rivers.”

The following scenic rivers are within the 5-mile study area:

James River*, a distance of 9.2 miles (4.07 miles in area of visual effect)

Scenic Roads

The Virginia Outdoors Plan also maintains a database of scenic roads. “There are both national and state-sponsored scenic road programs. The Virginia Byways program in Virginia, which is managed by Virginia Department of Transportation (VDOT) in partnership with the Department of Conservation and Recreation (DCR), recognizes natural, cultural, historical, recreational and archeological amenities of the commonwealth’s scenic roads. In addition,

*This section of the James River was designated as scenic in 2017 which resulted in a change since the 2015 report.

the unique and varied culture and character of the geographic regions of the Commonwealth are represented by designated Virginia Byways...Scenic Road designations include American Byways, Virginia Scenic Byways, National Forest Scenic Byways and American Automobile Association recognition.” The following special-status roads are located within the 5-mile study area:

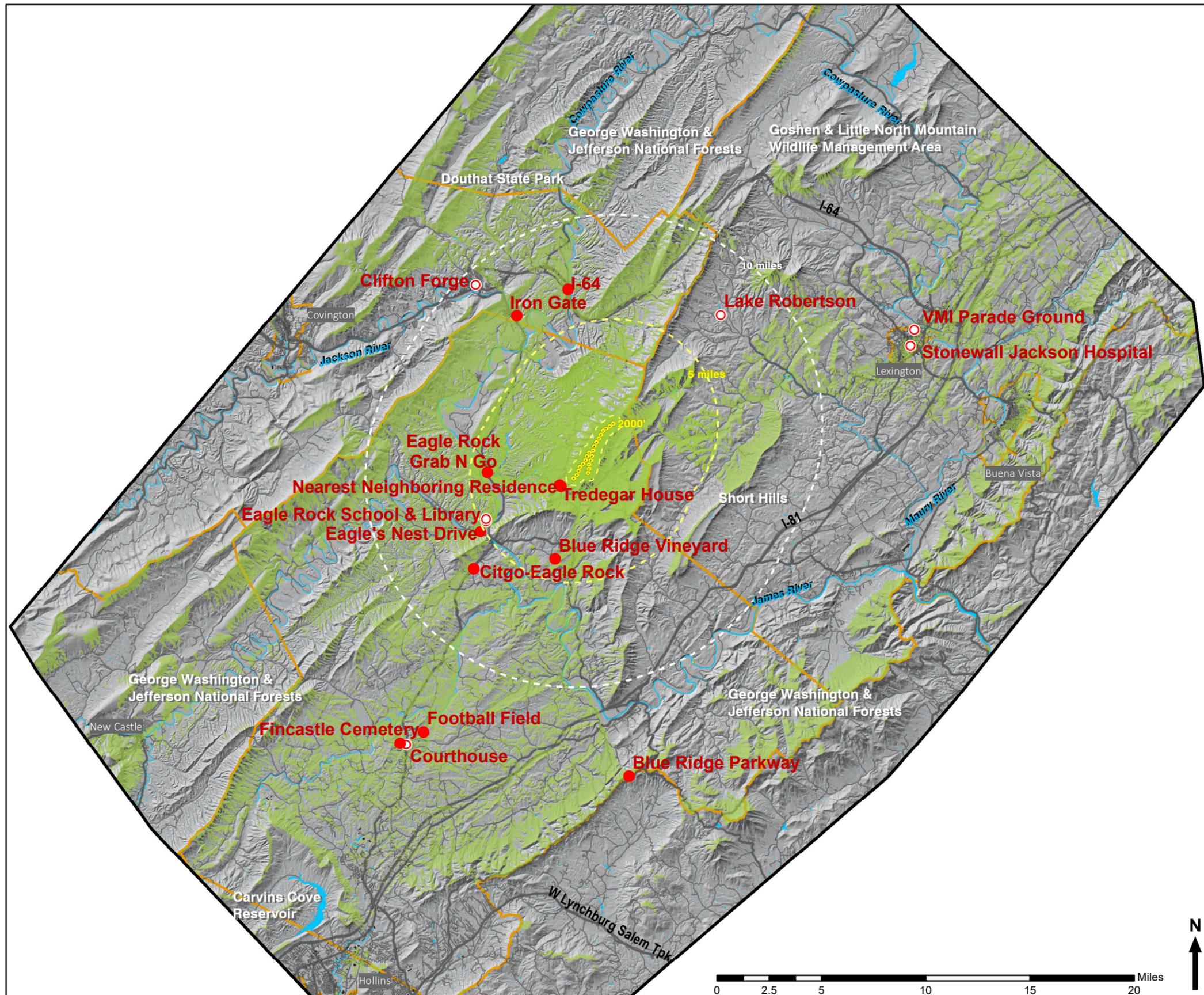
Interstate 64, a designated scenic road, from 2 miles NE of the 5-mile study area to points west of the study area, touches the north boundary of the study area for a distance of several hundred feet. The lower, eastbound lane allow a glimpse of the tips of the blades. The tips of the blades can be seen from the elevated westbound lane (see simulation of Interstate 64, page 64)

Botetourt Road (US 220) is a designated scenic road between Fincastle and Craig Creek Road. This road skirts the southwest boundary of the 5-mile study area for a distance of 1,700 linear feet. Because the segment within the study area is down in the valley near Eagle Rock, it is not likely that the windfarm can be seen from this road inside the study area.

North of Craig Creek Road, a designated Virginia Byway including a segment of Botetourt Road and Narrow Passage Road, traverses the study area for a distance of 7.66 linear miles near the southwest boundary. This byway will show a view of the windfarm along the US220 segment for approximately 2.26 linear miles (see simulation of Eagle’s Nest Drive, page 36). The analysis indicates that it will also show an occasional glimpse as it traverses east of Eagle Rock onto high points, where there are foreground open pastures and fields between the road and the windfarm.

Further Considerations

The geospatial analysis provides a broad overview of potential visual effect. Specific site-based observation points may benefit from additional field-observed resources that augment the study. To provide a more refined assessment of impact and supplement the work of the analysis model, Hill Studio personnel visited and assessed over a dozen sites around the county and beyond. Results of this analysis are discussed in the following chapter.



Legend

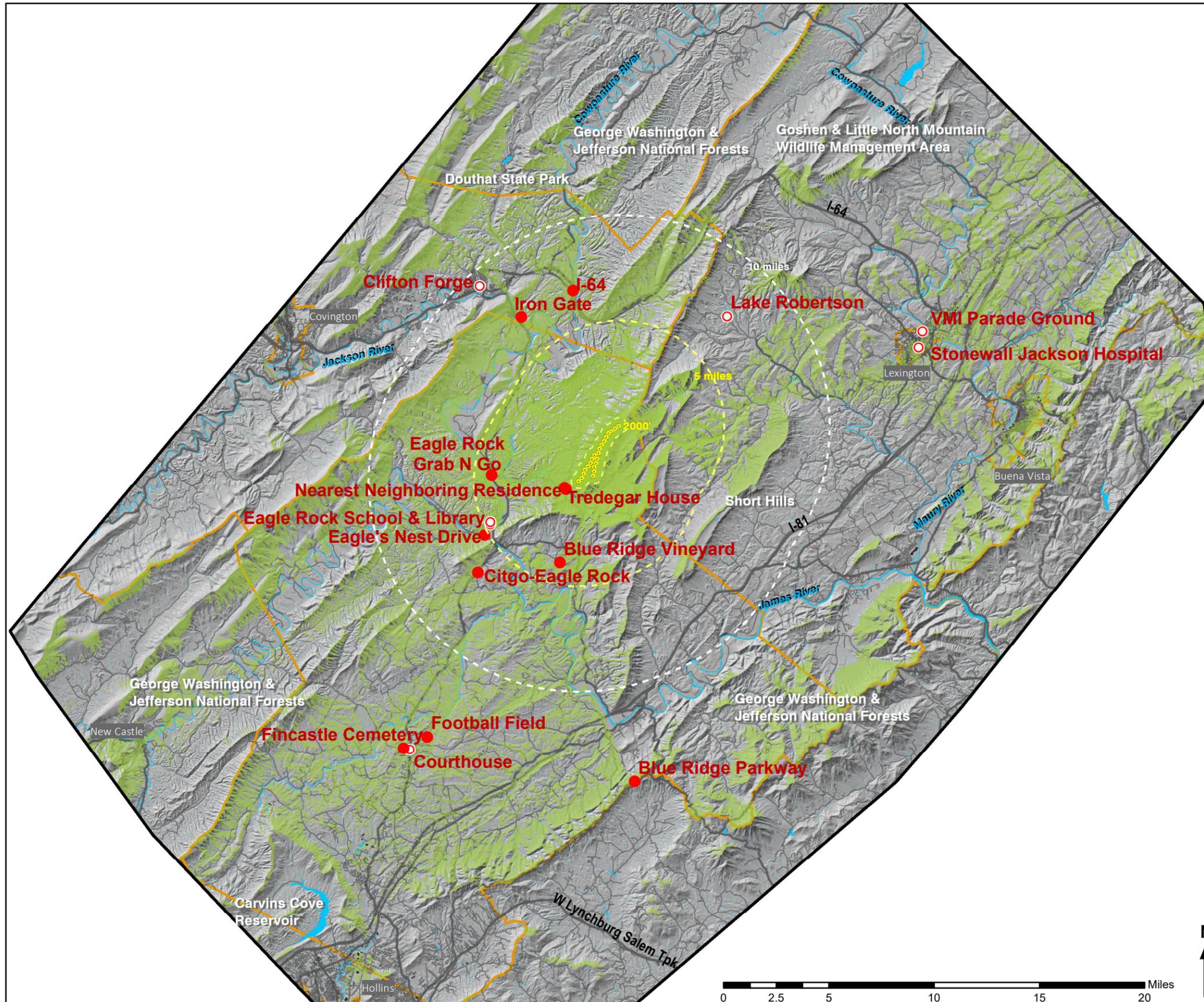
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- Foreground < 2,000'
- Middleground 2,000' to 5 Miles
- Background > 5 miles
- Wind Turbine Locations
- Visual Simulation Locations
- Other Locations Studied
- Road Center Lines
- Building Footprints
- County Boundaries



Rocky Forge Visual Assessment: Viewshed Analysis
 Area of Potential Visual Effect: 550 feet (comparison map from October 2015 study)
 Date: September 9, 2019



DEM is based upon preliminary design plans.
 Structure design and location will be finalized during
 the detail design and permitting process.



Legend

- Viewshed Analysis
- Foreground < 2,000'
- Middleground 2,000' to 5 Miles
- Background > 5 miles
- Wind Turbine Locations
- Visual Simulation Locations
- Other Locations Studied
- Road Center Lines
- Building Footprints
- County Boundaries

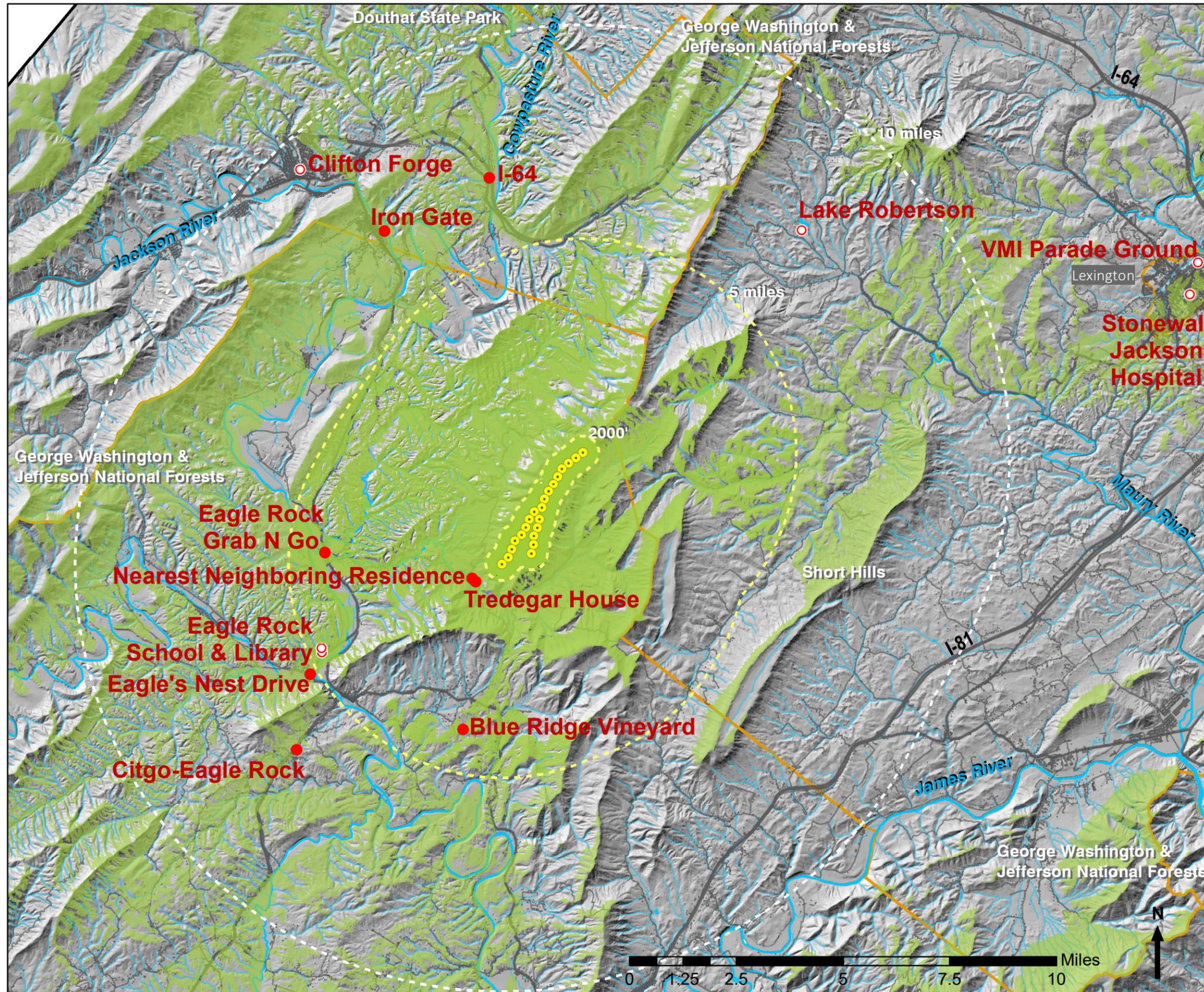


Rocky Forge Visual Assessment: Viewshed Analysis
 Area of Potential Visual Effect: 680 feet
 Date: September 9, 2019



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DEM is based upon preliminary design plans.
 Structure design and location will be finalized during
 the detail design and permitting process.



Legend

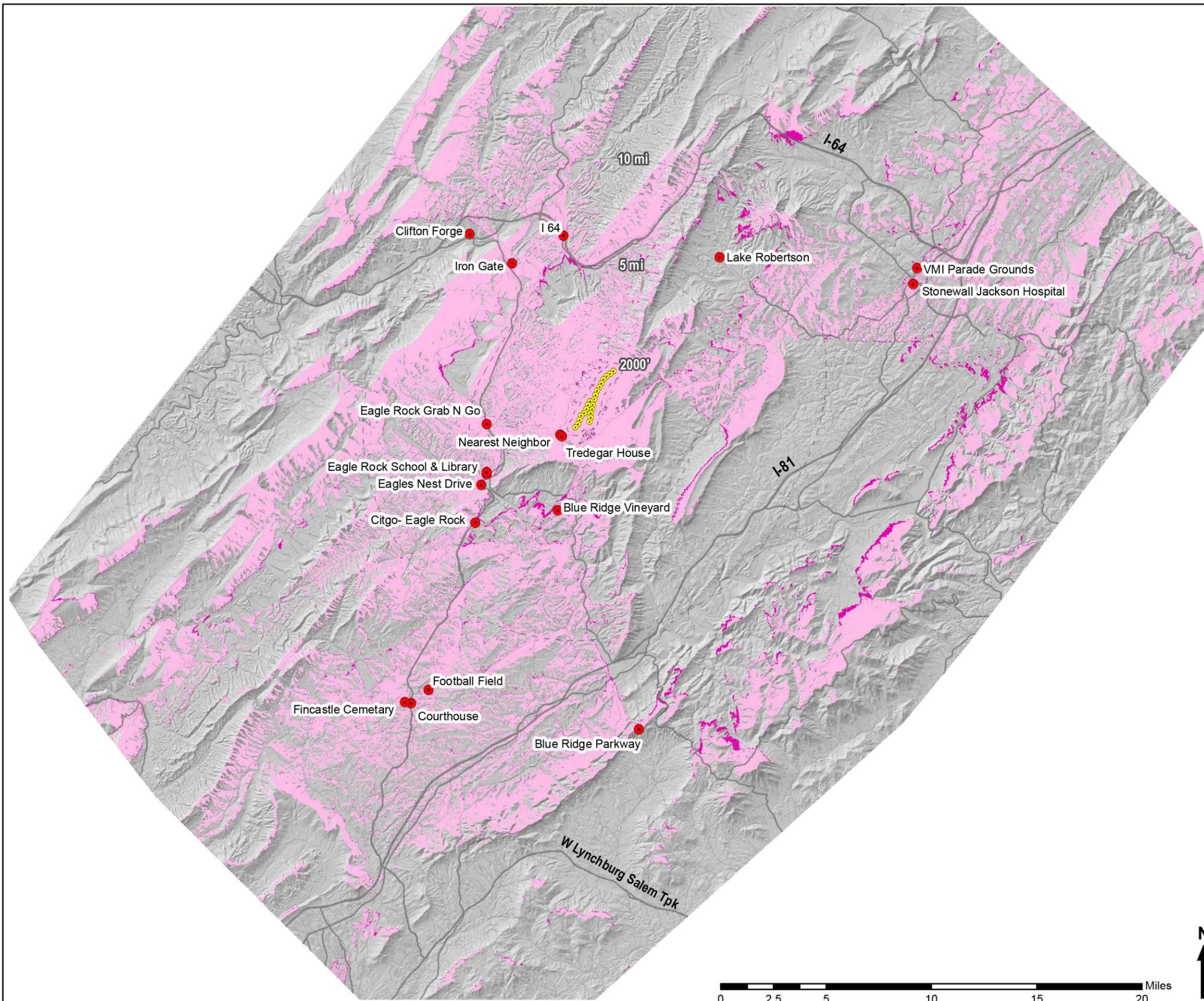
- Viewshed Analysis
- Foreground < 2,000'
- Middleground 2,000' to 5 Miles
- Background > 5 miles
- Wind Turbine Locations
- Visual Simulation Locations
- Other Locations Studied
- Road Center Lines
- Building Footprints
- County Boundaries



Rocky Forge Visual Assessment: Enlargment Showing 10-mile Detailed Area of Potential Effect
 Area of Potential Visual Effect: 680 feet
 Date: September 9, 2019

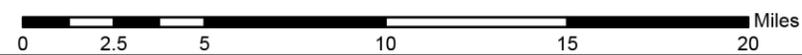


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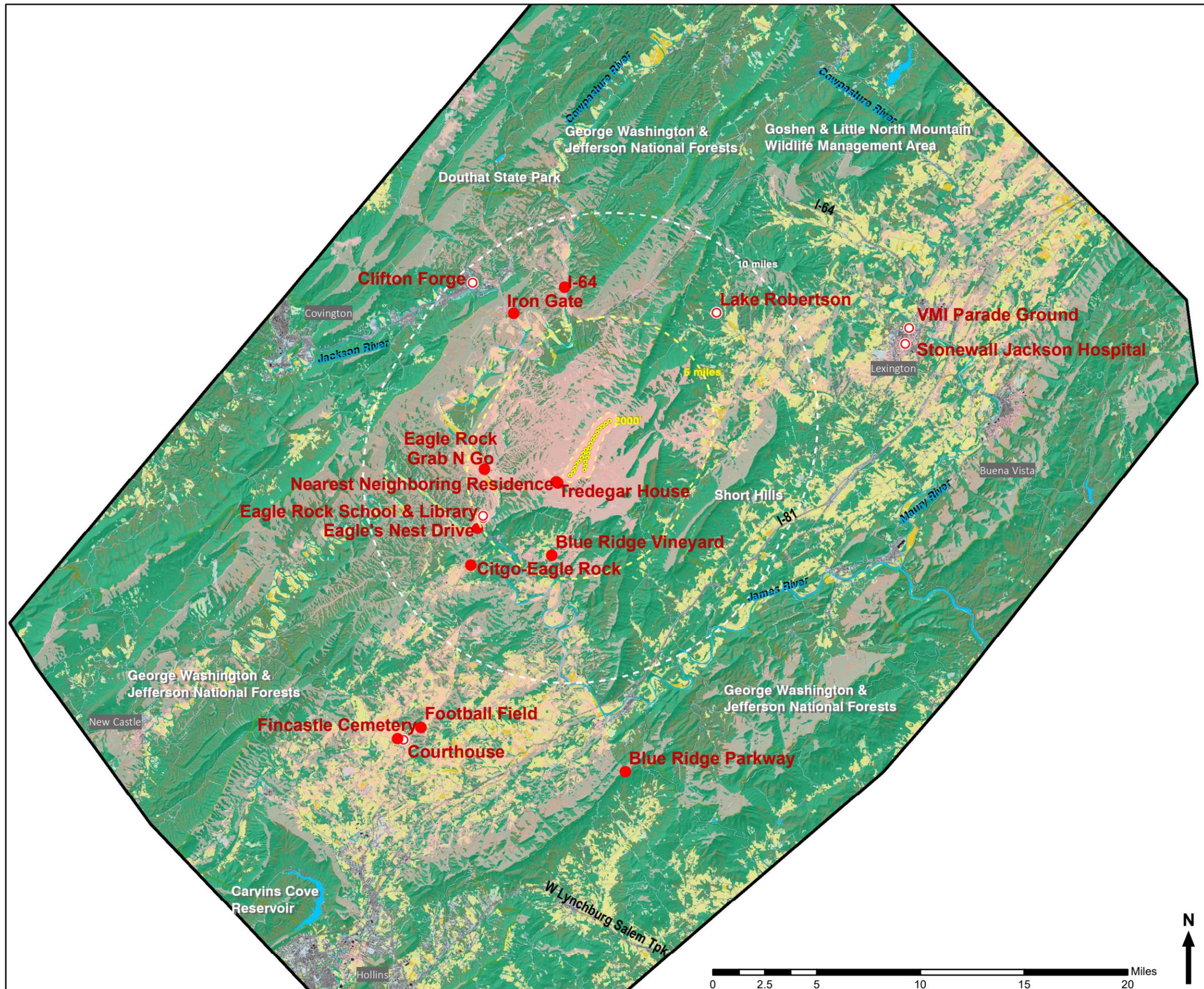
- 550'
- 680'



Rocky Forge Visual Assessment: Viewshed Analysis
 Wind Turbine Height Comparison
 Date: March 11, 2020



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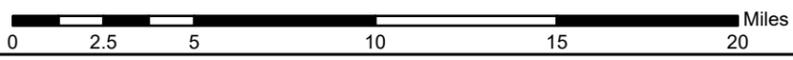


Legend

- Viewshed Analysis
- Foreground < 2,000'
- Middleground 2,000' to 5 Miles
- Background > 5 miles
- Wind Turbine Locations
- Visual Simulation Locations
- Other Locations Studied
- Road Center Lines
- Building Footprints
- County Boundaries

National Landcover Database 2016

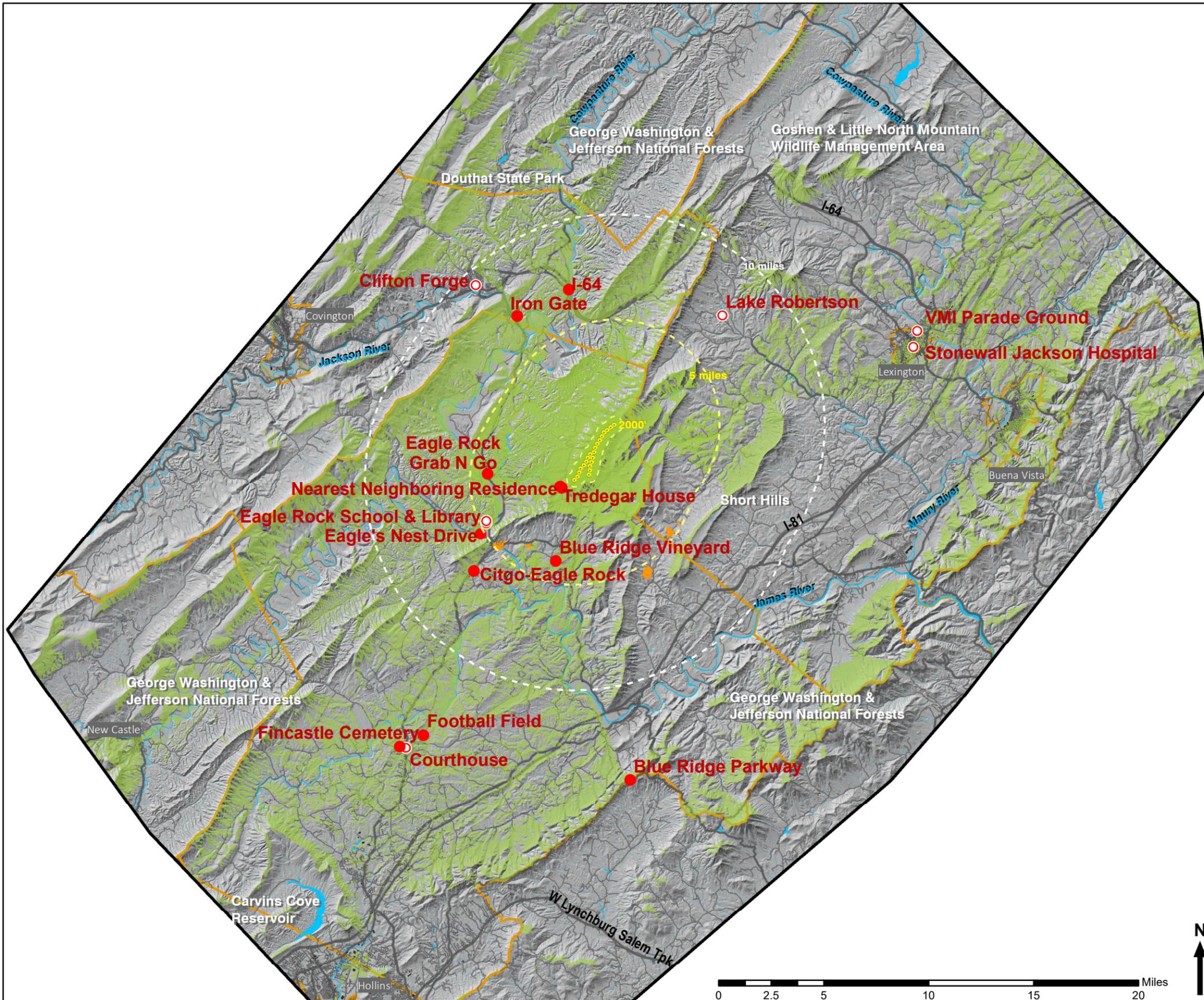
- Water
- Open Space
- Developed Lands
- Barren Land
- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Shrub/Scrub
- Herbaceous
- Pasture/Hay
- Cultivated Crops
- Woody Wetlands
- Emergent Herbaceous Wetlands



Rocky Forge Visual Assessment: Viewshed Analysis
 National Landcover Database 2016 (NLCD 2016)
 Date: September 9, 2019



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 the detail design and permitting process.



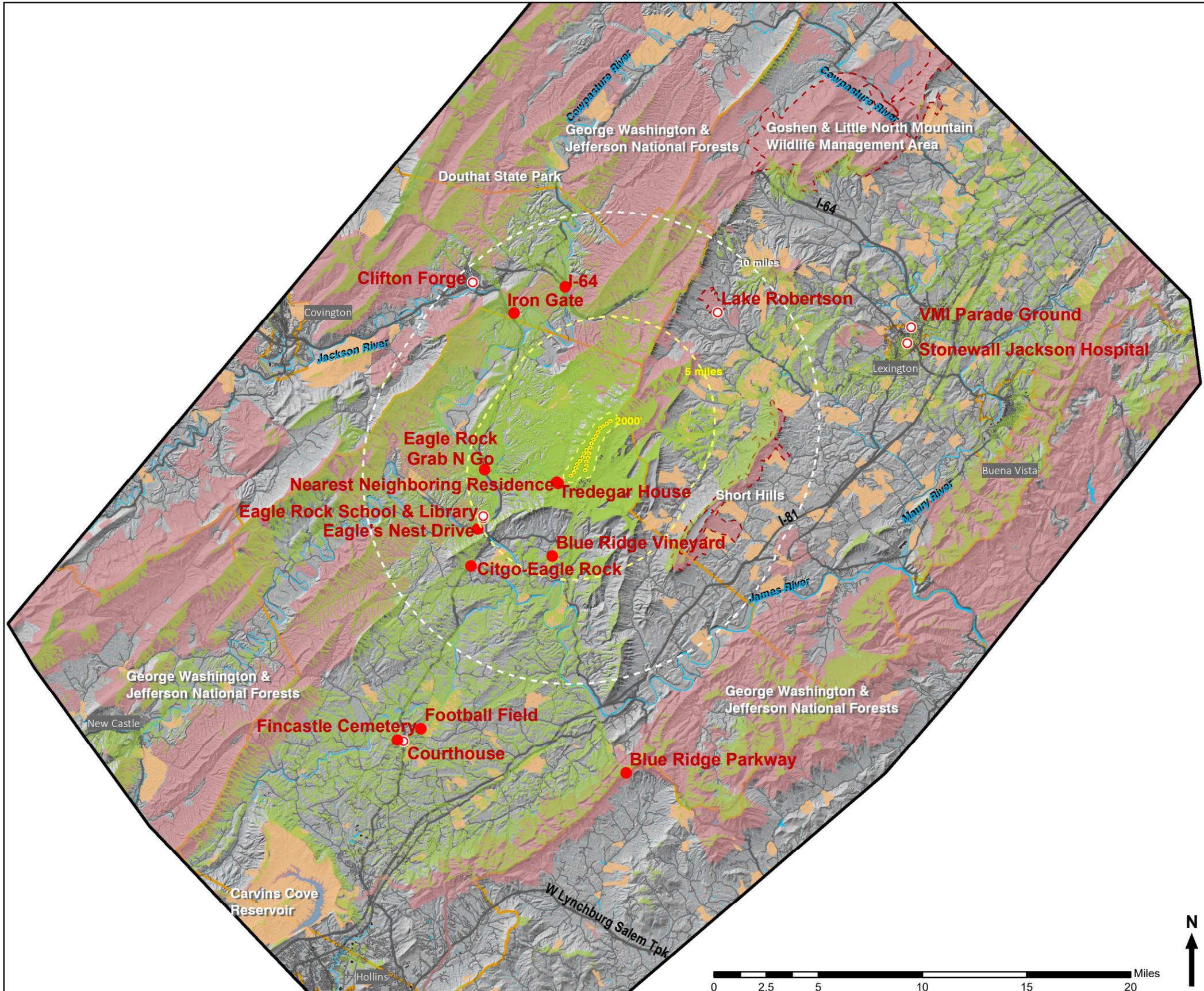
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- Viewshed Analysis
- Foreground < 2,000'
- Middleground 2,000' to 5 Miles
- Background > 5 miles
- Wind Turbine Locations
- Visual Simulation Locations
- Other Locations Studied
- Road Center Lines
- Building Footprints
- County Boundaries
- Historic Architectural Resources

Rocky Forge Visual Assessment: Viewshed Analysis
 Historic Architectural Resources
 Date: September 9, 2019



DEM is based upon preliminary design plans.
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 the detail design and permitting process.



Legend

- Viewshed Analysis
- Foreground < 2,000'
- Middleground 2,000' to 5 Miles
- Background > 5 miles
- Wind Turbine Locations
- Visual Simulation Locations
- Other Locations Studied
- Road Center Lines
- Building Footprints
- County Boundaries
- Conservation Easements
- Protective Management Lands
(National & State Parks/Forests/Reservoirs/Scenic Areas)
- Wildlife Management Areas

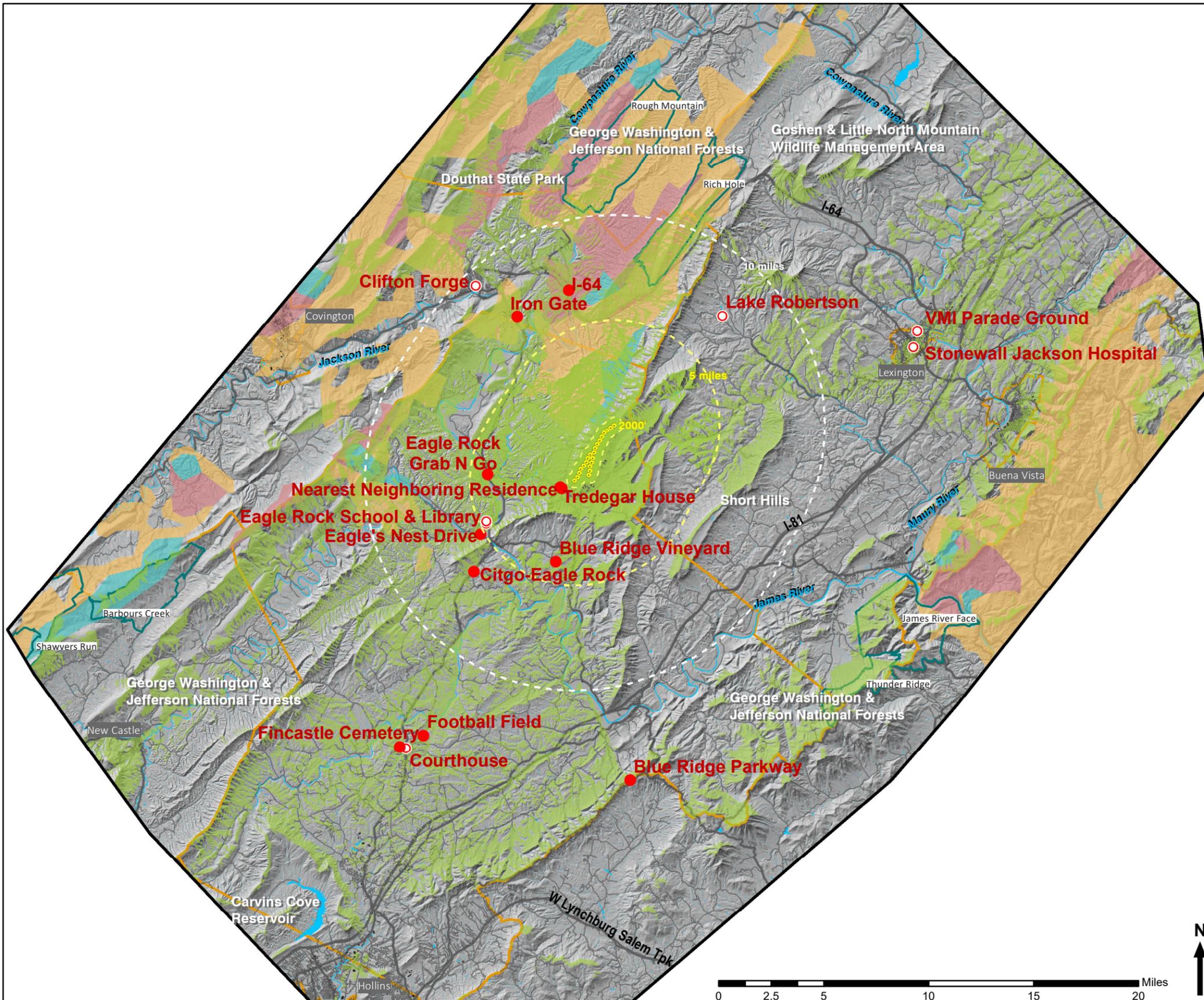


Rocky Forge Visual Assessment: Viewshed Analysis
 Conservation Lands
 Date: September 9, 2019



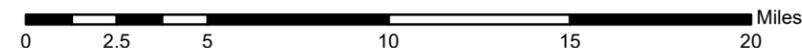
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Legend

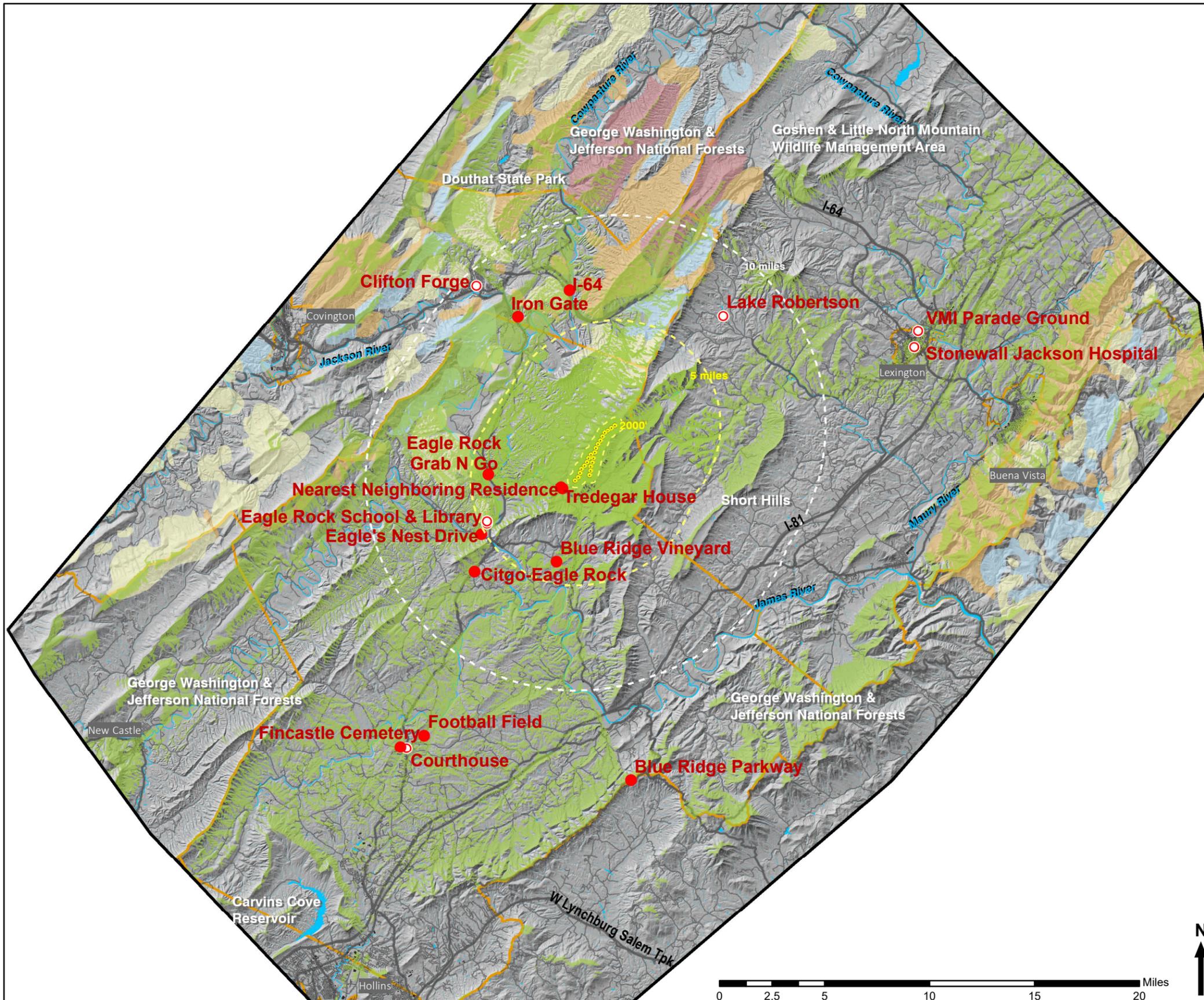
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- Building Footprints
- County Boundaries
- USFS Recreational Opportunity Spectrum 2008 Inventory by George Washington National Forest
- SPNM (beyond 1/2 mile from any road/utility)
- SPM (beyond 1/2 mile from improved road/utility)
- RN (within 1/2 mile from any road/utility)
- Designated Wilderness



Rocky Forge Visual Assessment: Viewshed Analysis
 USFS Recreational Opportunity
 Date: September 9, 2019

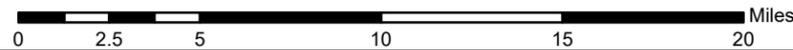


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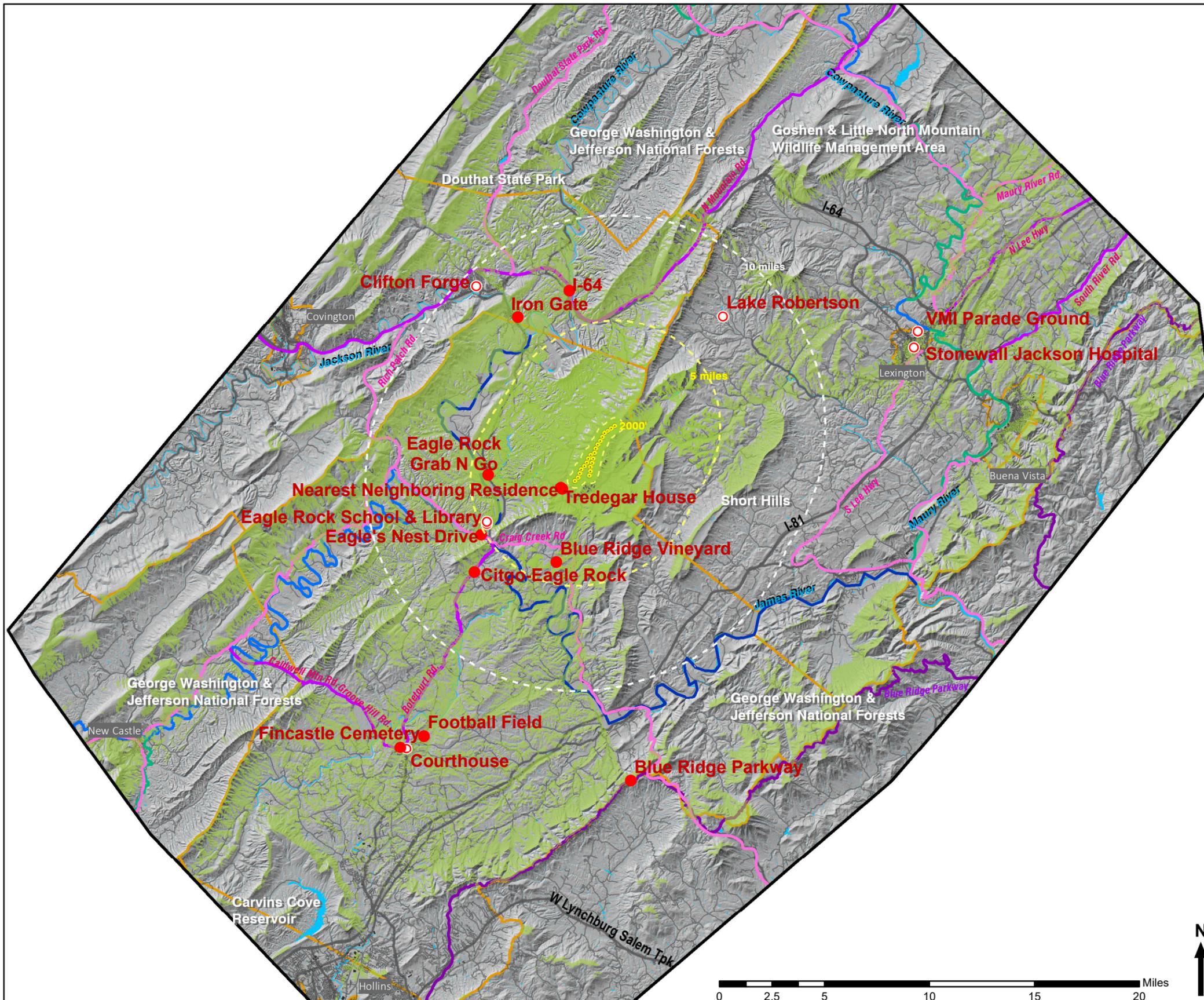
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 - County Boundaries
- USFS Scenic Integrity Objectives**
- Very High
 - High
 - Medium
 - Low



Rocky Forge Visual Assessment: Viewshed Analysis
 USFS Scenic Integrity
 Date: September 9, 2019

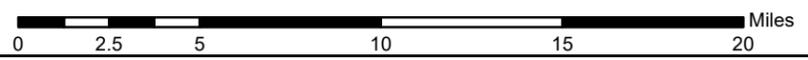


DEM is based upon preliminary design plans.
 Structure design and location will be finalized during
 the detail design and permitting process.



Legend

- Viewshed Analysis
- Foreground < 2,000'
- Middleground 2,000' to 5 Miles
- Background > 5 miles
- Wind Turbine Locations
- Visual Simulation Locations
- Other Locations Studied
- Road Center Lines
- Building Footprints
- County Boundaries
- Virginia Byways
- Scenic Roads
- Blue Ridge Parkway
- Designated Scenic Rivers
- Potential Scenic Rivers
- Qualified Scenic Rivers
- Rivers & Streams



Rocky Forge Visual Assessment: Viewshed Analysis
 Scenic Roads & Rivers
 Date: September 9, 2019



DEM is based upon preliminary design plans.
 Structure design and location will be finalized during
 the detail design and permitting process.



Selected Sites

Selected Sites

To augment the work of the geospatial analysis, selected sites from around Botetourt County were pinpointed by government officials and community stakeholders and proposed for before and after simulations. Hill Studio personnel visited each of these sites, took a series of photographs, and analyzed the photographs for the potential to convey a comparison between the existing condition and the proposed condition once the wind turbines were built. A total of thirteen sites were originally selected for study, then expanded to eighteen. As part of the work to correspond with the Botetourt County Wind Ordinance, a slate of sites was provided by Botetourt County for visual assessment.

1. Fincastle Courthouse
2. Fincastle Cemetery
3. Football Field
4. Exxon Grab N Go
5. Eagle Rock Citgo
6. Iron Gate
7. Clifton Forge
8. Blue Ridge Parkway
9. Blue Ridge Vineyard
10. Eagle Rock School/Library
11. Eagles Nest Drive

In addition to these sites, Rocky Forge Wind requested that we study the visual impact from the nearest neighbor and historic Tredegar House to the proposed windfarm, and provide a general assessment of the Interstate impact.

12. Nearest Neighbor to the Project
13. Tredegar House
14. Interstate 81

Due to the new turbine heights for the 2019 update, Hill Studio studied four additional sites for visual effect at the request of Rocky Forge Wind.

15. Stonewall Jackson Hospital, Lexington
16. VMI Parade Ground, Lexington
17. Lake Robertson
18. Interstate 64

These selected view points in the middleground and background were reviewed by Hill Studio and photographed for potential inclusion in before/after analysis contrasting the existing scene with the proposed action and determining the extent of visual effect from these selected sites. We visited these sites and photographed them in late summer and early fall, 2015 and visited the additional locations in early fall, 2019.

The photographs and simulations in the section show the leaves on the trees toward the end of the growing season, before trees turn with fall color. Winter brings a time when the windfarm would be more visible, due to lack of leaves on deciduous trees. According to data from Virginia Tourism Corporation, the summer season corresponds to times people are outdoors more and travelers come to the highlands for hiking, and visiting the Forests, Scenic Roads and Scenic Rivers, the Blue Ridge Parkway and Appalachian Trail. The trees with leaves on correspond to times more visitors are in the region.

Hill Studio predicts that 8 of the proposed 18 sites will not have a significant view of the proposed windfarm. This is because it will be blocked by mountains, other buildings, and/or forests. Each is described below beginning on page 23, with our findings as to why further simulation work was not pursued.



Eagle Rock Citgo

Eagle Rock Citgo

The Citgo store located just outside of the town of Eagle Rock on the northbound side of US 220 is a popular convenience store for local residents. Hill Studio predicts that the windfarm, which is approximately 6.5 miles from the site, will not be visible due to the view being shielded by Rathole Mountain.

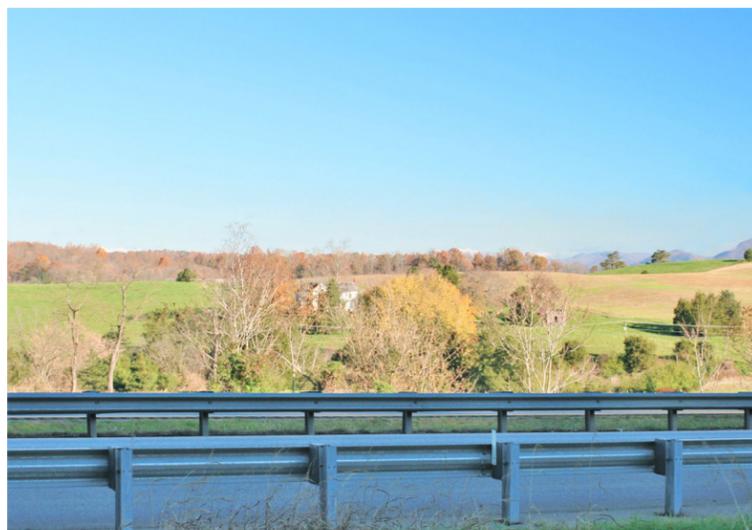
The photo to the left exhibits a view toward the wind turbines from the store and Route 220. This photo illustrates that the view in the direction of the wind turbines is blocked by the mountain.



Eagle Rock Library

Eagle Rock School and Library

Neither Eagle Rock School nor Eagle Rock Library is predicted to have a view of the proposed windfarm from their sites, due to the thick forest located just to the north of these facilities. The road that leads to both facilities will feature a view, so we modelled the view from Eagle's Nest Drive, near its intersection with Route 220. The photos to the left exhibit a view toward the wind turbines from both Eagle Rock School and Eagle Rock Library grounds. Note that the view in the direction of the wind turbines is blocked by the existing vegetation. In the winter months, when deciduous trees have shed their leaves, visitors of these sites may see glimpses of the turbines from these locations. Please see page 35 for additional discussion of the Eagle's Nest Drive simulation.



I-81

I-81

Linking Daleville, Troutville and Buchanan to points North, the I-81 corridor stretches approximately 28 miles through Botetourt County on a NE-SW traverse. According to the viewshed analysis, travelers of the northbound lanes will likely catch glimpses of the wind turbines. Sometimes mitigated by vegetative cover, it is likely the predominant views will be in open areas along northbound I-81 between the exits at miles 150 (Hollins) and 162 (Buchanan). The mountains block views along I-81 between miles 162 and 188. Distant views of the windfarm will begin again along southbound I-81 between exits at miles 188 (Lexington) and 200 (Fairfield), near Lexington, and continue to the northeast departure of I-81 from the study area.



I-64

I-64

Most of the drive along Interstate 64 westbound through Alleghany County will not feature a view of the windfarm. The photo along Interstate 64 looks in the direction of the windfarm from the westbound lane. On the eastbound lane, a truck rest area approximately 2 miles west of the Irondale Furnace exit is the closest visitor facility location along I-64 to the windfarm at 5 miles from the property. Hill Studio predicts that the windfarm will not be visible to visitors of the rest area because the view will be blocked by Blacks Gap and the northern end of North Mountain in the foreground. However, the raised westbound lane of I-64, located about 20 feet higher than the rest area, will provide a brief glimpse of the windfarm tips for westbound travelers for a few seconds. Please see page 63 for additional discussion of the Interstate 64 simulation location which was taken from the eastbound lane as it provides a view of the windfarm for a greater portion of I-64.



Fincastle Courthouse

Fincastle Courthouse

The view from the historic crossroads and courthouse square has foreground obstacles in the form of a number of other buildings. Hill Studio predicts that it would not be possible to see the proposed windfarm from the grounds of or adjacent to the Botetourt County Courthouse. The photograph to the left exhibits a view toward the wind turbines from the courthouse grounds. This photograph illustrates that the view in the direction of the wind turbines is blocked by buildings.



Clifton Forge

Clifton Forge

Located in Alleghany County, northwest of the proposed windfarm, Clifton Forge is 8.5 miles from the windfarm at its nearest point. The visual analysis indicates the vast majority of the land in Clifton Forge will not have a view of the wind turbine site due to the ridges of Wilson Mountain blocking this view from a number of the residences, businesses, and travel routes. There are a few isolated places shown on the visibility analysis map, which may have a view of the turbines. These include several clusters of houses in elevated neighborhoods, which will have a view of the upper parts of the wind turbines in the background. The majority of these residences will have potential views blocked by vegetation. To the left, a photo from Clifton Forge looks in the direction of the proposed windfarm. Wilson Mountain is predicted to block the view.



Stonewall Jackson Hospital

Stonewall Jackson Hospital

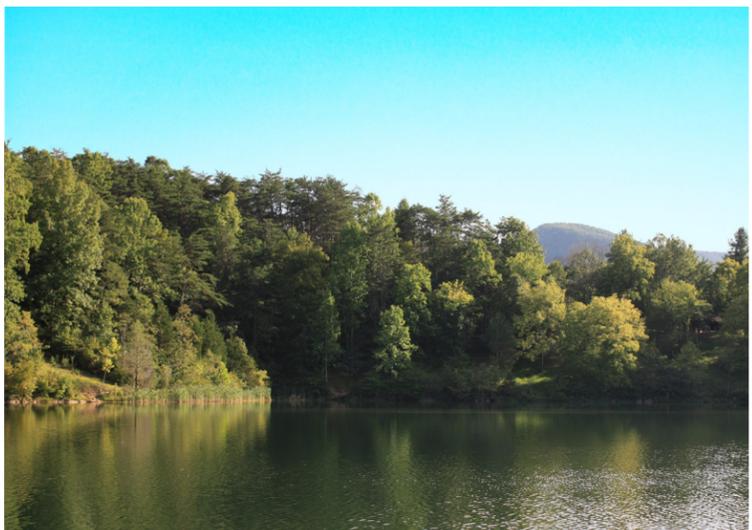
The viewshed analysis shows that most of the city of Lexington is not within the area of potential visual effect. Although showing as potentially visible from several of the high points in the vicinity of downtown such as the hospital, the density of buildings and mature vegetation in the middle of downtown are likely to mitigate this potential effect, in the same manner demonstrated in Fincastle. The cleared upper rolling hills that surround Lexington will provide some views of the windfarm in the background. In the photo to the left, the wind mills are blocked by the trees to the left of the light post. Views are unlikely in winter due to density of vegetation.



VMI Parade Ground

VMI Parade Ground

Offering one of the best chances for visibility in Rockbridge County, the Parade Ground features a flat, grassy plateau, casting the eye towards distant mountains. The windfarm is to the left of the photo but will be blocked by foreground buildings along Letcher Avenue and by the dense trees on the southwest end of the Parade Ground.



Lake Robertson

Lake Robertson

An important natural and cultural resource to the region, this 580-acre area features a 26-acre lake surrounded by mature trees and more than 50 camping sites. Its location in the valley beneath the Green Hill Mountain ridge, all of Lake Robertson is predicted to be out of view of the windfarm, therefore the turbines will not be visible

Pre- and Post-Construction Assessment

Reviewing Before/After Simulations

A “before and after simulation” is a design professional’s best judgment of a comparison between the existing landscape seen by the viewer, and the landscape that will be seen following the construction of the wind turbines. There are a number of influences which the landscape architect takes in account when building a model to predict the after condition.

The following process is employed:

1. Create a digital three-dimensional model of the topography.
2. Capture photographs of the existing condition using a lens, which will approximate conditions seen by the average viewer.
3. Superimpose, or overlay, the photograph onto the digital model. Obtain digital models of the proposed wind turbines and splice these into the model.
4. Render a depiction of the photograph, the topographic model, and wind turbine model.
5. Adjust the simulation for atmospheric conditions and other detailed elements, which appear on the existing conditions photographs.

Over the years the practice of digital modeling has become more precise and efficient as technology has become available. The prediction of rendering of the atmosphere remains one of the most complicated parts of the simulation process. The Blue Ridge atmosphere is particularly interesting, as humidity, sunlight, and particles in the air change frequently. For the printed version of the document, atmospheric conditions between viewer and the wind turbines are not arduously manipulated, because in most cases the detail would be lost in printing. The larger format boards for public presentation and large format website versions of the document will account for atmosphere.

Selected Sites

The remaining 10 proposed sites were analyzed and a pre-construction and post-construction assessment (also known as a “before and after” simulation) has been produced and been shown on the following pages.

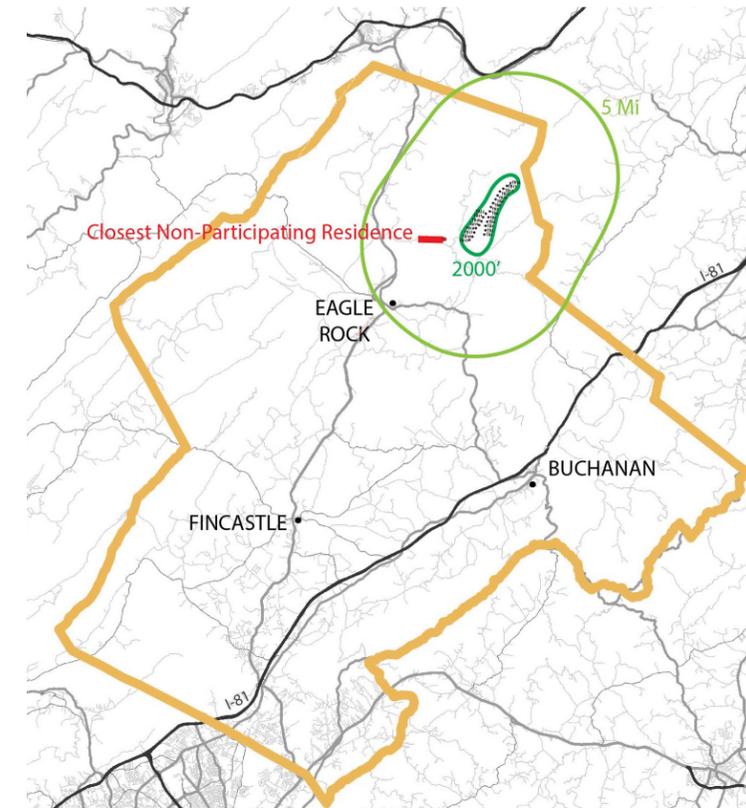
Each of the sites features a description of the location of the property, and a montage of several assessment graphics. Each montage features:

1. A map of the study area featuring the Botetourt County boundary, with a section line, showing the relationship between the view point and the proposed windfarm.
2. A scaled section cut showing the viewer, and the proposed wind turbines. Distances in feet are shown horizontally and vertically to the wind turbine base. The blue shaded area shows the viewer’s relationship to the tip of the nearest wind turbine at 680’ above the surface. The brown shaded area represents the topography between the viewer and the nearest turbine.
3. A location within the Google Earth 3D model. This depiction is elevated above the viewer, showing the windfarm on the North Mountain.
4. Panoramic view of the proposed wind turbines. Many of the scenes in this landscape feature broad panoramic views. The panoramic depiction panelizes several photographs, showing the expanse of the view, in relation to the proposed windfarm. The panorama is provided to relate the proposed action to the scale and context of some of the planned and unplanned viewer experiences in the region. Although our normal cone of vision does not allow us to completely experience some of the panoramas without turning our head, the memory of the scene is of the complete view. In some foreground experiences, like the nearest non-participating residence, the normal cone of vision does not fully allow an experience of all the turbines. The panorama provides a more realistic, complete and memorable experience of the windfarm. In the case of distant scenes, the panorama shows the windfarm in arguably a more memorable context, framed by foreground trees. Although the windfarm occupies less of the scene, it is the complete scene we remember. Some of the panoramic experiences result from random luck. A view is opened because a farmer wanted to make a hayfield. Others, however, are the result of intentional actions to display a panoramic scene for the viewer. The Blue Ridge Parkway is renowned in the design community for its magnificent vistas, which are intentionally opened to provide a view of the managed countryside. The panorama shown from Mills Gap overlook demonstrates the windfarm in the context of the designed framed scene.

Following the montage, for each of the selected viewpoints, we have provided a pairwise spread of existing preconstruction condition, and our prediction of the post-construction condition.

Closest Non-Participating Residence

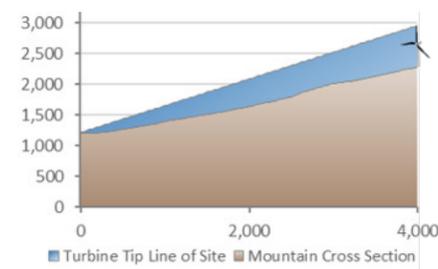
This residence is the closest non-participating neighbor to the project site, located approximately 1.15 miles from the nearest proposed turbine location. The residence is located on Dagger Springs Road.



Location in 3D model



Panoramic view of proposed wind turbines



Section from viewpoint to proposed wind turbines



Rocky Forge Visual Assessment: Preliminary Turbine Locations
 Closest Non-Participating Residence
 Proposed/Post-Construction Condition (18 Turbines Visible)

Distance: 1.15 miles
 Date of Photograph: 17 September 2015
 Angle: Viewer height, approximately 5 feet from ground

Camera: Canon EOS Digital 400xTi
 Lens: Canon EF Digital 35mm fixed with polarizing filter



Simulation is based upon preliminary design plans. Structure design and location will be finalized during the detail design and permitting process.



Rocky Forge Visual Assessment: Preliminary Turbine Locations
Closest Non-Participating Residence
Existing/Pre-Construction Condition

Distance: 1.15 miles
Date of Photograph: 17 September 2015
Angle: Viewer height, approximately
5 feet from ground

Camera: Canon EOS Digital 400xTi
Lens: Canon EF Digital 35mm fixed
with polarizing filter



HILL
STUDIO

Simulation is based upon preliminary design plans.
Structure design and location will be finalized during
the detail design and permitting process.



Rocky Forge Visual Assessment: Preliminary Turbine Locations
Closest Non-Participating Residence
Proposed/Post-Construction Condition (13 Turbines Visible)

Distance: 1.15 miles
Date of Photograph: 17 September 2015
Angle: Viewer height, approximately
5 feet from ground

Camera: Canon EOS Digital 400xTi
Lens: Canon EF Digital 35mm fixed
with polarizing filter

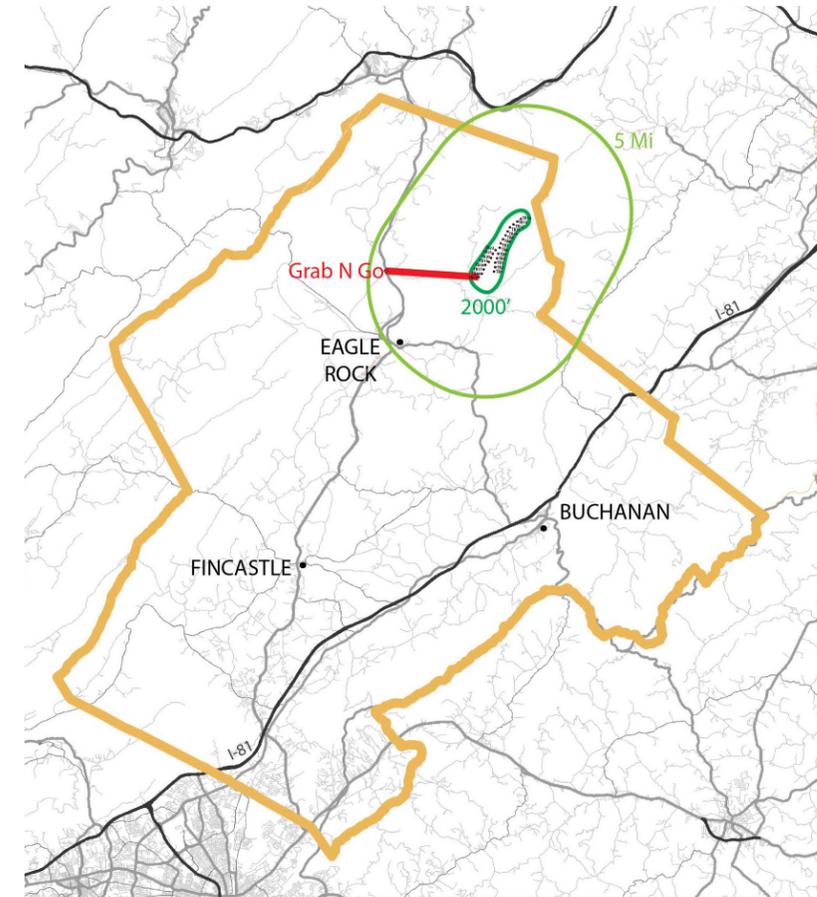


HILL
STUDIO

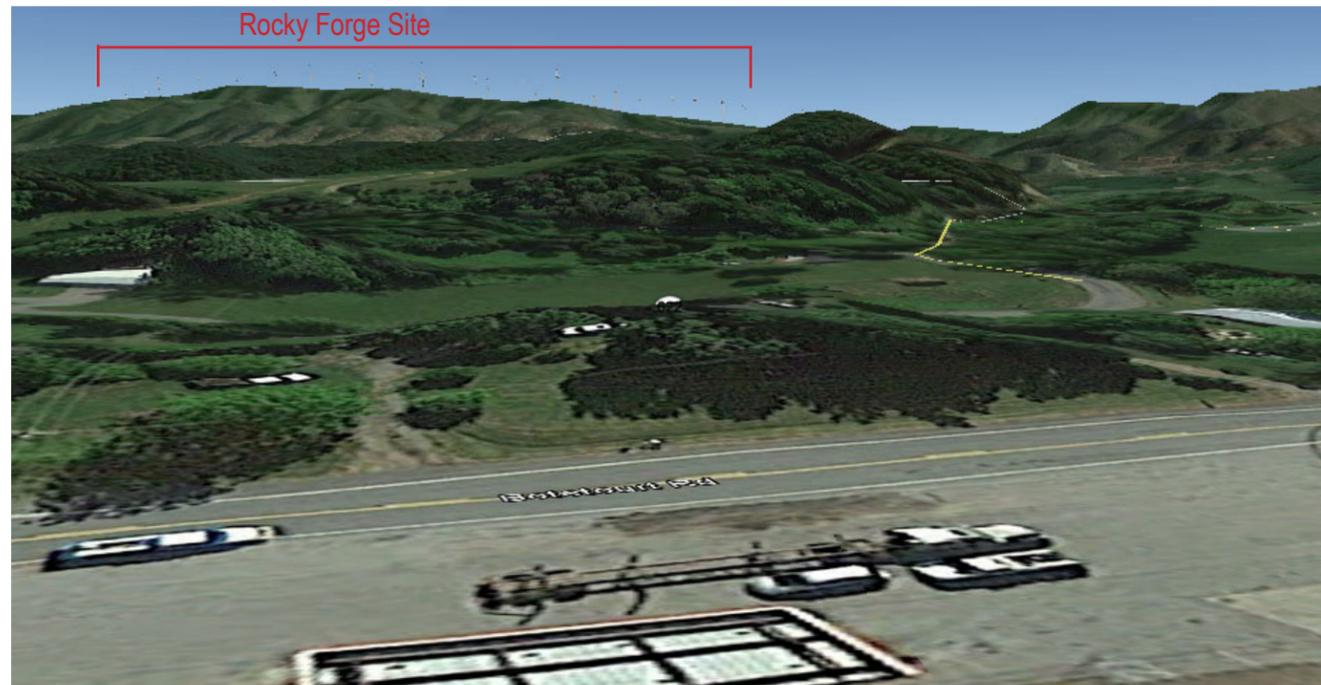
Simulation is based upon preliminary design plans.
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Eagle Rock Grab N Go

A popular crossroads, commercial and recreational node in Botetourt County, Eagle Rock Grab N Go is adjacent to the James River along US 220. It is one of the closest commercial developments to the proposed windfarm. Because of foreground vegetation on the west side of US 220, Hill Studio predicts that there is nowhere on the site that can view the proposed windfarm. The photo shows the view in the direction of the windfarm and with the foreground trees blocking this potential view. In the winter months, when deciduous trees have shed their leaves, visitors of this site may see glimpses of the turbines from this location.



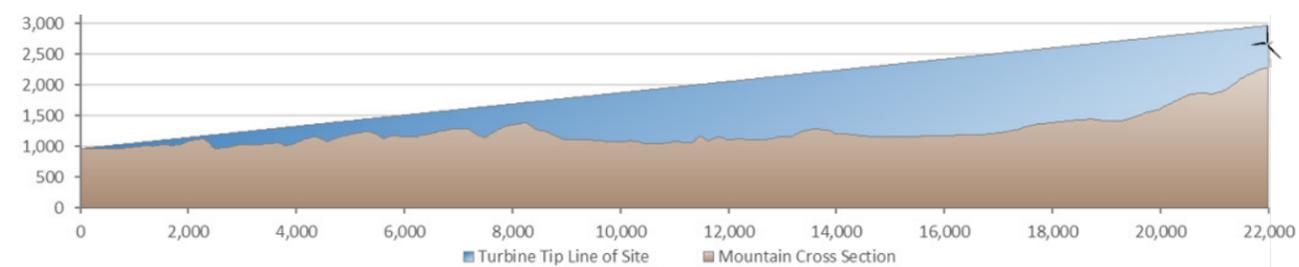
Location map



Location in 3D model



Panoramic view of proposed wind turbines



Section from viewpoint to proposed wind turbines



Rocky Forge Visual Assessment: Preliminary Turbine Locations
 Grab N Go, Eagle Rock, VA
 Proposed/Post-Construction Condition (0 Turbines Visible)

Distance: 4.20 miles
 Date of Photograph: 15 September 2015
 Angle: Viewer height, approximately 5 feet from ground

Camera: Canon EOS Digital 400xTi
 Lens: Canon EF Digital 35mm fixed with polarizing filter



Simulation is based upon preliminary design plans. Structure design and location will be finalized during the detail design and permitting process.



Rocky Forge Visual Assessment: Preliminary Turbine Locations
Grab N Go, Eagle Rock, VA
Existing/Pre-Construction Condition

Distance: 4.20 miles
Date of Photograph: 15 September 2015
Angle: Viewer height, approximately
5 feet from ground

Camera: Canon EOS Digital 400xTi
Lens: Canon EF Digital 35mm fixed
with polarizing filter



HILL
STUDIO

Simulation is based upon preliminary design plans.
Structure design and location will be finalized during
the detail design and permitting process.

LOCATION OF PROPOSED TURBINES
VIEW BLOCKED BY VEGETATION



Rocky Forge Visual Assessment: Preliminary Turbine Locations
Grab N Go, Eagle Rock, VA
Proposed/Post-Construction Condition (0 Turbines Visible)

Distance: 4.20 miles
Date of Photograph: 15 September 2015
Angle: Viewer height, approximately
5 feet from ground

Camera: Canon EOS Digital 400xTi
Lens: Canon EF Digital 35mm fixed
with polarizing filter

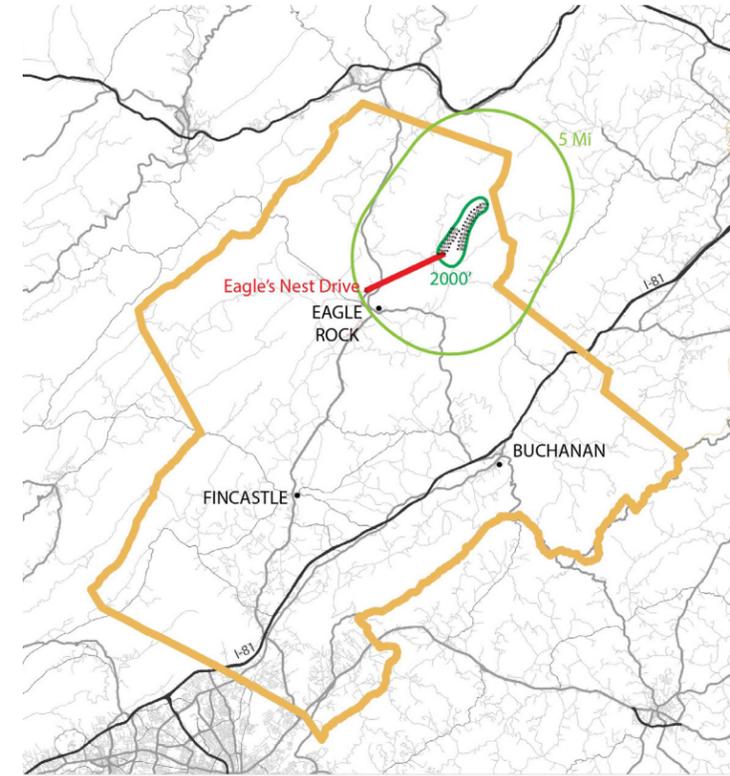


HILL
STUDIO

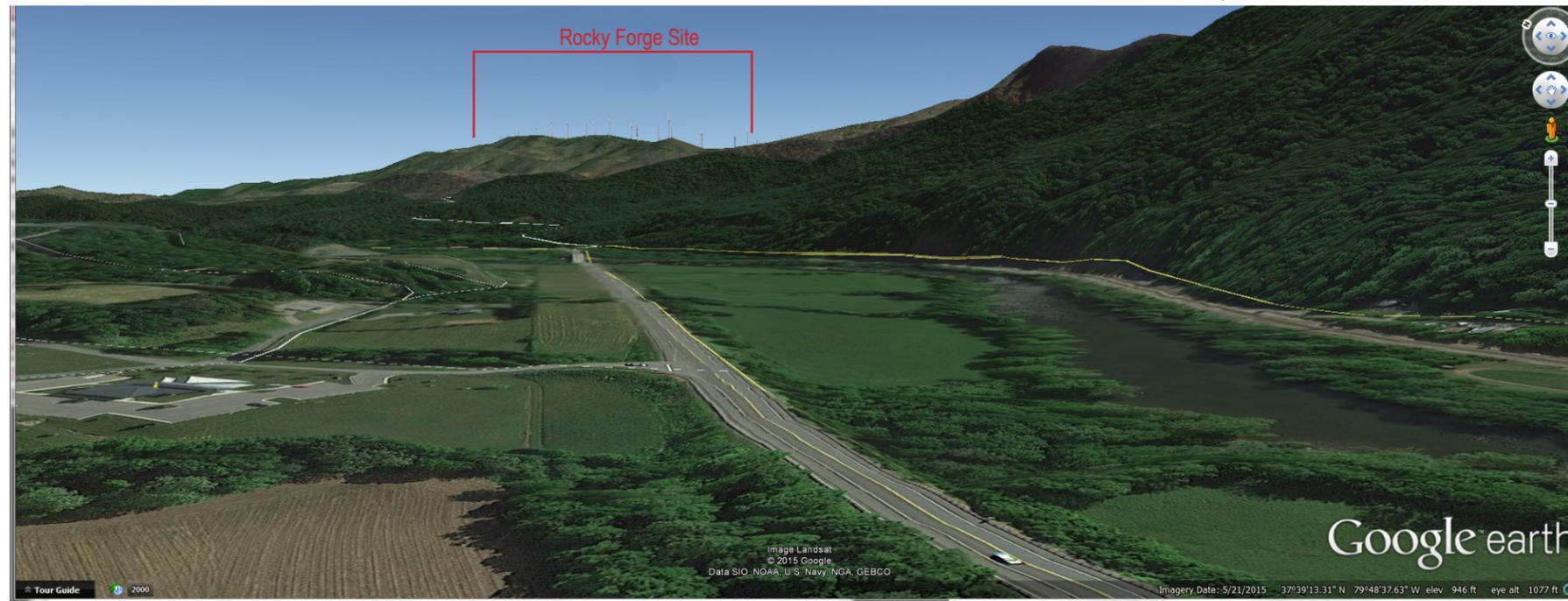
Simulation is based upon preliminary design plans.
Structure design and location will be finalized during
the detail design and permitting process.

Eagles Nest Drive

Eagles Nest Drive intersects US 220 outside of Eagle Rock. Once Hill Studio determined that the wind turbines were not visible from the Elementary School and the Library, a new simulation was added to show where turbines would be visible in that general area. From the intersection of Eagles Nest Drive and US 220, there is an open view of the turbines due to the clear and straight alignment of the highway corridor.



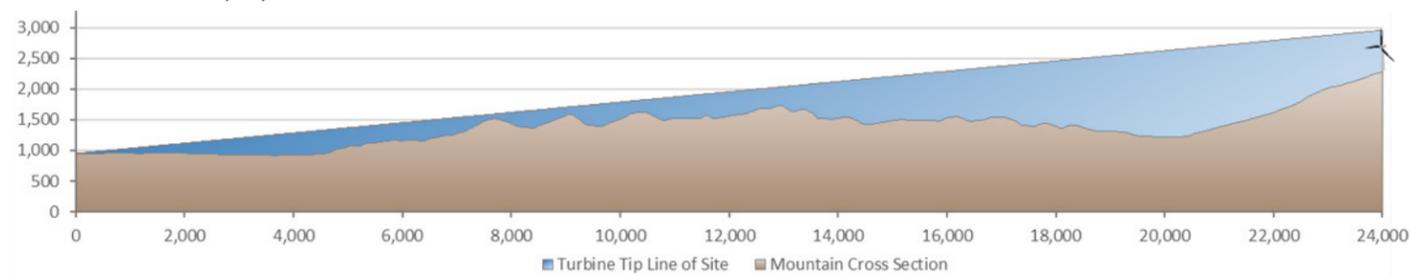
Location map



Location in 3D model



Panoramic view of proposed wind turbines



Section from viewpoint to proposed wind turbines



Rocky Forge Visual Assessment: Preliminary Turbine Locations
 Intersection of Eagles Nest Drive and Route 220
 Proposed/Post-Construction Condition (18 Turbines Visible)

Distance: 4.72 miles
 Date of Photograph: 15 September 2015
 Angle: Viewer height, approximately 5 feet from ground

Camera: Canon EOS Digital 400xTi
 Lens: Canon EF Digital 35mm fixed with polarizing filter



Simulation is based upon preliminary design plans. Structure design and location will be finalized during the detail design and permitting process.



Rocky Forge Visual Assessment: Preliminary Turbine Locations
Intersection of Eagles Nest Drive and Route 220
Existing/Pre-Construction Condition

Distance: 4.72 miles
Date of Photograph: 15 September 2015
Angle: Viewer height, approximately 5 feet from ground

Camera: Canon EOS Digital 400xTi
Lens: Canon EF Digital 35mm fixed with polarizing filter



HILL
STUDIO

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Rocky Forge Visual Assessment: Preliminary Turbine Locations
Intersection of Eagles Nest Drive and Route 220
Proposed/Post-Construction Condition (18 Turbines Visible)

Distance: 4.72 miles
Date of Photograph: 15 September 2015
Angle: Viewer height, approximately
5 feet from ground

Camera: Canon EOS Digital 400xTi
Lens: Canon EF Digital 35mm fixed
with polarizing filter

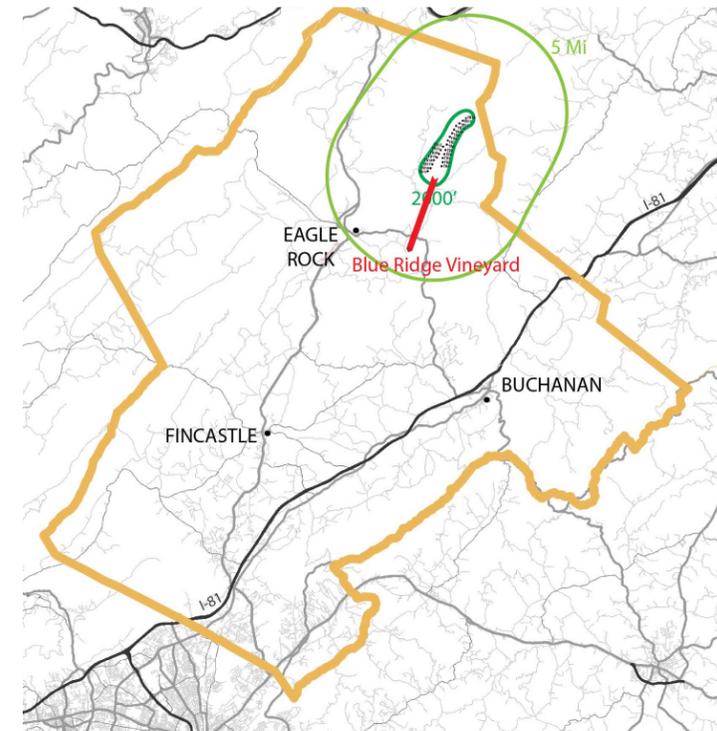


HILL
STUDIO

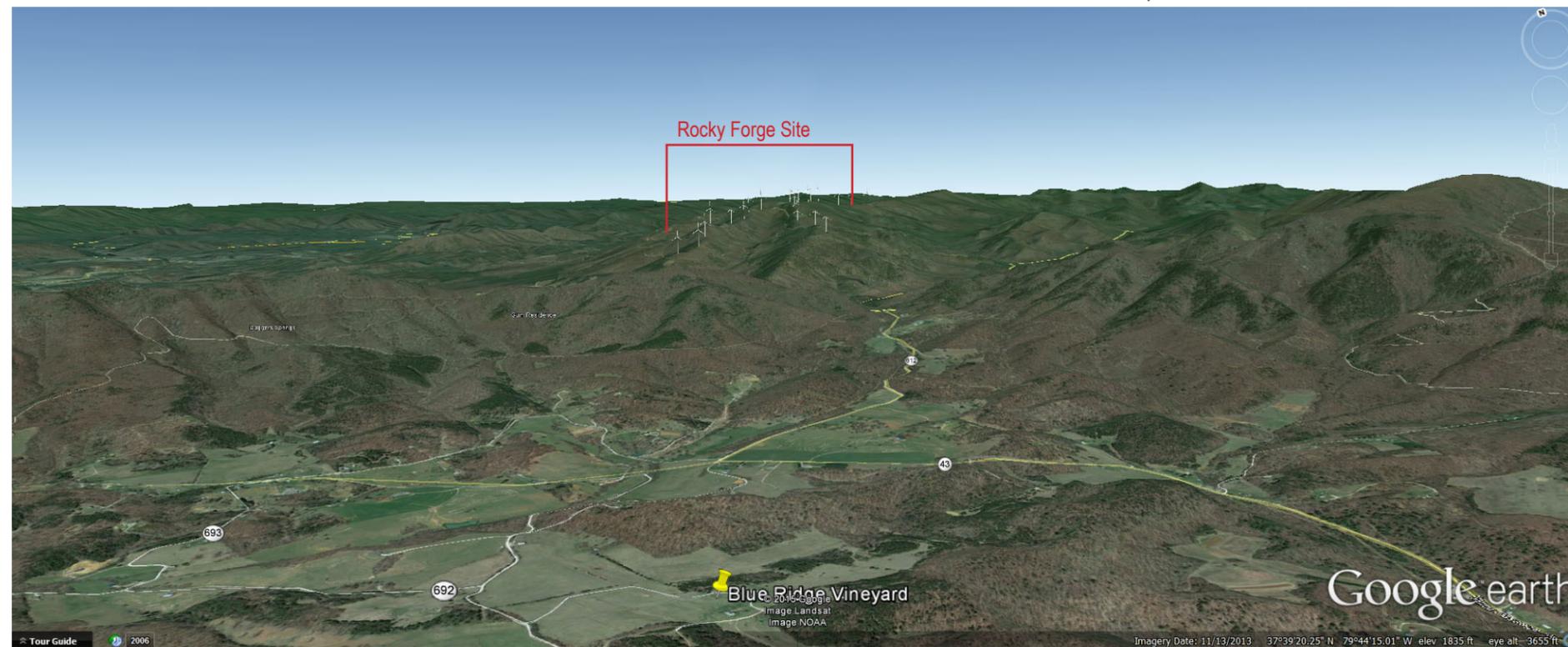
Simulation is based upon preliminary design plans.
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Blue Ridge Vineyard

The Blue Ridge Vineyard is located approximately 3.8 miles from the site. Views of the wind turbines will be shielded mainly by Scruff Mountain, with only the blade tips and some hubs visible to visitors of the vineyard. The view of the turbines will be located to the rear of the tasting room/pavilion.



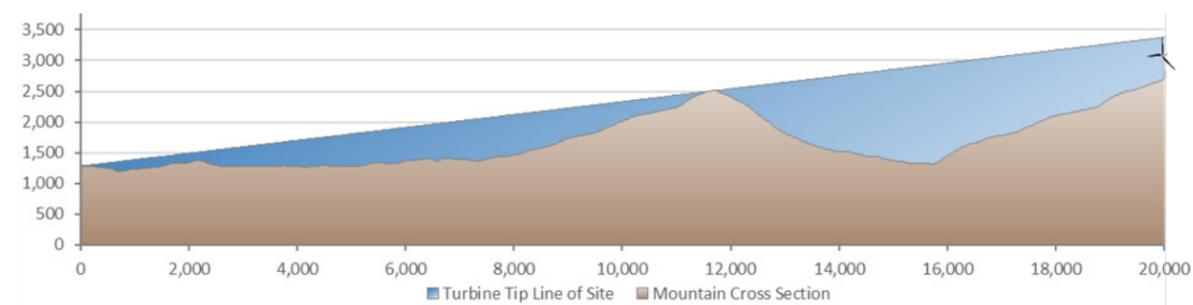
Location map



Location in 3D model



Panoramic view of proposed wind turbines



Section from viewpoint to proposed wind turbines



Rocky Forge Visual Assessment: Preliminary Turbine Locations
 Blue Ridge Vineyard
 Proposed/Post-Construction Condition (15 Turbines Visible)

Distance: 3.80 miles
 Date of Photograph: 15 September 2015
 Angle: Viewer height, approximately 5 feet from ground

Camera: Canon EOS Digital 400xTi
 Lens: Canon EF Digital 35mm fixed with polarizing filter



Simulation is based upon preliminary design plans. Structure design and location will be finalized during the detail design and permitting process.



Rocky Forge Visual Assessment: Preliminary Turbine Locations
Blue Ridge Vineyard
Existing/Pre-Construction Condition

Distance: 3.80 miles
Date of Photograph: 15 September 2015
Angle: Viewer height, approximately 5 feet from ground
Camera: Canon EOS Digital 400xTi
Lens: Canon EF Digital 35mm fixed with polarizing filter



HILL
STUDIO

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Rocky Forge Visual Assessment: Preliminary Turbine Locations
Blue Ridge Vineyard
Proposed/Post-Construction Condition (15 Turbines Visible)

Distance: 3.80 miles
Date of Photograph: 15 September 2015
Angle: Viewer height, approximately
5 feet from ground

Camera: Canon EOS Digital 400xTi
Lens: Canon EF Digital 35mm fixed
with polarizing filter

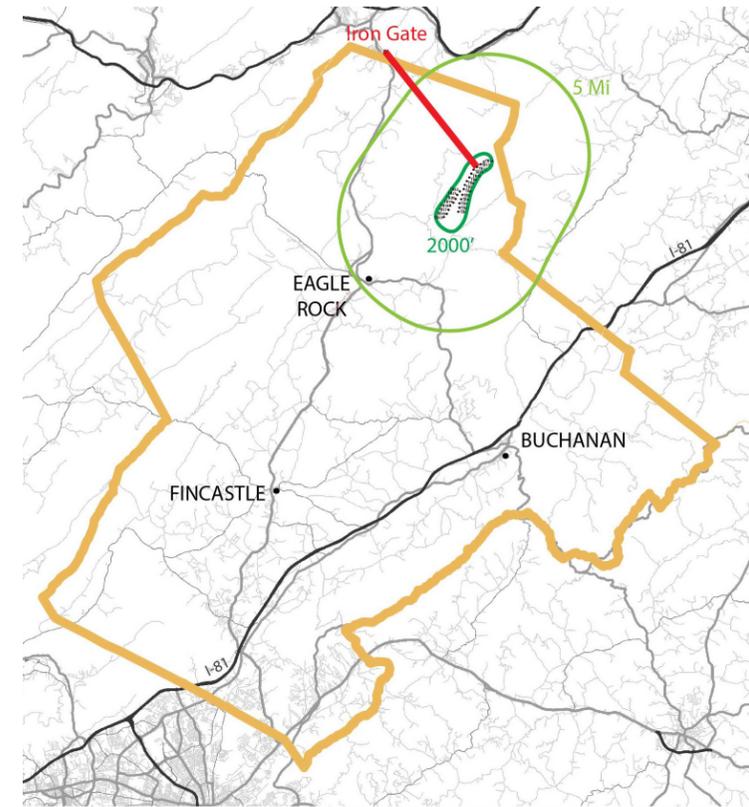


HILL
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Iron Gate

The Town of Iron Gate is located on the Botetourt County/Alleghany County line approximately 6.7 miles northwest of the proposed windfarm. The windfarm will be visible through the viewer's windshield while traveling south towards Fincastle on Route 220, and from homes and roadways in the Town of Iron Gate.



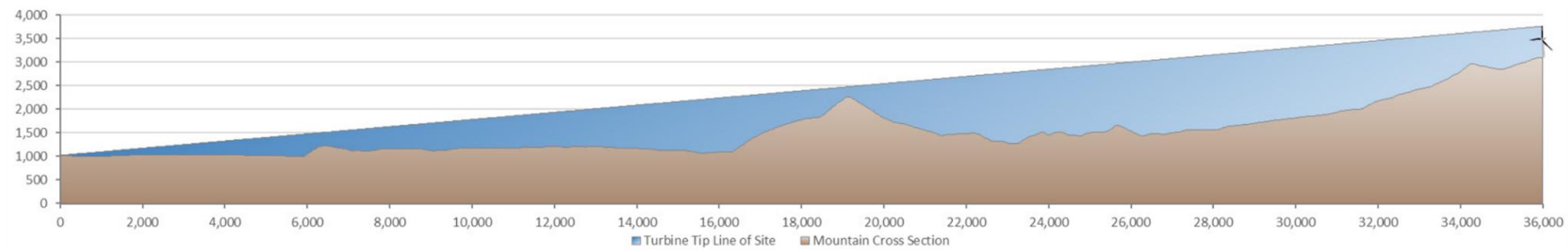
Location map



Location in 3D model



Panoramic view of proposed wind turbines



Section from viewpoint to proposed wind turbines



Rocky Forge Visual Assessment: Preliminary Turbine Locations
 Iron Gate, Intersection of Route 220 and 10th Street
 Proposed/Post-Construction Condition (9 Turbines Visible)

Distance: 6.70 miles
 Date of Photograph: 15 September 2015
 Angle: Viewer height, approximately 5 feet from ground

Camera: Canon EOS Digital 400xTi
 Lens: Canon EF Digital 35mm fixed with polarizing filter



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Rocky Forge Visual Assessment: Preliminary Turbine Locations
Iron Gate, Intersection of Route 220 and 10th Street
Existing/Pre-Construction Condition

Distance: 6.70 miles
Date of Photograph: 15 September 2015
Angle: Viewer height, approximately 5 feet from ground
Camera: Canon EOS Digital 400xTi
Lens: Canon EF Digital 35mm fixed with polarizing filter



HILL
STUDIO

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Rocky Forge Visual Assessment: Preliminary Turbine Locations
Iron Gate, Intersection of Route 220 and 10th Street
Proposed/Post-Construction Condition (9 Turbines Visible)

Distance: 6.70 miles
Date of Photograph: 15 September 2015
Angle: Viewer height, approximately
5 feet from ground

Camera: Canon EOS Digital 400xTi
Lens: Canon EF Digital 35mm fixed
with polarizing filter

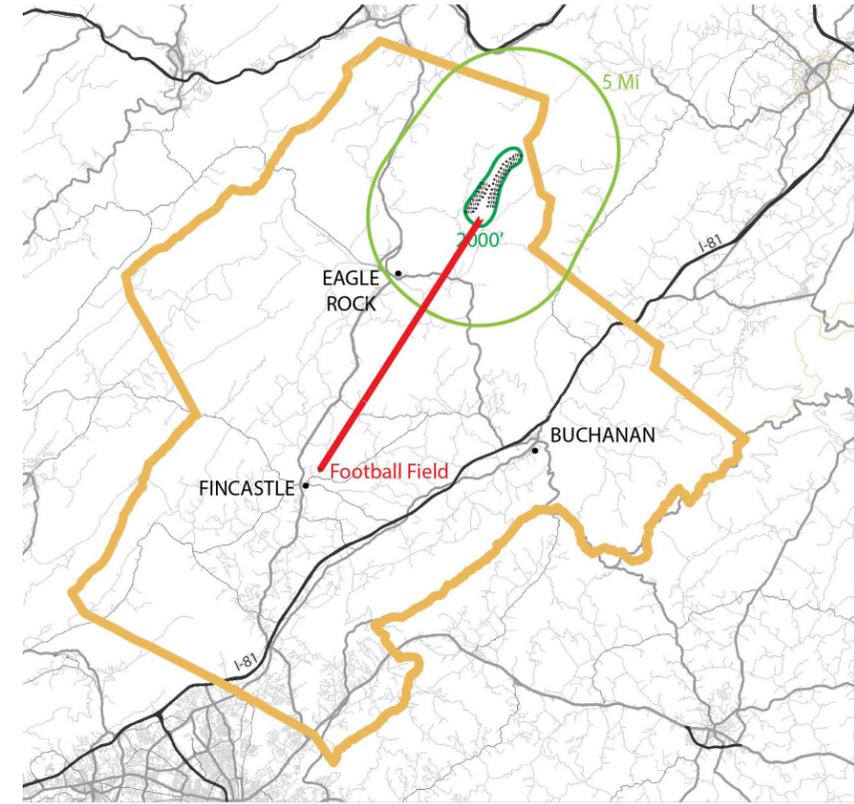


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STUDIO

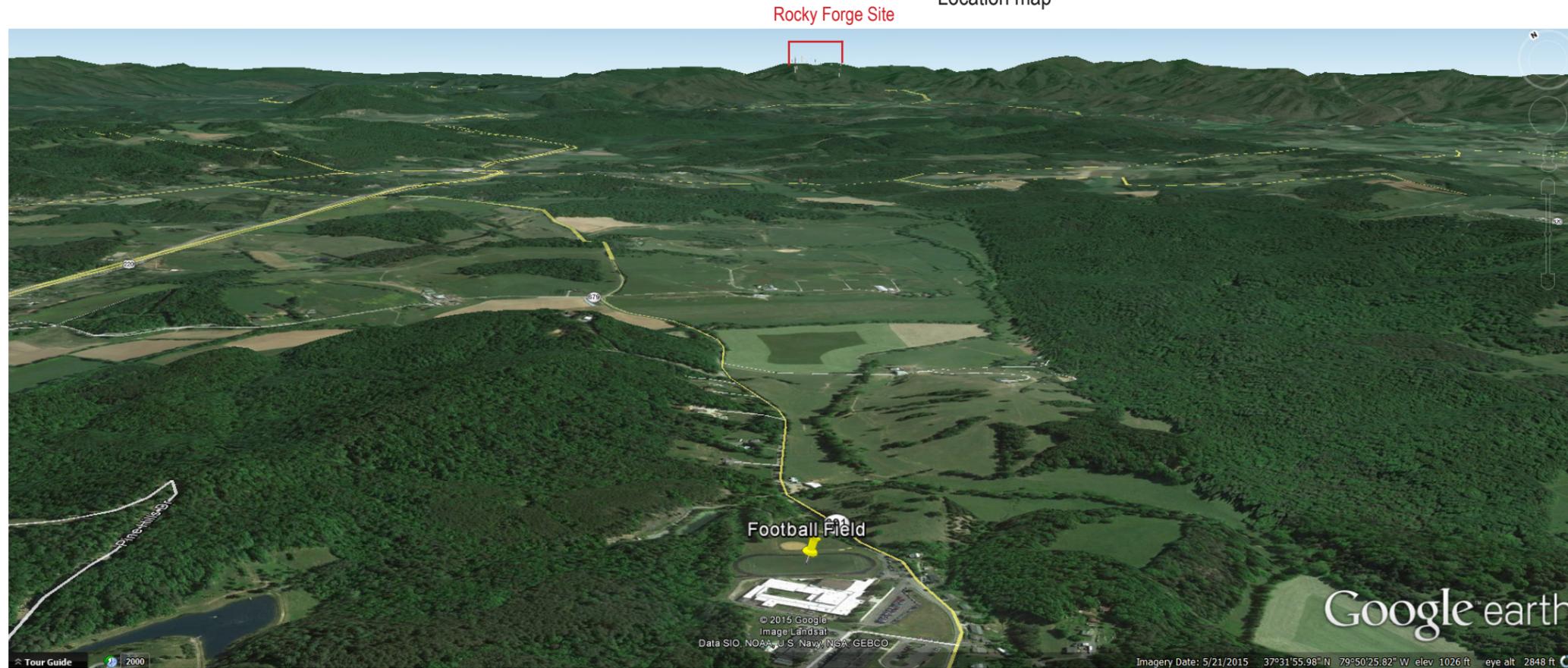
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Football Field

The football field at Central Academy Middle School is oriented in a northeast southwest orientation. The grandstands face north looking across the football field to the valley beyond. The mountains, including North Mountain are the back of this framed view from the bleachers. The windfarm can be seen from the football field in the distant background.



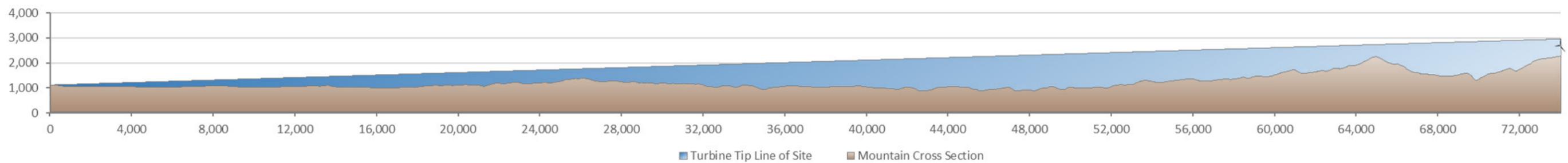
Location map



Location in 3D model



Panoramic view of proposed wind turbines



Section from viewpoint to proposed wind turbines



Rocky Forge Visual Assessment: Preliminary Turbine Locations
 Central Academy Football Field, Fincastle, VA
 Proposed/Post-Construction Condition (18 Turbines Visible)

Distance: 14.12 miles
 Date of Photograph: 15 September 2015
 Angle: Viewer height, approximately 5 feet from ground

Camera: Canon EOS Digital 400xTi
 Lens: Canon EF Digital 35mm fixed with polarizing filter



Simulation is based upon preliminary design plans. Structure design and location will be finalized during the detail design and permitting process.



Rocky Forge Visual Assessment: Preliminary Turbine Locations
Central Academy Football Field, Fincastle, VA

Existing/Pre-Construction Condition

Distance: 14.12 miles
Date of Photograph: 15 September 2015
Angle: Viewer height, approximately
5 feet from ground

Camera: Canon EOS Digital 400xTi
Lens: Canon EF Digital 35mm fixed
with polarizing filter



HILL
STUDIO

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Rocky Forge Visual Assessment: Preliminary Turbine Locations
Central Academy Football Field, Fincastle, VA
Proposed/Post-Construction Condition (18 Turbines Visible)

Distance: 14.12 miles
Date of Photograph: 15 September 2015
Angle: Viewer height, approximately
5 feet from ground

Camera: Canon EOS Digital 400xTi
Lens: Canon EF Digital 35mm fixed
with polarizing filter

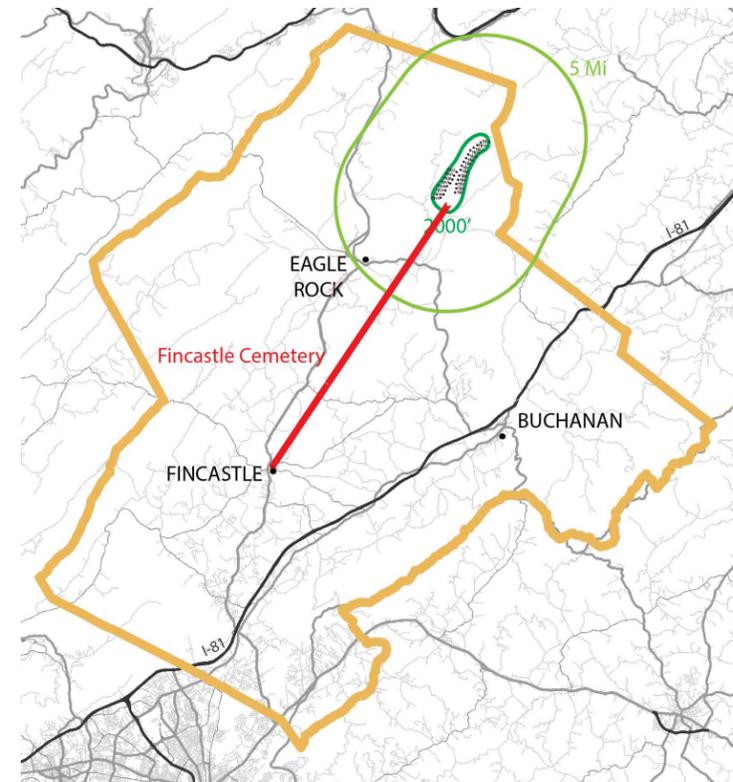


HILL
STUDIO

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Fincastle Cemetery

Fincastle Cemetery, also known as Godwin Cemetery or Slicer-Godwin Cemetery, is located on a high knob near the Fincastle Methodist Church. The high point of the cemetery, at 1293 feet elevation, is predicted to have the most visual impact. Still the view of the proposed windfarm from the high knob will only show the highest portions of the wind turbine blades. The hubs and the towers are predominantly masked by ridges and vegetation in the middleground behind the Town of Fincastle.



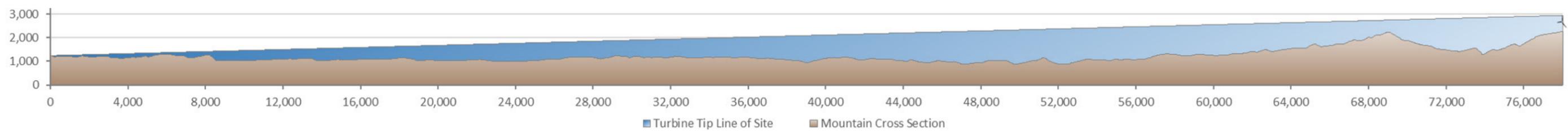
Rocky Forge Site Location map



Location in 3D model



Panoramic view of proposed wind turbines



Section from viewpoint to proposed wind turbines



Rocky Forge Visual Assessment: Preliminary Turbine Locations
 Godwin Cemetery, Fincastle, VA
 Proposed/Post-Construction Condition (6 Turbines Visible)

Distance: 15.10 miles
 Date of Photograph: 15 September 2015
 Angle: Viewer height, approximately 5 feet from ground

Camera: Canon EOS Digital 400xTi
 Lens: Canon EF Digital 35mm fixed with polarizing filter



Simulation is based upon preliminary design plans. Structure design and location will be finalized during the detail design and permitting process.



Rocky Forge Visual Assessment: Preliminary Turbine Locations
Godwin Cemetery, Fincastle, VA
Existing/Pre-Construction Condition

Distance: 15.10 miles
Date of Photograph: 15 September 2015
Angle: Viewer height, approximately
5 feet from ground

Camera: Canon EOS Digital 400xTi
Lens: Canon EF Digital 35mm fixed
with polarizing filter



HILL
STUDIO

Simulation is based upon preliminary design plans.
Structure design and location will be finalized during
the detail design and permitting process.



Rocky Forge Visual Assessment: Preliminary Turbine Locations
Godwin Cemetery, Fincastle, VA
Proposed/Post-Construction Condition (6 Turbines Visible)

Distance: 15.10 miles
Date of Photograph: 15 September 2015
Angle: Viewer height, approximately
5 feet from ground

Camera: Canon EOS Digital 400xTi
Lens: Canon EF Digital 35mm fixed
with polarizing filter

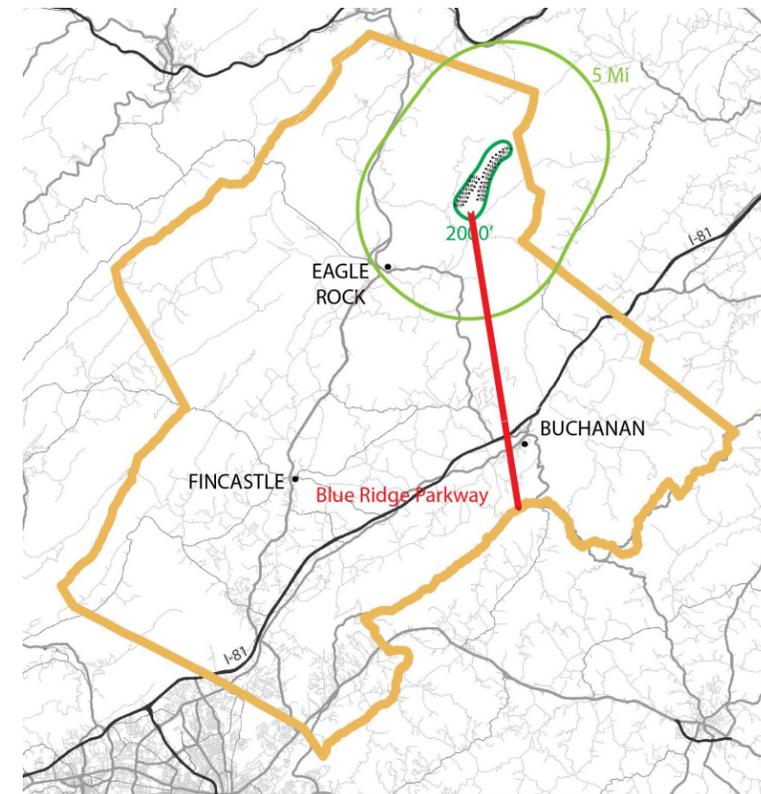


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Blue Ridge Parkway

The Blue Ridge Parkway, located to the east and southeast of the windfarm, has several overlooks that were considered for visual simulations. Hill Studio determined that the Mills Gap overlook will have the clearest and closest view to the site. At approximately 14 miles from the site, the wind turbines are visible beyond Purgatory Mountain, Brushy Mountain and Stamping Ground Mountain.



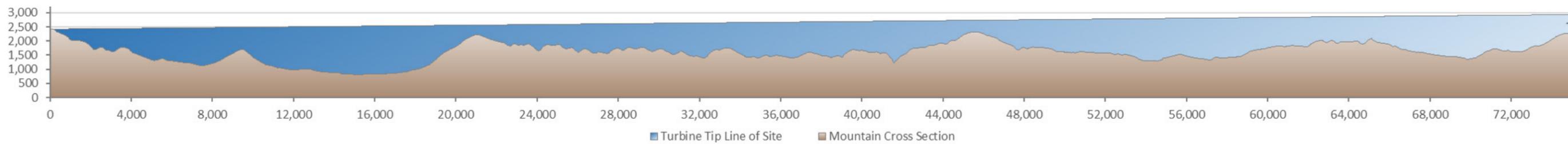
Location map



Location in 3D model



Panoramic view of proposed wind turbines



Section from viewpoint to proposed wind turbines



Rocky Forge Visual Assessment: Preliminary Turbine Locations
 Blue Ridge Parkway, Mills Gap Overlook
 Proposed/Post-Construction Condition (18 Turbines Visible)

Distance: 14.15 miles
 Date of Photograph: 18 September 2015
 Angle: Viewer height, approximately 5 feet from ground

Camera: Canon EOS Digital 400xTi
 Lens: Canon EF Digital 35mm fixed with polarizing filter



Simulation is based upon preliminary design plans. Structure design and location will be finalized during the detail design and permitting process.



Rocky Forge Visual Assessment: Preliminary Turbine Locations
Blue Ridge Parkway, Mills Gap Overlook
Existing/Pre-Construction Condition

Distance: 14.15 miles
Date of Photograph: 18 September 2015
Angle: Viewer height, approximately
5 feet from ground

Camera: Canon EOS Digital 400xTi
Lens: Canon EF Digital 35mm fixed
with polarizing filter



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the detail design and permitting process.



Rocky Forge Visual Assessment: Preliminary Turbine Locations
Blue Ridge Parkway, Mills Gap Overlook
Proposed/Post-Construction Condition (18 Turbines Visible)

Distance: 14.15 miles
Date of Photograph: 18 September 2015
Angle: Viewer height, approximately 5 feet from ground

Camera: Canon EOS Digital 400xTi
Lens: Canon EF Digital 35mm fixed with polarizing filter

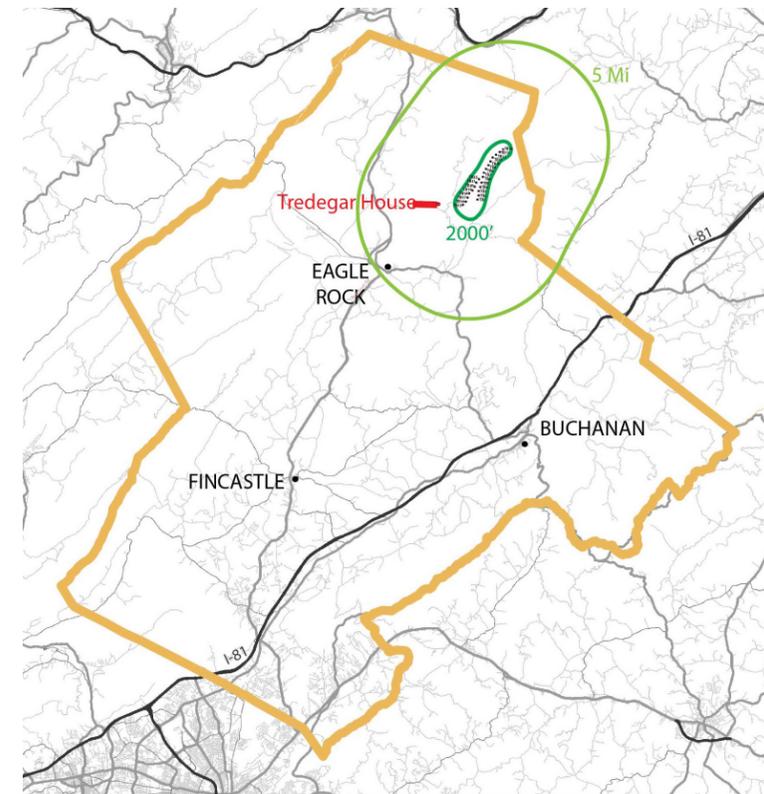


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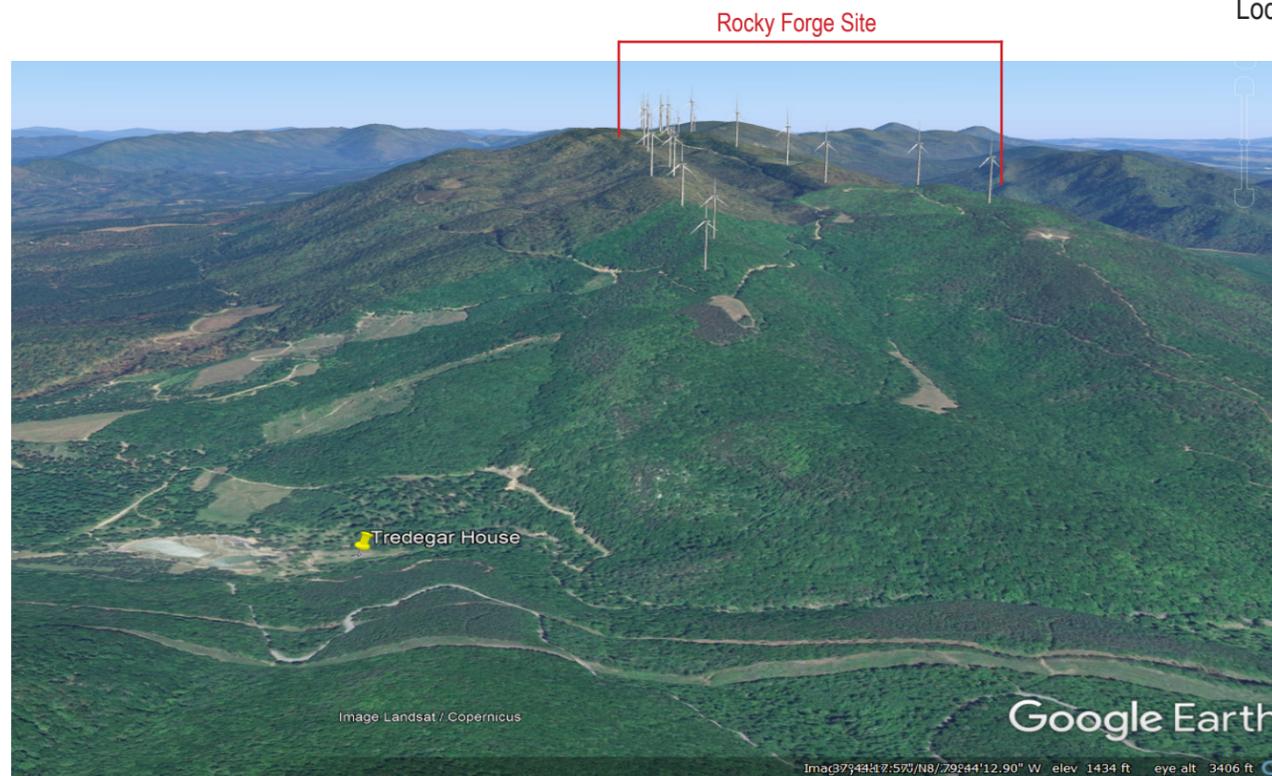
Simulation is based upon preliminary design plans. Structure design and location will be finalized during the detail design and permitting process.

Tredegar House

Tredegar House is a historic site on the same property as the proposed windfarm. The view will be a middleground experience, with the house at approximately 4000' from the nearest turbine.



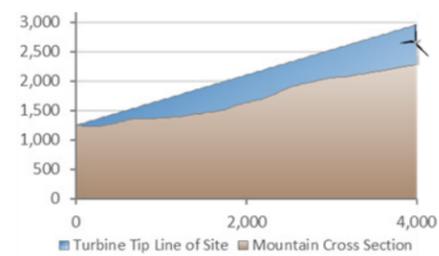
Location map



Location in 3D model



Panoramic view of proposed wind turbines



Section from viewpoint to proposed wind turbines



Rocky Forge Visual Assessment: Preliminary Turbine Locations
 Tredegar House
 Proposed/Post-Construction Condition (5 Turbines Visible)

Distance: 0.76 miles
 Date of Photograph: 30 November 2015
 Angle: Viewer height, approximately 5 feet from ground

Camera: Canon EOS Digital 400xTi
 Lens: Canon EF Digital 35mm fixed with polarizing filter



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Simulation is based upon preliminary design plans. Structure design and location will be finalized during the detail design and permitting process.



Rocky Forge Visual Assessment: Preliminary Turbine Locations
Tredegar House
Existing/Pre-Construction Condition

Distance: 0.76 miles
Date of Photograph: 30 November 2015
Angle: Viewer height, approximately
5 feet from ground

Camera: Canon EOS Digital 400xTi
Lens: Canon EF Digital 35mm fixed
with polarizing filter



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STUDIO

Simulation is based upon preliminary design plans.
Structure design and location will be finalized during
the detail design and permitting process.



Rocky Forge Visual Assessment: Preliminary Turbine Locations
Tredegar House
Proposed/Post-Construction Condition (5 Turbines Visible)

Distance: 0.76 miles
Date of Photograph: 30 November 2015
Angle: Viewer height, approximately
5 feet from ground

Camera: Canon EOS Digital 400xTi
Lens: Canon EF Digital 35mm fixed
with polarizing filter

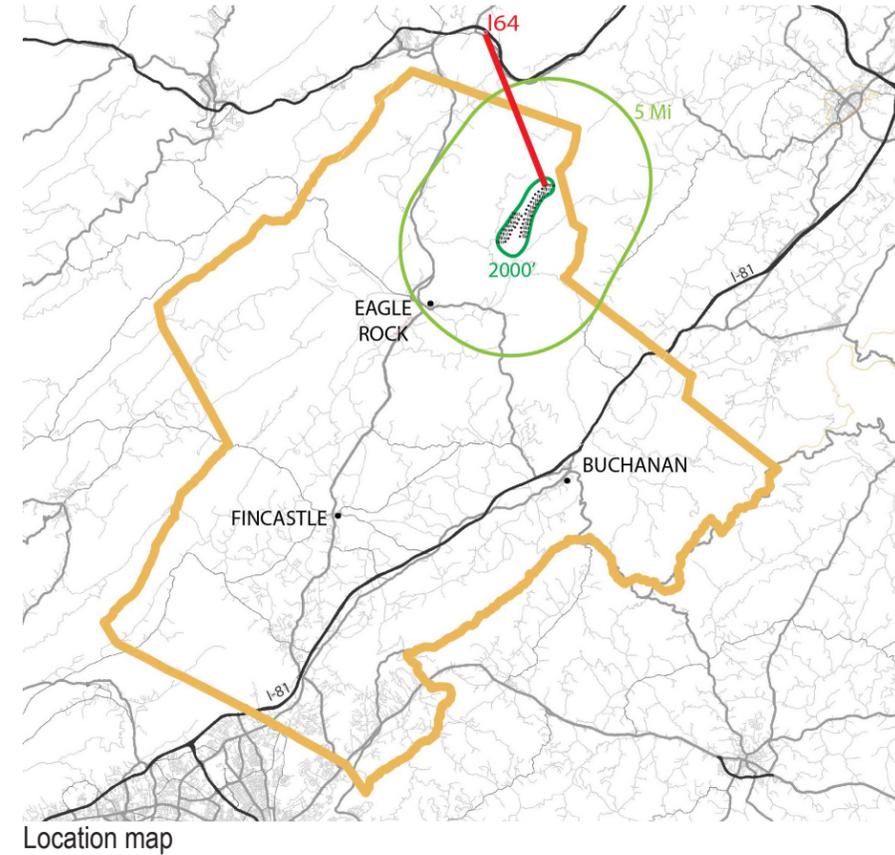


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Simulation is based upon preliminary design plans.
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Interstate 64

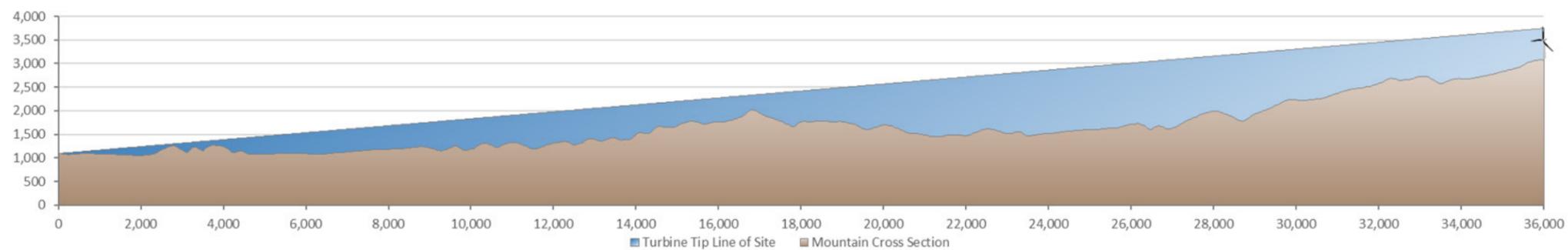
Located to the northwest of the windfarm near Longdale Furnace, Interstate 64 has a few locations that were considered for visual simulations. Hill Studio determined that the eastbound section near Nicelytown and Longdale Furnace in Allegheny County has the clearest and closest view to the site. At approximately 6.8 miles from the site, the wind turbines are visible beyond Anthony Knobs. The windfarm will be visible through the viewer's windshield while traveling east towards Lexington and west towards Clifton Forge on I-64. At a speed of 70 miles per hour, the axial view will last for about 1 minute and 30 seconds (2 miles).



Location in 3D model



Panoramic view of proposed wind turbines



Section from viewpoint to proposed wind turbines



Rocky Forge Visual Assessment: Preliminary Turbine Locations
 Interstate 64-Eastbound
 Proposed/Post-Construction Condition (8 Turbines Visible)

Distance: 6.82 miles
 Date of Photograph: 20 September 2019
 Angle: Viewer height, approximately 5 feet from ground

Camera: Canon EOS Digital 400xTi
 Lens: Canon EF Digital 35mm fixed with polarizing filter



Simulation is based upon preliminary design plans. Structure design and location will be finalized during the detail design and permitting process.



Rocky Forge Visual Assessment: Preliminary Turbine Locations
Interstate 64-Eastbound
Existing/Pre-Construction Condition

Distance: 6.82 miles
Date of Photograph: 20 September 2019
Angle: Viewer height, approximately
5 feet from ground

Camera: Canon EOS Digital 400xTi
Lens: Canon EF Digital 35mm fixed
with polarizing filter



HILL
STUDIO

Simulation is based upon preliminary design plans.
Structure design and location will be finalized during
the detail design and permitting process.



Rocky Forge Visual Assessment: Preliminary Turbine Locations
Interstate 64-Eastbound
Proposed/Post-Construction Condition (8 Turbines Visible)

Distance: 6.82 miles
Date of Photograph: 20 September 2019
Angle: Viewer height, approximately
5 feet from ground

Camera: Canon EOS Digital 400xTi
Lens: Canon EF Digital 35mm fixed
with polarizing filter



HILL
STUDIO

Simulation is based upon preliminary design plans.
Structure design and location will be finalized during
the detail design and permitting process.