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1.0 INTRODUCTION

This Environmental Impact Assessment Report (“EIAR”) addresses necessary modifications to the Marble River Wind Farm which is to be located in the Towns of Clinton and Ellenburg, Clinton County, New York (See Figure 1). The purpose of this EIAR is to describe the potential environmental impacts of the modifications made to the Marble River Wind Farm since it was reviewed and approved under the State Environmental Quality Review Act (“SEQRA”) and local laws. Consistent with the requirements of SEQRA, this analysis will compare the potential impacts of the proposed Project modifications with the potential impacts of the permitted Project as analyzed in the Draft Environmental Impact Statement (“DEIS”), the Supplemental Environmental Impact Statement (“SEIS”), the Final Environmental Impact Statement (“FEIS”) and Joint Statement of Findings and Decision (“Findings Statement”) (collectively the “Approved Project Record”), and permitted by the Towns and State and Federal Agencies. This analysis supplements and, as relevant to the proposed modifications, may amend the information in the Approved Project Record. Information and analysis provided in the Approved Project Record that will not change as a result of the project modifications, will not be re-presented in this EIAR.¹

Marble River, LLC (“Marble River”) has proposed the Project modifications to accommodate changed circumstances in the economy and the wind industry, which have occurred since the Towns issued the SEQRA Findings Statement and permits in 2008. The most significant changes in circumstances are the economic downturn in the fall of 2008, and the concomitant sharp drop in energy prices, which have rendered many proposed wind projects uneconomical. The modifications proposed by Marble River are principally aimed at maximizing project efficiencies in order to reduce construction and operational costs while continuing to minimize environmental impacts to the maximum extent practicable. To this end, Marble River proposes to reduce the project size and consolidate infrastructure while maintaining the same level of energy production as the original Project. More specifically, Marble River proposes to reduce the number of turbines from 109 to 74 (many of these were in a cluster in the northeast sector of the Project, relatively distant from the main body of the Project and the interconnection). They also propose to use the more efficient Vestas V112 3.0 megawatt (“MW”) turbine rather than the previously permitted Suzlon S88 2.1 MW turbine. By using the more efficient turbines, the Modified Project will produce roughly the same amount of electricity as the permitted Project (original rated capacity 230 MW vs. modified rated

¹ These sections of the SEQRA record include descriptions of background information on the Project, the owner/operator, purpose need and benefit, lease/easement terms and conditions, delivery and storage, turbine installation and work areas, access road design, underground electrical collection system design, wind measurement tower design, substation and interconnection facilities, project construction sequencing, operations and maintenance, and decommissioning.

capacity 222 MW) but will do so with 35 fewer turbines. The consolidation and reduction in the number of turbines also reduces the overall length of access roads and electrical collection lines formerly serving the eliminated turbines, including the elimination of a costly underground collection line through an ecologically sensitive area between the former turbine cluster in the northeast section of the Project and the main body of the Project. In addition, the remaining electrical collection lines will be located entirely underground. Other minor modifications are summarized in Section 1.3.

This report discusses the SEQRA process and history as background to the Approved Project, evaluates the environmental, economic and other essential considerations of the Project modifications, and provides a conclusion regarding whether or not the proposed Project modifications would have any potentially significant adverse environmental impacts. For clarification, the Project as previously proposed and approved is referred to as the “Approved Project”, whereas the Project currently proposed is referred to as the “Modified Project”.

1.1 SEQRA Process and History for the Approved Project

In November 2005, a Full Environmental Assessment Form that addressed the Marble River Wind Farm was submitted to the Towns of Clinton and Ellenburg pursuant to SEQRA and its implementing regulations at 6 NYCRR Part 617, the formal submittal of which initiated the SEQRA review process for the proposed action. The Towns agreed to act as co-Lead Agencies for the purpose of this coordinated SEQRA review. On January 4, 2006, the Town of Ellenburg, as the co-Lead Agency, issued a positive declaration, requiring the preparation of the DEIS. On January 6, 2006, the Town of Clinton, as the co-Lead Agency, also issued a positive declaration, requiring the preparation of the DEIS.

On March 30, 2006 the DEIS for the Marble River Wind Farm was submitted to both co-Lead Agencies for review and was subsequently accepted as complete on April 6, 2007. Upon Lead Agency acceptance of the DEIS, copies of that document (along with a copy of the public notice) were distributed to all interested and involved agencies (see DEIS Table 1) and made available to the public at the Clinton and Ellenburg Town Clerk’s Offices, and the Public Library. Additional copies of the document were sent to the Northern Adirondack Central School District and the Chateaugay Central School. The entire DEIS was posted to the Project’s website (www.horizonwindfarms.com) to facilitate public review and comment on the document. The public comment period ran from April 6, 2006 to June 5, 2006 and public hearings were held at both the Churubusco Fire House, Clinton Mills Road, Churubusco, New York on May 25, 2006 for the Town

of Clinton and the Ellenburg Town Hall in Ellenburg, New York on May 25, 2006 for the Town of Ellenburg.

Significant changes to the size and scope of the Project such as relocation of the project substation, addition of overhead collection lines, and multiple relocations of wind turbines as well as completion of additional studies necessitated the preparation of a SEIS. The SEIS was accepted by the Lead Agencies on July 25, 2007, and a Notice of Completion of Public Comment Period were subsequently filed and published. The public comment period on the SEIS ran until September 25, 2007. Public hearings on the SEIS were held on August 27, 2007 at the Ellenburg Town Hall and the Churubusco Fire House.

Comments received during the public comment periods for the DEIS and SEIS were compiled into a FEIS. A Responsiveness Summary was subsequently prepared as part of the FEIS (Section 4.0) to address all substantive oral and written comments received on the DEIS and SEIS. The FEIS was submitted to the Towns of Clinton and Ellenburg in January 2008 and subsequently approved and released for public review.

The Towns of Clinton and Ellenburg as joint Lead Agencies reviewed the DEIS, SEIS and FEIS. On April 15, 2008 The Towns of Clinton and Ellenburg issued a Joint Statement of Findings and Decision as required by SEQRA. The Findings Statement concluded, among other things, that the Project is consistent with social, economic, and other essential considerations from among the reasonable alternatives available; the respective Town approved actions avoid or minimize adverse environmental impacts to the maximum extent practicable; and that adverse environmental impacts will be avoided or minimized to the maximum extent practicable by incorporation as conditions to the permits or agreements. The Findings Statement is included as Appendix A.

Subsequently after a thorough, nearly 3-year review, the Marble River Wind Farm was approved by the Towns of Clinton and Ellenburg, and Marble River was granted Wind Energy permits under the Towns' local laws authorizing the construction of the Marble River Wind Farm.

1.2 Issued Permits for the Approved Project

Following the conclusion of SEQRA Review, Marble River was issued various permits for the Approved Project. Issued permits are described in Table 1.2-1.

Table 1.2-1. Permits Issued to Marble River for the Approved Project

Issued Permit, Approval or Authorization	Issuing Agency	Issuing Date
LOCAL APPROVALS		
Town of Clinton Wind Energy Facility Permit under Local Law No. 1 of 2005.	Clinton Town Board	06/17/2008
Height Variance and turbine setback distance variance	Clinton Town Board	05/14/2008
Highway Work Permit	Clinton Town Board	Included in host community agreement
Town of Clinton Host Community Agreement	Clinton Town Board	01/01/2009 (effective date)
Town of Ellenburg Host Community Agreement	Ellenburg Town Board	01/01/2009 (effective date)
Town of Ellenburg Special Use Permit under Local Law No. 4 of 2005.	Ellenburg Town Board	06/17/2008
COUNTY		
Highway Work Permit	Clinton County Highway Department	Expected September 2010
PILOT Agreement	Clinton County Industrial Development Agency	Expected September 2010
STATE APPROVALS		
PSL §68 Certificate of Environmental Compatibility and Public Need	New York State Department of Public Service	6/19/2008
Article 24 Freshwater Wetlands Permit	New York State Department of Environmental Conservation	9/30/2008
Article 15 Protection of Waters Permit	New York State Department of Environmental Conservation	9/30/2008
State Pollution Discharge Elimination System Permit (for Construction Discharges)	New York State Department of Environmental Conservation	11/23/2008
Special Use Permit for Oversize/Overweight Vehicles	New York State Department of Transportation	In Process
Highway Work Permit	New York State Department of Transportation	In Process
FEDERAL APPROVALS		
Approval of Nacelle Lighting Plan and Determination of No Hazard	Federal Aviation Administration	4/16/2009
Wetland and Stream Disturbance Permit pursuant to Section 404 of the C.W.A.	United States Army Corps of Engineers	9/1/2009

1.3 Summary of Project Modifications

As explained above, Marble River has proposed modifications to the Approved Project that would consolidate and reduce the Project size and enhance Project efficiency in order to maintain anticipated electricity production levels, in a manner that will avoid any additional significant adverse

impacts as compared to the Approved Project. In fact, many of the proposed modifications will further avoid or reduce impacts that would have resulted from the Approved Project. An overall map showing the locations of wind turbines and accompanying infrastructure proposed in 2006, compared to the modified layout, is provided as Figure 3. Specifically, the Marble River proposes the following modifications:

- A change in the model of turbine from a Suzlon S88 with a capacity of 2.1 MW to a Vestas V112 which has a capacity of 3.0 MW,
- A reduction in the number of turbines from 109 to 74,
- A decrease in the project area from 17,000 acres to approximately 11,500 acres,
- A decrease in the length of proposed access roads from 48 miles to 19 miles,
- A decrease in the length of underground electrical collection lines and minor modifications in the routing of these lines from 55 miles to 38 miles,
- The removal of all 13.6 miles of overhead electrical collection lines,
- A minor modification of the location of Turbines 91, 96S, 4A, 50, 56, and 161 due to change in turbine model,
- Relocations of 15 turbines to address requirements by the U.S. Army Corps of Engineers (“Corps”) and New York State Department of Environmental Conservation (“NYSDEC”) as a part of wetland and stream disturbance permit review, and
- An increase in the overall height of the turbine from 407 to 492 feet.

Additionally, Section 1.1 of the SEIS indicates that the project construction schedule would start in Spring 2008 and be completed by December 2009. Based on the proposed modifications to the Project, construction is scheduled to start in Fall 2010 and be completed in 2012². No other project modifications are proposed.

As a result of proposed modifications, Marble River submitted applications to the Towns of Clinton and Ellenburg to modify the issued permits for Wind Energy Conversion Systems (“WECS”), pursuant to the respective local laws on August 2, 2010. The request for a permit modification is subject to review under SEQRA. As such, Part 1 of a Full Environmental Assessment form for the Modified Project was prepared and submitted to the Towns (Appendix B). It is assumed that the Towns of Clinton and Ellenburg will again serve as co-Lead Agencies under SEQRA to evaluate the Modified Project, and upon Lead Agency determination, subsequently make a determination of significance in accordance with 6 NYCRR §617.7. Likewise, Marble River has or will submit

applications to other agencies listed in Table 1.2-1 to seek modifications to other federal, state or local permits or approvals, as necessary to construct the Modified Project.

1.4 Modified Project Location

Largely, the remaining turbine locations within the Project have not changed from the Approved Project. As described in the Approved Project SEQRA record (DEIS Section 2.4), the Project will be located in the Towns of Clinton and Ellenburg, Clinton County, New York. The regional location of the Project is depicted in Figure 1. The Project area is located on the Churubusco plateau, generally around the Hamlet of Churubusco, in the Town of Clinton, New York. The southern boundary of the Project area runs east to west 1 mile north of the Village of Ellenburg Center in Ellenburg, New York. The northern boundary of the Project area runs east to west approximately 500 feet south of the Canadian border (Figure 2). The Site is located on a plateau with limited relief in topography. Site elevations range from 800 feet above mean sea level (MSL) in the northern portion of the Site and 1,640 feet MSL in the southern portion of the Site. Brandy Brook, Crystal Creek and the English River drain the eastern portion of the Site. Tributaries to the Great Chazy River drain the southern portion of the Site and Hinchinbrook, Dry Brook and the Marble River drain the Western portion of the Site.

Highways that bisect include US 11 and State Highways 189 and 190. Major local roads including Frontier, Liberty Pole, Merchia, Whalen, Looby, Lagree, Campbell, Gagnier, Brandy Brook, Patnode, Sancomb, Ryan Number 5, Bohon, Clinton Mills, and Jones Roads and seasonal use roads including Robare Pond Road, Patnode, Swamp Road, and Jones Road occur within the Project boundaries.

1.5 Modified Project Description

Pages 4 through 12 of the Findings Statement provide a summary of the Approved Project description. The Modified Project is described below.

The size of the Project area has decreased from 17,000 acres, to approximately 11,500 acres. The land is primarily in forest and agricultural use. Farms and rural residences occur along the public roads within the Project area. Significant areas of wetlands located in the northeast portion of the Approved Project area have been eliminated from the Modified Project area.

² Estimated date of construction based upon recent coordination with New York Power Authority.

The Modified Project will include up to 74 wind turbines with 58 turbines proposed in the Town of Clinton and 16 turbines proposed within the Town of Ellenburg. This is a reduction in the number from the 109 turbines permitted in the Approved Project. These turbines are situated in the same locations as the Approved Project, except the locations of wind turbines 91, 96S, 4A, 50, 56, and 161, which have been slightly modified due to the change in turbine model. Additional wind turbine relocations were conducted to meet requirements of the Corps and NYSDEC as a part of wetland and stream disturbance permit issuance (Figure 3). Within the Town of Ellenburg, 10 turbines are proposed north of State Route 190; and an additional 6 turbines are proposed south of State Route 190. Within the Town of Clinton, 20 turbines are proposed south of State Route 11, 13 turbines are proposed north of State Route 11 and south of Looby Road, and an additional 25 turbines are proposed north of Looby Road. Each Vestas V112 turbine has a generating capacity of 3.0 MW and will include a 112-meter (367 foot) diameter, three-bladed rotor mounted on a 94-meter (308 foot) tall steel pole tower (total maximum height of 150 meters (492 feet)). To-scale drawings and specifications for the Vestas V112 turbine are presented in Appendix C. Three 94-meter tall, self supporting (unguyed) wind measurement towers will be installed in the Town of Clinton, as permitted in the Approved Project.

Other Modified Project infrastructure includes approximately 19 miles of gravel access road, and approximately 38 miles of underground electrical collection lines, a lay-down yard and an Operations and Maintenance (“O&M”) facility. This is a reduction from the 48 miles of gravel access road, and 55 miles of electric collection lines in the Approved Project. No changes to the lay-down yard or Operations & Maintenance (“O&M”) facility are proposed. The access roads, underground electrical collection lines, temporary lay-down yard, and O&M facility will be installed as described in Section 2.5 of the DEIS and Section 2.5 of the SEIS.

As originally permitted in the Approved Project, a Point of Interconnection (“POI”) Station, approximately 200 feet x 350 feet in size, will be located at the New York Power Authority (NYPA) 230 kilovolt (kV) transmission line easement area. Neighboring this station to the north, Marble River will construct two 34.5 kV collector stations, each approximately 136 feet x 173 feet. Each collector station will have ten collector bays laid out so as to accommodate eight collector circuits, including two spare bays. The POI station and collection stations, previously described in Section 2.5 of the DEIS and SEIS, were similarly approved and permitted, and no modifications are proposed.

2.0 EVALUATION OF POTENTIAL IMPACTS OF THE MODIFIED PROJECT AND PROPOSED MITIGATION

The Approved Project Record described the existing environmental setting, evaluated potential environmental and socioeconomic impacts, and presented proposed mitigation measures to compensate for unavoidable adverse environmental impacts to the maximum extent practicable. Topic areas reviewed in the Approved Project Record include:

Geology, Soils and Topography

Water Resources

Ecological Resources

Traffic and Transportation

Land Use and Zoning

Community Facilities and Services

Cultural Resources

Visual Resources

Climate and Air Quality

Sound

Socioeconomics

Telecommunications

Safety and Security

Additionally, as required by SEQRA, the Approved Project Record provided an analysis of unavoidable adverse environmental impacts, cumulative impacts, growth inducing impacts, irretrievable commitment of natural resources, effects on the use and conservation of energy and an alternatives analysis.

The Findings Statement (see Appendix A), analyzed potentially significant adverse environmental impacts from the Approved Project, and identified mitigation measures intended to mitigate those impacts to the maximum extent practicable as required by SEQRA. This section discusses and compares, any quantitative and qualitative changes, or lack of changes, to resource-based impacts from the Modified Project to the conclusions in the Findings Statement regarding impacts on these resources from the Approved Project.

2.1 Geology, Soils, and Topography

2.1.1 Existing Conditions

Information regarding the existing conditions of physiography, geology, and soils is as described in Section 3.1 of the DEIS. This includes a summary of project area bedrock geology, surficial geology, soils conditions, and unusual landforms or geologic formations.

2.1.2 Comparison of Potential Impacts

As described in the Approved Project Record (see Sections 3.1 of the DEIS and SEIS), the Approved Project infrastructure was sited to avoid or minimize either temporary or permanent impacts to physiography, geology, and soils. The Modified Project will be sited in essentially the same locations, using the same methods as the Approved Project. Therefore the Modified Project will not result in greater significant adverse impacts on area physiography than the Approved Project, and due to the reduction in the project size, the Modified Project will actually reduce the impacts on these resources that were anticipated in the FEIS and Findings Statement. These comparative potential short-term, long-term, and cumulative impacts to soils and geology are described below.

The Approved or the Modified Project will result in the same temporary and permanent disturbance of soils at each turbine footprint and gravel crane pad, access roads, staging and laydown areas, permanent meteorological towers, the O&M facility, storage area, and substation. The primary impact to physical features of the Project site will be the disturbance of soils during installation of turbine foundations, substation, underground 34.5 kV cable, and access roads. In each case, the construction of the underground collection line will result in only temporary soil disturbance. Additionally, delivery of turbine components along proposed construction routes will require some level of improvement to public road intersections and culverts. It is generally anticipated that roadway improvements for the Modified Project will be nearly identical to the Approved Project (as described in the Section 2.6 of the DEIS). Since it will involve fewer turbines and less collection line (overhead and underground) there will be fewer of these installation and siting impacts for the Modified Project than for the Approved Project.

Based on the Modified Project design, potential soil disturbance and impact resulting from all construction activities could total up to 453.5 acres (temporary and permanent impacts). This is a significant reduction in comparison to up to 835 acres of total soil disturbance for the Approved Project. As described for the Approved Project, the actual total impacts for the Modified Project will likely be less than these calculations indicate, due to the fact that proposed roads utilize existing farm lanes to access turbine sites (thus reducing impacts for new road construction), to the extent possible.

Overall, the Modified Project will result in a permanent conversion of approximately 88 acres of land into built facilities (0.2-acre crane pad and foundation at each tower site, maximum 20-foot-wide permanent access roads, a 4.2-acre substation, a 1.1-acre collection station, a 5-acre O&M building,

and 0.1 acre at each of the three permanent meteorological tower locations, compared to 134 acres of permanent disturbance described in Section 2.3.1 of the FEIS for the Approved Project. The decrease in permanent soil impacts between the Approved Project and Modified Project is due to the decrease in Project size and consolidation of Project infrastructure, (fewer turbines, reduced length of the access roads and underground electrical collection lines, and elimination of overhead electrical lines). For the Modified Project, as with the Approved Project, beyond occasional soil disturbance associated with Project maintenance and repair, impacts caused by the operation of this Project on physiography, geography, and soils are expected to be minimal.

2.1.3 Mitigation

Proposed measures to avoid, minimize, and mitigate impacts to physiography, soils, and topography are as described in the DEIS and SEIS (Sections 3.1.3) of the Approved Project. Because there is an overall decrease in the temporary and permanent impacts as a result of the Modified Project, no additional mitigation is required or proposed.

2.2 Water Resources

2.2.1 Existing Conditions

On behalf of Marble River, Tetra Tech EC, Inc. ("TTECI") conducted extensive wetland surveys for the Approved Project, providing site-specific information regarding surface waters and wetlands. The DEIS included Wetland Delineation Report dated March 2006 (DEIS Appendix E), the SEIS included a June 2007 Updated Wetland Delineation Report dated June 2007 included (SEIS Appendix E), and the FEIS included an Updated Wetland Delineation Report (FEIS Appendix A). These reports provide an inventory of all federal and state freshwater wetlands and streams delineated within the Project area for the Approved Project.

TTECI conducted additional wetland and stream studies during July 2010 for previously unsurveyed areas in the Modified Project area. The Supplemental Wetland Delineation Report, which provides an updated description of federal and state freshwater wetlands identified within the Modified Project area, is included as Appendix D of this EIAR. The supplemental report includes descriptions of the Modified Project area, methods used to determine the presence of wetlands, information reviewed (concerning wetlands and soils), field survey results (relating to delineated wetlands, surface waterbodies, vegetation, soils, and hydrology), and a summary of the NYSDEC regulated wetlands and adjacent areas.

Section 3.2.1 of the DEIS for the Approved Project contains a description of the wetland community types. Wetland community types found within the Approved Project area are the same as those found within the Modified Project area.

Existing conditions for groundwater, which apply to both the Modified Project and the Approved Project, are as described in Section 3.2.1.3 of the DEIS.

2.2.2 Comparison of Potential Impacts

2.2.2.1 Construction

As discussed in the Section 3.2 of the DEIS, the Approved Project was designed to avoid or minimize overall permanent impact on surface water bodies/streams and wetland areas. This is also true for the Modified Project. As part of the avoidance and minimization effort, the layout was revised so that no turbine foundations are located within delineated wetlands. This is also true for the Modified Project. See Section 3.2.2.1.1 of the DEIS and SEIS for specific design criteria used to minimize wetland impacts. Opportunities for additional wetland avoidance and impact minimization were identified and evaluated during the federal and state wetland permitting process for the Approved Project. Permits to disturb wetlands and streams were issued to Marble River by the NYSDEC and Corps, on 9/30/2008, and 9/1/2009, respectively.

Section 3.2.2.1 of the SEIS describes anticipated temporary disturbance and permanent impacts to wetlands as a result of construction of the Approved Project. In the SEIS, it was described that permanent loss of surface water/wetland acreage will occur along proposed access roads and within the work areas of proposed wind turbines. It was further described that wetlands will also be permanently impacted due to the installation of wind turbine foundations and structural fill. Final impact calculations to wetlands were estimated and provided in Appendix B of the FEIS. Based on the specific engineering site plans provided by URS Corporation, TTECI identified approximately 8.9 acres of wetlands that will be permanently impacted by Approved Project construction. By community type, the permanently impacted wetland will include 3.1 acres of forested wetlands, 2.6 acres of scrub-shrub wetland, and 3.2 acres of emergent wetland. Construction was also anticipated to result in temporary impacts to approximately 65.5 acres of wetlands: 38.5 acres of forested wetland, 14.1 acres of scrub-shrub wetland and 12.8 acres of emergent wetlands. Approximately 88% of the estimated construction-related wetland impacts are temporary disturbances and were to be restored following the Approved Project construction. Proposed wetland restoration areas are as described in the DEIS. Additionally, TTECI identified 65 surface waterbody crossings within the Approved Project site boundaries. The only NYSDEC protected stream that was anticipated to be

crossed is the English River, located in the northeastern portion of the Approved Project site. The English River is classified as C(T), indicating that it supports a trout population.

The nature of impacts to wetlands and streams for the Modified Project is similar to those described above (and in the Approved Project Record) for the Approved Project. However, due to the reduction in the number of turbines and the consolidation of infrastructure, the anticipated impacts are significantly reduced for the Modified Project. Notably, Marble River eliminated the northeast cluster of turbines and an underground electrical collection routed through an ecologically sensitive area within the Project area. Moreover, the overhead electrical collection lines have been eliminated from the Project.

At this time, preliminary engineering has been completed for the Modified Project. Therefore, potential impacts to wetlands and streams have been determined based upon conservative assumptions for widths of disturbance around turbines (200 foot radius total disturbance/turbine and 0.2 acres permanent impact/turbine), underground electrical collection (3 feet wide permanent impact) and access roads (40 feet wide total disturbance, and 20 feet wide permanent disturbance). Based upon these assumptions, approximately 1.5 acres of wetlands will be permanently impacted by Modified Project construction. By community type, the permanently impacted wetland will include 0.8 acres of forested wetlands, 0.2 acres of scrub-shrub wetland, and 0.5 acres of emergent wetland. Construction was also anticipated to result in temporary impacts to approximately 18.9 acres of wetlands: 9.4 acres of forested wetland, 5.4 acres of scrub-shrub wetland and 4.1 acres of emergent wetlands. Approximately 92.6% of the estimated construction-related wetland impacts are temporary disturbances and will be restored following Project construction. Proposed wetland restoration areas are as described in the DEIS. Additionally, TTECI identified 56 surface waterbody crossings within the Modified Project site boundaries, none of which are regulated or protected by NYSDEC.

The wetland impacts described above for the Modified Project will be further refined once final engineering for the Modified Project is complete, and plan to be addressed during the anticipated permit modification request that will be submitted to the Corps and NYSDEC. This process, referred to as the Joint Application process, was described in detail in the DEIS (Section 3.2.2.1.1).

2.2.2.2 Operation

Operational impacts to wetlands from the Approved Project are described in Sections 3.2.2 of the DEIS and the SEIS respectively. These same operational impacts will occur as a result of the

Modified Project. Long-term impacts to wetlands will result from vegetation management activities in forested wetlands (e.g., periodic clearing of vegetation along underground electrical interconnect routes and selective tree clearing around tower sites). These activities will not result in a loss of wetland acreage, but will result in the conversion of forested wetlands to systems dominated by shrub and herbaceous vegetation (scrub-shrub/wet meadow/emergent). However, due to its smaller size, the Modified Project will have fewer operational impacts than were anticipated in the FEIS and Findings Statement for the Approved Project.

No significant changes to stormwater runoff volumes are anticipated, as only approximately 88 acres of impervious/compacted surface to the 11,500-acre (<1%) Modified Project area is anticipated. This is a significant reduction as compared to the creation of 134 acres of impervious surface permitted for the Approved Project. However, as described for the Approved Project, installation of permanent Project infrastructure associated with the Modified Project could result in localized changes to runoff/drainage patterns. Operational impacts to groundwater associated with the Modified Project are also as described in Section 3.2.2.2.2 of the DEIS for the Approved Project.

2.2.3 Mitigation

Proposed measures to avoid, minimize, and mitigate impacts to water resources are as described in Section 3.2.3 of the DEIS and SEIS, as well as Section 2.4.1 and Appendix E, Wetland Mitigation Plan, of the FEIS for the Approved Project. No additional mitigation measures are proposed for the Modified Project. Marble River will seek a modification to the permits issued by the Corps and NYSDEC for disturbances to streams and wetlands. The permit modification requests will include an update to the approved/accepted Wetland Mitigation Plan.

2.3 Ecological Resources

This section provides an updated description of ecological resources based on the Modified Project boundaries and new information that has become available since completion and acceptance of the FEIS and Findings Statement.

2.3.1 Existing Conditions

2.3.1.1 Vegetation

Vegetative communities, common and rare plant species, and significant natural communities found within the Approved Project site are as described in the DEIS (Section 3.3), SEIS (Section 3.3), and FEIS (Section 2.2.2) for the Approved Project. This description is also true for the Modified Project,

which is located in the same area. However, due to the decrease in the Project size from the Approved Project, the acreage of vegetative communities present within the Modified Project site have similarly decreased. The Project site for the Modified Project is now comprised of approximately 7,081 acres of forest land (61% of the site), 2,528 acres of agricultural land (21.8% of the site), 1,490 acres of successional shrubland (13% of the site), 180 acres of successional old field (1.6% of the site), 164 acres of developed/disturbed lands (1.5% of the site), and 126 acres of open water (1% of the site). This compares to the Approved Project described in Section 3.3 of the SEIS which is comprised approximately 12,840 acres of forest land (69% of the site), 2,735 acres of agricultural land (15% of the site), 2,232 acres of successional shrubland (12% of the site), 348 acres of open water (2% of the site), 199 acres successional old field (1% of the site), and 66 acres of developed/disturbed lands (> 1%).

2.3.1.2 Fish and Wildlife

Fish and wildlife resources within the Modified Project area are the same as for the Approved Project, and are as described in DEIS (Section 3.3), SEIS (Section 3.3), and FEIS (Section 2.2.2).

2.3.1.3 Threatened and Endangered Species

Threatened and endangered species are as described in Section 3.3 of both the DEIS and SEIS of the Approved Project and are the same for the Modified Project.

2.3.2 Comparison of Potential Impacts

2.3.2.1.1 Vegetation

The nature of impacts to vegetation and vegetative communities for the Modified Project are the same as the Approved Project. Project construction and operation will result in temporary and permanent impacts to vegetation within the Project site. However, as with the Approved Project, no plant species occurring in the Modified Project area will be extirpated or significantly reduced in abundance as a result of construction activities.

For the Approved Project, the anticipated types or nature of Project-related impacts to vegetation are as described in the DEIS (Section 3.3). For the Modified Project, the anticipated impacts to vegetation and specific vegetative community types have largely been reduced due to the decrease in Project size. See Table 2.3-1, below. The Modified Project will result in disturbance to approximately 251.5 acres of agricultural land, 1 acre of successional old-field, 37.5 acres of successional shrubland, and 160 acres of forest. This compares to disturbance estimates of 266

acres of agricultural land, 5 acres of successional old-field, 73 acres of successional shrubland, and 347 acres of forest for Project construction described in the Approved Project. Although there is a minor increase in anticipated impacts to agricultural land, this has resulted from relocation of infrastructure outside of forestland or other sensitive lands such as wetlands. As shown in Table 2.3-1 below, overall the Modified Project will significantly reduce both temporary and permanent impacts to vegetation and vegetative communities as compared to the Approved Project.

Table 2.3-1. Impacts to Vegetative Communities

Community	Total Disturbance (Acres)		Temporary Disturbance (Acres)		Conversion to Other Successional Communities (Acres)		Permanent Loss (Acres)	
	Modified Project	Approved Project	Modified Project	Approved Project	Modified Project	Approved Project	Modified Project	Approved Project
Agricultural Land	251.5	266.0	201.5	219.0	0.0	0.0	50.0	47.0
Successional Old-Field	1.0	5.0	0.5	4.0	0.0	0.0	0.5	1.0
Successional Shrubland	37.5	73.0	30.5	60.0	0.0	0.0	7.0	13.0
Forest	160	347.0	0.0	0.0	130.0	276.0	30.0	71.0
Disturbed-Developed	1.5	15.0	1.0	13.0	0.0	0.0	0.5	2.0
Total	451.5	706.0	233.5	296	130.0	276.0	88.0	134

As shown in this Table, the Modified Project as compared to the Approved Project will have significantly reduced permanent impacts on forestlands. As previously described in the SEIS of the Approved Project, permanent impacts to forest vegetation will occur through conversion of one vegetative community to another (i.e., forest to successional shrubland or old field). This conversion will occur within the turbine workspaces, along access roads, and within the wind measurement tower workspaces. A total of 130 acres of forestland will be converted to successional communities for the duration of the Modified Project operation, as compared to 276 acres for the Approved Project.

2.3.2.1.2 Fish and Wildlife

Potential construction and operation-related impacts to wildlife for the Approved Project are described in Section 3.3 of the DEIS and SEIS, and Section 2.2 of the FEIS. A comparison of anticipated construction and operation related impacts to fish and wildlife for the Modified and Approved Projects are described below.

Habitat Loss: It is anticipated the Modified Project would result in a total of 88 acres of wildlife habitat being permanently lost from the Project site (i.e., converted to built facilities), as compared to 134 acres identified for the Approved Project. Therefore, the Modified Project results in an overall reduction in the amount of habitat loss.

Forest Fragmentation: As mentioned in the discussion of construction-related impacts, the Modified Project will result in permanent loss or conversion of 160 acres of forest habitat, as compared to 347 acres in the Approved Project.

Disturbance/Displacement: Anticipated disturbance/displacement impacts on wildlife for the Modified Project are similar to the Approved Project and are as described in Sections 3.3.2 of the DEIS and SEIS.

Collision: The information regarding anticipated collision impacts on wildlife can be found in Section 3.2.2.2.2 of the DEIS and SEIS. The Vestas V112 proposed as a part of the Modified Project has a 10% larger overall rotor swept zone area, which has the potential to increase potential collision impacts (injury or mortality) to wildlife. However, the change in spatial distribution of turbines on the landscape is expected to minimize exposure to birds in areas where there is typically higher bird abundance and use such as wetlands and water bodies. Also, the elimination of the 13.6 miles of overhead electrical collection lines, are anticipated to reduce the impacts on wildlife due to collision.

2.3.2.1.3 Threatened and Endangered Species/Unique Natural Communities

As described in Sections 3.3.2 of the DEIS and SEIS, and 2.2 of the FEIS for the Approved Project, no state listed threatened or endangered plant species are located within the Project area, and therefore no impacts are anticipated. Since the Modified Project area is a smaller footprint within the Approved Project area, no impacts are anticipated.

Potential impacts to listed wildlife species as a result of the Approved Project are as described in Section 3.3.2 of the DEIS. Listed wildlife species observed within the Approved Project area, and likely to be nesting, include one state-listed threatened species (northern harrier) and five state-listed species of special concern (horned lark, grasshopper sparrow, vesper sparrow, sharp-shinned hawk, and Cooper's hawk). In addition, the unoccupied nest of what appeared to be an osprey (state-listed special concern) was also observed on site. These species utilize a variety of habitats, including open grassland (northern harrier, horned lark, vesper sparrow, and grasshopper sparrow), forest (Cooper's hawk and sharp-shinned hawk) and open water/wetlands (osprey). Because the Modified

Project will occur in or adjacent to all of these habitat types (as with the Approved Project), construction-related impacts to these species are possible. Disturbance/displacement, habitat loss, and/or mortality impacts to eggs or young of these species could occur. However, significant additional avoidance of wetlands and areas of undisturbed forest (particularly the elimination of the cluster of turbines in the northeast section of the Approved Project) will occur as a result of the Project modifications; and therefore, should further serve to avoid or minimize impacts to the three listed raptor species. Given the relatively small area of grassland habitat that is being directly or indirectly impacted by Project construction, any impacts to the other listed species will be minor and largely temporary. Because listed mammals, reptiles and amphibians are not likely to occur to site, construction-related impacts to such species are not anticipated.

The Approved Project area included two unique natural communities (rich shrubland fen and sandstone pavement barrens) that occurred within the eastern area of the Project site (see Section 3.3.1.1.2 of the DEIS). However, as a result of project modifications, these two unique areas are no longer within the Modified Project area and therefore the potential impacts identified for the Approved Project have been eliminated..

2.3.3 Mitigation

Mitigation for impacts to ecological resources are as described in the DEIS (Section 3.3), the SEIS (Section 3.3), and the FEIS (Section 2.4.2) and include environmental monitoring during construction. The Findings Statement concludes that direct and indirect impacts to habitat and wildlife have been minimized to the greatest extent possible (p. 44). The Modified Project further reduces impacts to vegetative communities as compared to the Approved Project. Additionally, no increase in impacts to wildlife will be realized as a result of the project modifications. Therefore, no change in mitigation is proposed.

2.4 Traffic and Transportation

2.4.1 Existing Conditions

The Project area for both the Approved Project and the Modified Project is served by a network of state, county and local highways and roads that range from two-lane highways to gravel roads and dirt access roads and logging roads. Existing traffic and transportation conditions were presented in Section 3.4 of the DEIS for the Approved Project. This includes a description of the transportation routes outside of the Project area, oversized/overweight truck routes, transportation routes within the Project area, and school bus routes.

2.4.2 Comparison of Potential Impacts

Impacts to traffic and transportation are described in the DEIS Section 3.4. Additionally, Marble River presented a supplemental traffic assessment regarding the evaluation of preferred delivery routes for turbine components and other associated materials and equipment necessary for construction and operation of the Project (SEIS Appendix H). As stated in the DEIS, the roads within the Project site vary in surface type, width and condition. The DEIS and SEIS presented an assessment of roads that will require upgrades to allow them to be used for turbine component and construction material delivery. These upgrades will include surface upgrades, road profile modifications, turn radius improvements at intersections, the addition of structural capacity and surface drainage, the addition of culverts and possible minor road widening. The DEIS and the SEIS provide a description of anticipated road improvement areas, delivery routes, and construction trips generated by the Approved Project.

It is anticipated that the traffic and transportation-related impacts of the Modified Project will be essentially the same as described in the Approved Project Record, and the same general delivery routes, local highways, and roads will be used for turbine component delivery and construction material delivery. It is also projected that a reduction in construction related traffic trip generation will occur as a result of the reduced number of turbines.

2.4.3 Mitigation

As described in the Section 3.4 of the DEIS and SEIS for the Approved Project, delivery routes have been selected to minimize impacts to local roads and communities. Delivery routes have been selected based upon extensive field surveys and in coordination with the Clinton County Highway Department. Marble River will obtain all required town, county and state permits. A road improvement plan will be implemented in each town that includes necessary improvements and repairs to be completed at Marble River's expense. Anticipated improvements are as described in the SEIS Section 3.4.3.

Since the Modified Project will not use new construction delivery routes, and no additional impacts to traffic or transportation are anticipated as a result of the Modified Project, no additional mitigation measures beyond those described for the Approved Project are required or proposed.

2.5 Land Use and Zoning

Land use and zoning in the Project site was determined through review of local town codes, tax parcel maps, aerial photographs, and field review conducted during 2005. Since the Approved

Project was permitted, the Project site has decreased in size. As verified by local officials, the land use and zoning within Modified Project area is the same as identified in Section 3.5 of the DEIS.

2.5.1 Existing Conditions

2.5.1.1 Regional Land Use Patterns

Regional land use patterns have not changed since Marble River received its permit and are as described in Section 3.5 of the DEIS. The Towns of Clinton and Ellenburg are located in northwest Clinton County, along the Canada-United States border. This area is primarily rural and dominated by active and reverting agricultural land, managed forestland, large wetland areas, and widely scattered rural homes and farms. Most of the agricultural land in this region of New York is devoted to dairy farming, and a significant amount of agricultural land has gone out of production over the last 20 years.

2.5.1.2 Project Area Land Use and Zoning

Land use within the Modified Project site has not changed since the Towns approved the Project. Active farms, managed forestland, and single-family rural residences are the dominant land uses within the Modified Project area.

Zoning within the Modified Project area has not changed. The Town of Ellenburg has a Wind Energy Facility Law (Local Law No. 4 of 2005) that allows for the creation of Wind Overlay Zones in the Rural Use and Rural Arterial zoning districts. Wind-powered electric generating facilities (referred to as a WECS in the local law) can be developed within a Wind Overlay Zone. The Town of Clinton also has a local law governing Wind Energy Facilities (Law Local Law No. 1 of 2005). This local law provides the Town of Clinton with the authority to approve or deny applications for Wind Energy Permits (see Appendix I of the DEIS). A Wind Energy Permit, if approved, allows for the construction, maintenance and operation of a Wind Energy Facility.

Based on the new Project layout and turbine component specifications, Marble River will request a height waiver from the Town of Clinton and a height variance from the Town of Ellenburg. The current local law in Clinton allows for 400-foot turbine heights, while the Town of Ellenburg allows for a 440-foot turbine height. The Modified Project includes a change in the turbine model and dimensions to the proposed Vestas V112, which has a total tip height of 492 feet. No other waivers will be necessary from the Towns of Clinton or Ellenburg.

2.5.1.3 Agricultural Land

Both the Modified Project and the Approved Project have portions of two agricultural districts (Districts 03 and 10) that occur within the Project site boundary. Approximately 56% of the Approved Project site is located within these districts. In comparison, approximately 58% of the Modified Project site is located within an agricultural district. While, the Approved Project layout was comprised of 2,735 acres (15%) of agricultural land, the Modified layout consists of 2,528 acres (22%) of the approximately 11,500-acre area in row crops, field crops, or pastureland.

2.5.1.4 Future Land Use

As stated in Section 3.5.1 of the DEIS for the Approved Project, aside from the permitted Project and other proposed wind power projects, future land use patterns in Clinton County are anticipated to remain largely unchanged for the foreseeable future. Construction and operation of the Modified Project, as with the Approved Project, is not anticipated to impact future land use in the Project area, with the exception of minor land conversion to build wind farm facilities on each parcel.

2.5.2 Comparison of Potential Impacts

The Modified Project will be in conformance with local zoning but will require a height waiver from the Town of Clinton and a height variance from the Town of Ellenburg. Additionally, similar to the Approved Project, the Modified Project will have localized impacts on land use. These impacts include temporary, construction-related impacts, as well as permanent impacts (related to operational facilities and infrastructure). These impacts are summarized below.

2.5.2.1 Construction

Construction-related disturbance to agricultural land for the Approved Project was anticipated to impact approximately 266 acres (of which 219 acres will be restored to agricultural use). The Modified Project will result in a minor decrease in impacts to agricultural land use. The Modified Project is anticipated to impact 251.5 acres of agricultural land, of which 201.5 acres will be restored to agricultural use. As previously described in Section 3.5.2 of the DEIS, along with this temporary impact to agricultural land, movement of equipment and material could result in damage to growing crops, damage to fences and gates, damage to subsurface drainage systems (tile lines), and temporary blockage of farmer's access to agricultural fields. However, wind turbines and associated facilities for the Modified Project have been located so as to minimize loss of active agricultural land and interference with agricultural operations. Additionally, measures to minimize construction related impacts to agricultural land are detailed in Appendix D of the DEIS (Agricultural Protection

Measures), which are prepared in accordance with New York State Department of Agriculture and Markets mitigation guidelines.

The Approved Project anticipated a disturbance to approximately 347 acres of forestland, while the Modified Project is anticipated to clear approximately 160 acres of forestland. As previously described in Section 3.3 of the DEIS, as with the Approved Project, for the Modified Project, construction related impacts to forestland have also been minimized by siting turbines in previously disturbed areas and using the existing network of forest roads, log landings, and skid trails to accommodate permitted and proposed access road and interconnect routes. Improvements to existing roads to accommodate construction activity will ultimately enhance access to these properties for future forest management activities.

2.5.2.2 Operation

Marble River will request a height waiver from the Town of Clinton and a height variance from the Town of Ellenburg to exceed the maximum allowable structure height of 400 feet and 440 feet, respectively, as the currently proposed Vestas V112 turbine is 492 feet in height.

As compared with the Approved Project, only minor changes to land use within the Project site are anticipated as a result of Project operation for the Modified Project. The 74 turbine sites, substation, and other ancillary facilities represent the cumulative conversion of approximately 88 acres of land from agricultural land, meadow/brushland, or forestland to developed land use. This is a decrease in 45 acres from the Approved Project, which consisted of 134 acres of permanent disturbance. Only 1.5 acres of developed land will be impacted by the Modified Project, compared to 15 acres for the Approved Project, but these impacts will be confined to the properties of participating landowners, and largely temporary in nature (construction activity).

2.5.3 Mitigation

Mitigation for impact to land use and zoning is as described in the DEIS and SEIS, Sections 3.5. Because an overall reduction in impacts to land use is anticipated as a result of the Modified Project, no additional mitigation is required or proposed.

2.6 Community Facilities and Services

2.6.1 Existing Conditions

The Towns of Clinton and Ellenburg are served by a range of community facilities and services, including public utilities and infrastructure, police and fire protection and emergency response, educational facilities, and parks and recreation. These services are described in Section 3.6.1 of the DEIS and are generally considered adequate for the area's population. These facilities and services are the same when considering the Approved Project in relation to the Modified Project.

2.6.2 Comparison of Potential Impacts

As with the Approved project, the Modified Project is not expected to result in significant adverse effects on community facilities or services within the Project area, including utilities, provision of emergency services, libraries, park and recreational areas, and health care and public education facilities. In fact, the additional municipal and county revenue generated by the Modified Project will help maintain and possibly expand these services and facilities.

2.6.3 Mitigation

Mitigation to community facilities and services is as described in Section 3.6.3 of the DEIS. Mitigation measures for the Approved Project and the Modified Project are the same. They include additional tax revenue which will help support community facilities and services within the Modified Project area, including utilities, provision of emergency services, libraries, park and recreational areas, and health care and public education facilities and services without significantly drawing upon them. Because the Modified Project does not result in additional adverse impacts to community facilities and services, no additional mitigation measures are required or proposed.

2.7 Cultural Resources

2.7.1 Existing Conditions

Cultural resources (including archeological sites located within the Approved Project area and historically significant properties or structures and archeological sites located within the five-mile-radius survey area for the Approved Project) are identified in the DEIS (Section 3.7 and Appendix J), SEIS (Section 3.7 and Appendix J), and FEIS (Sections 2.2.3, 2.3.4, and 2.4.3 and Appendix K) of the Approved Project Record. The cultural resources studies prepared for the Approved Project were conducted in accordance with the *New York State Historic Preservation Office Guidelines for Wind Farm Development Cultural Resources Survey Work* (the SHPO *Wind Guidelines*) issued by the

New York State Office of Parks, Recreation, and Historic Preservation (OPRHP) in 2006. These studies were submitted to OPRHP for review and comment in accordance with Section 106 of the National Historic Preservation Act; Section 14.09 of the New York State Parks, Recreation, and Historic Preservation Law; and SEQRA. A review of the previously conducted cultural resources surveys and associated regulatory agency correspondence relative to the Modified Project design is included herein as Appendix E.

2.7.2 Comparison of Potential Impacts

2.7.2.1 Archeological Resources

The total archeological survey fieldwork conducted for the Approved Project included the excavation of 4,913 shovel tests and pedestrian surface surveys of an additional 84 acres in cultivated fields (SEIS Appendix J; FEIS Appendix K). The Modified Project layout significantly reduces the Project footprint relative to the Approved Project, due to the elimination of 35 proposed wind turbines and associated reduction in the lengths or sizes of other facilities (Table 2.7-1). The Modified Project layout is located within a substantially smaller Project Area (referring to all participating parcels within which Project facilities may be constructed), reduced to 11,500 acres from 17,000 acres. The Modified Project layout also results in substantially reduced total lengths for access roads (19 miles reduced from 48 miles) and underground electrical interconnects (38 miles reduced from 55 miles). Another significant change in the Modified Project layout is the elimination of a 13-mile-long overhead electrical interconnection line that would have required a 120-foot-wide right-of-way (ROW). Overall, the Modified Project layout represents a significant reduction in the total area of ground disturbance, or archeological area of potential effect (APE) for the Project.

Table 2.7-1. Reduced Project Footprint and Archeological APE

Project Components	Approved Project Layout	Modified Project Layout	Decrease in Archeological APE
Project Area	17,000 acres	11,500 acres	32%
Turbines	109	74	32%
Access Roads (40 feet wide)	48 miles	19 miles	60%
Overhead Electrical Collection Line (120-foot ROW)	13 miles	0 miles	100%
Underground Interconnect (10-foot ROW)	55 miles	38 miles	31%
Substation/Point of Interconnect	5 acres	4.2 acres	16%
Operations, Maintenance, & Staging	23 acres	23 acres	0%
Wetland Mitigation Areas	22.4 acres	22.4 acres	0%

As previously noted, the archeological survey work for the Approved Project was conducted in accordance with the SHPO *Wind Guidelines*, which specify an archeological testing methodology

that intensively samples selected areas within the larger Project area. The amount of archeological survey work conducted (i.e., the number of shovel tests excavated) was determined based on the total area of proposed ground disturbance (archeological APE) at the time that the archeological work was conducted. The SHPO *Wind Guidelines* are based on the assumption that additional archeological survey work is not necessary if project components move around during the project development process, as long as the total area of ground disturbance for the project does not increase (OPRHP 2006). As mentioned previously, the number of proposed turbines, length of access roads, and length of underground interconnects have all been substantially reduced in the Modified Project layout. In addition, only six of the proposed turbines in the Modified Project layout are sited in only slightly different locations than in the Approved Project layout (Appendix E), and the associated changes to access road and underground collection routes are relatively minor. Consequently, the previously conducted archeological survey work associated with Approved Project layouts adequately covers the Modified Project layout's archeological APE and no additional archeological survey work is required or proposed.

The archeological survey work conducted for the Approved Project layout resulted in the identification of 15 archeological sites. These included two prehistoric Native American sites (both isolated finds of possible flaked stone tools), 11 nineteenth-to-twentieth-century domestic sites (house foundations or farmstead remains), the abandoned railroad berm of the Ogdensburg & Lake Champlain Railroad, and the Clinton Mills Historic Site (an abandoned sawmill and associated town). A Phase 2 archeological investigation was conducted for the Clinton Mills Historic Site (FEIS Appendix K), which resulted in the recommendation that the Clinton Mills site was eligible for listing on the NRHP.

The Modified Project layout will not affect any identified archeological resources. As shown on Appendix E, all Project components in the Approved and Modified Project layout are sited to avoid impacts to the identified archeological sites. In the Modified Project layout, no Project facilities are located in the vicinity of the NRHP-eligible Clinton Mills Historic Archeological District (Appendix E), which further minimizes the potential impact of the Modified Project and eliminates the need for implementation of any avoidance measures in this area. In a letter dated August 30, 2010, SHPO concluded that based on the studies conducted for the Approved Project, no further archeological testing was required for the Modified Project (Appendix E).

2.7.2.2 Historic-Architectural Resources

The historic-architectural resources survey conducted for the Approved Project (SEIS Appendix J) resulted in the identification of 73 potential historic properties located within five miles of the permitted wind turbines. These included properties that were previously listed on the National Register of Historic Places (“NRHP”), previously determined by the New York SHPO to be eligible for listing on the NRHP, and newly identified properties which, in the opinion of Marble River’s consultants, satisfied NRHP eligibility criteria.

Most of the 35 wind turbines that are eliminated in the Modified Project layout were located in the northeast portion of the Project area (Figure 1). As depicted on Figure 2 (Appendix E), the elimination of these turbines results in a reduced 5-mile-radius Study Area for the Modified Project. Consequently, of the 73 properties identified in the historic-architectural resources survey (SEIS Appendix J), 20 are now located greater than 5 miles from the nearest proposed wind turbine in the Modified Project. These include 11 properties that SHPO determined were eligible for listing on the NRHP, six properties that SHPO determined were not eligible for listing on the NRHP, and three properties for which SHPO did not have sufficient information to provide a determination. Figure 2 (Appendix E) also depicts a viewshed analysis for the Modified Project layout (based on topography only) that identifies areas from which the proposed turbines could potentially be visible. The Modified Project layout does not result in any changes in the visibility of the Project from any historic property locations.

OPRHP staff indicated in correspondence dated August 30, 2010 (Appendix E) that the APE for visual effects on historic properties should remain unchanged, regardless of the elimination of 35 wind turbines and corresponding reduction in the 5-mile-radius visual study area for the Modified Project. Furthermore, OPRHP determined that the same properties previously identified as being adversely affected by the Approved Project will continue to be adversely affected by the Modified Project. The rationale for the determination of adverse effect on historic properties (Bonafide, October 29, 2007) resulting from the introduction of wind turbines into the rural landscape remains unchanged.

2.7.3 Mitigation

Proposed measures to avoid, minimize, and mitigate impacts to cultural resources are as described in the Findings Statement for the Approved Project. Since there is no change in the area of potential

effect and number of potentially affected historic properties as a result of the Modified Project layout, no additional mitigation is required or proposed.

2.8 Visual Resources

2.8.1 Existing Conditions

Existing conditions for the Approved Project related to visual and aesthetic resources (such as landscape similarity zones, viewer/user groups, and visually sensitive sites) located within the 5-mile-radius visual study area for the Approved Project are as described in the Visual Impact Assessment (“VIA”) (DEIS Appendix K) and Supplemental Visual Impact Assessment (“SVIA”) (SEIS Section 3.8 and Appendix K). While these existing conditions are substantially the same for the Modified Project, the existing visual environment has changed as a result of the construction of nearby wind power facilities owned by Noble Wind Energy, since the Approved Project was evaluated for potential visual impacts. An assessment of cumulative visual impacts included an expectation that the Noble Wind Energy projects would be constructed (see Cumulative Impacts Assessment conducted in DEIS and SEIS Sections 5.0). As a result of this recent construction, the visual study area now includes 192 existing wind turbines that were built as components of the Noble Clinton, Ellenburg, and Chateaugay Windparks constructed in 2008. The existing Noble projects are located adjacent to the Project area, to the east, southeast, and south of the Modified Project (Figure 4). The Noble Clinton Windpark is a 100.5 MW project that includes 67 1.5 MW turbines, the Noble Ellenburg Windpark is an 81 MW project that includes 54 1.5 MW turbines, and the Noble Chateaugay Windpark is a 106.5 MW project that includes 71 1.5 MW turbines (Noble, 2009). Each GE 1.5MW turbine in the existing Noble projects has a 77-meter (253-foot) diameter, three-bladed rotor mounted on an 80-meter (262-foot) tall steel pole tower (total maximum height of 118.5 meters (389 feet)).

2.8.2 Comparison of Potential Impacts

2.8.2.1 Construction

Visual impacts during construction of the Approved Project were described in Section 3.8 of the DEIS and SEIS and will be similar for the Modified Project. However, the visual impacts during construction, as described in Section 3.8.2.1 of the SEIS, regarding ROW clearing associated with the 34.5 kV overhead collection line have been eliminated for the Modified Project.

2.8.2.2 Operation

2.8.2.2.1 Viewshed Analysis

An updated viewshed analysis was prepared for the Modified Project layout consistent with the methods outlined in the Approved Project VIA (DEIS Appendix K) and SVIA (SEIS Appendix K). The results of the viewshed analysis for the Modified Project are depicted in Figure 5 and summarized in Table 2.8-1. The elimination of 35 proposed wind turbines in the Modified Project layout reduced the area of the 5-mile-radius visual study area (excluding all Canadian land area within five miles of the project) by 12,702 acres (from 125,248 acres for the Approved Project to 112,546 acres for the Modified Project; see Table 2.8-1).

Table 2.8-1. Viewshed Analysis Summary for the Modified Project

Type of Viewshed	Modified Project Layout				Approved Project Layout			
	5-Mile Viewshed 112,546 acres *		10-Mile Viewshed 256,215 acres *		5-Mile Viewshed 125,248 acre *		10-Mile Viewshed 273,215 acres *	
	Visible Acres	% Visible	Visible Acres	% Visible	Visible Acres	% Visible	Visible Acres	% Visible
Blade Tip: Topo Only	105,403	94%	190,493	74%	115,850	92%	207,378	76%
Nacelle (FAA): Topo Only	102,706	91%	176,799	69%	112,812	90%	195,915	72%
Blade Tip: Topo & Vegetation	24,591	22%	33,948	13%	38,987	32%	46,033	17%
Nacelle (FAA): Topo & Vegetation	20,914	19%	27,727	11%	not available	not available	not available	not available

* Calculations do not include Canadian land area

Topographic viewshed analysis (not including the potential screening effects of vegetation) of the 5-mile-radius visual study area (Table 2.8-1) indicates that the Modified Project layout will result in a decrease of 10,447 acres (relative to the Approved Project Layout) in the areas from which the Project could potentially be visible, from 115,850 acres to 105,403 acres. The area of potential nighttime visibility (assuming all turbines are lighted with FAA warning lights) within five miles of the project will decrease from 112,812 acres to 102,706 acres. Factoring vegetation into the viewshed analysis significantly reduces potential Project visibility, and further reduces the potential visibility of the Modified Project layout relative to the Approved Project layout. Vegetation (in combination with topography) will serve to screen the Modified Project layout from approximately 78% of the 5-mile-radius study area (daytime views) (i.e., potential visibility is limited to 22% of the area, or 24,591 acres). The viewshed for the Approved Project layout indicated that vegetation and topography

would screen 69% of the 5-mile-radius study area (i.e., potential visibility would have included 31% of the area, or 38,987 acres).

The 10-mile-radius viewshed analysis for the Modified Project layout (Table 2.8-1) also indicates an overall decrease in Project visibility relative to the Approved Project layout (again, excluding Canadian land areas). The area of potential blade-tip visibility based only on topography for the current layout decreases by 16,975 acres, to 190,403 acres from 207,378 acres for the Approved Project layout. Factoring vegetation into the analysis results in a further decrease in the amount of areas with potential blade-tip visibility to 33,948 acres for the Modified Project layout from 46,033 acres for the Approved Project layout. Based only upon topography, the area of potential nighttime visibility for the Modified Project layout in the 10-mile-radius viewshed also decreases from 195,915 acres for the Approved Project layout to 176,799 acres for the Modified Project layout.

2.8.2.2.2 Visual Simulations

Results of the field survey efforts conducted for the VIA were used as known location and scale references to modify the visual simulations reflecting the Modified Project (Appendix F). The techniques used in preparing the revised simulations are the same as were used for the Approved Project and are described in the DEIS (Section 3.8), VIA (Appendix K of DEIS), and SVIA (Appendix K of SEIS). Revised simulations from each of the viewpoints presented in the VIA and SVIA were prepared. Of the 19 viewpoints for which simulations were prepared in the VIA and SVIA, three no longer presented open views or visibility towards the Project as a result of project changes and the elimination of turbines and the overhead electrical lines. Revised simulations showing the Modified Project were prepared for the remaining 16 viewpoints. The revised simulations are presented in a three part series per viewpoint. For each viewpoint, a view is presented with the existing conditions (with constructed Noble Wind Energy facilities in some views), a view with the existing conditions and the modeled layout of the Approved Project, and a view with the existing conditions and the proposed Modified Layout. These are presented in Appendix F.

2.8.2.2.3 Comparative Visual Impact Evaluation of the Modified Project and the Approved Project

As a part of the VIA and SVIA, an in-house panel of three EDR landscape architects rated the Approved Project layout in terms of its contrast with existing components of the landscape. The methodology for the rating is provided in Section 3.8.2.2.5 of the DEIS. To evaluate the Modified Layout, one Registered Landscape Architect evaluated the 16 viewpoints for the Modified Project, using the same methodology that was used by the previous in-house panel.

The Landscape Architect was asked to evaluate the revised simulations for the Modified Project to determine if Project changes altered their previous conclusions. The Landscape Architect was also advised that since the previous evaluations, two new wind turbine projects were constructed. The existing Noble wind turbines appear in both the existing conditions and simulations that were evaluated for the Modified Project (Appendix F). The simulations for viewpoints 203, 205 and 212 (included in the VIA and/or SVIA) were not included in the updated evaluation because no turbines or other project infrastructure are visible in these views as a result of the Modified Project. The results of the Registered Landscape Architect's evaluation (Appendix F Contrast Rating Forms) are summarized in Table 2.8-2.

Table 2.8-2. Summary of Visual Simulation Assessment Contrast Ratings

Viewpoint #	Contrast Rating *				Composite
	Vegetation	Land Use	Land Form	Viewer Activity	
3	5	2.5	2.5	3.5	3.38
8	5	2.5	3.5	2.5	3.38
15	3	2.5	2.5	3.5	2.88
26	1.5	1.5	1.5	1.5	1.50
34	2	1.5	1.5	1.5	1.63
36	5	2.5	2	3	3.13
38	3.5	1.5	2.5	2.5	2.50
74	2.5	4	2	3.5	3.00
81	3	2	2	2.5	2.38
165	2	2	2	2	2.00
170	4	2	3	3	3.00
179	2	2	2	2.5	2.13
196	1	1	1	1	1.00
207	1.5	1	1	1	1.13
210	5	3	2	5	3.75
217	5	4	2	3.5	3.63

*The Modified Project's contrast with existing conditions on a scale of 1 (completely compatible) to 5 (strong contrast).

The contrast scores for the simulations of the Modified Project generally indicate a low-to-moderate level of visual contrast which are very similar to those presented in the VIA and SVIA for the Approved Project. The composite contrast rating scores for the revised simulations ranged from 1 to 3.75, with 11 of the 16 viewpoints having a composite score equal to or below the midpoint of 3.0 on the scale of 1 to 5 (Table 2.8-2). Composite contrast ratings for the Approved Project layout ranged from 1 to 3.79). Like the VIA and SVIA for the Approved Project, the views with a limited number of turbines (Viewpoints 207) or where turbines were viewed at a great distance or significantly screened (Viewpoints 26, 74, 165, 179, 207) received low contrast ratings for the Modified Project. However, some of the views for the Modified Project also received relatively low contrast ratings

because of the presence of the existing turbines in the view (Viewpoints 26, 34, and 196). Viewpoint 196, which provides a panoramic view in winter from Lyon Mountain Fire Tower with the existing (Noble) wind turbines in the mid-to-background, received the lowest composite rating for the Modified Project simulations. The impact of the Modified Project in this view is minimal because of the existing wind turbines in the view. Also consistent with the VIA and SVIA for the Approved Project, the viewpoints with turbines in the foreground and mid-ground received higher contrast ratings (Viewpoints 3, 8, 36, 210, and 217) for the Modified Project. The highest contrast rating was received for Viewpoint 210. In this case in the most influential factor for the contrast rating was the perceived of the scale of the single turbine in the view due to the proximity of the viewer.

For the Viewpoints 3, 8, 15, 26, 34, 36, 38, 81, 165, 196, 207, and 217 (all representing midground and distant views), the Landscape Architect concluded there was no difference in the impact between the Approved Project and the Modified Project. For the remaining viewpoints (Viewpoints 74, 170, 179, and 210), which represent a midground and foreground views, he concluded that there was a slight increase in impact due to the perceived increase in scale of the wind turbines (they seemed taller or closer). In no case did he conclude that there was a significant increase in visual contrast between the Modified Project and the Approved Project.

2.8.2.2.4 Comparative First Level Assessment of Shadow Flicker

An updated shadow flicker analysis was prepared for the Modified Project layout (see Appendix G). The analysis was prepared in accordance with the methods outlined in Section 3.5.2.2.6 of the DEIS for the Approved Project. This modeling effort is known as a 'first level' shadow flicker analysis.

The first level shadow flicker analysis for the Modified Project layout identified 249 structures located within 3,281 feet (1,000 meters) of any proposed wind turbine. Of the 249 receptors, there are 20 receptors (8%) that are predicted to exceed 25 hours of shadow flicker per year (see Table 2.8-3). A threshold of 25 hours per year was established in the Sections 3.8 of the DEIS and SEIS for the Approved Project for requiring additional analysis and possible mitigation measures. Moreover, this standard is generally accepted as an industry baseline in the United States.

Table 2.8-3. Summary of Shadow Flicker Results (based upon first level analysis)

Hours / year of shadow flicker	Number of receptors	Percent of all receptors
No shadow flicker	89	36%
Less than 1 hour/year	2	1%
1-10 hours/year	67	27%
10-25 hours/year	71	28%
>25 hours/year	20	8%
Totals	249	100%

The locations of these receptors are depicted in Attachment A of Appendix G. As indicated in Table 1 of Appendix G, estimated annual shadow flicker values at these homes range from 25:17 hours/year to 63:30 hours/year. The complete modeling output for the shadow flicker analysis is included in Attachment C of Appendix G, including both tabular and graphical calendars for each receptor with shadow flicker predicted to exceed 25 hours/year. These calendars provide the exact times of day and year when residences could be affected by shadow flicker. All shadow flicker receptors and the hours of shadow flicker which they are predicted to receive are indicated in tables and maps included in Appendix G.

As indicated in Section 3.8.2.2.6 of the SEIS and a first level of shadow flicker analysis, the Modified Project will result in an increase from 11 to 20 receptors that could potentially experience shadow flicker more than 25 hours per year. Additionally, the estimated maximum amount of shadow flicker per year increased from 37 to 63.5 hours. Of the 20 receptors anticipated to experience shadow flicker above 25 hours per year, 10 are project participants, and two are project participants of a separate parcel. Therefore, a total of eight non-participating residences are expected to experience shadow flicker in excess of 25 hours per year.

2.8.2.2.5 Assessment of Second Level Shadow Flicker for the Modified Project

It is important to note that a first level shadow flicker model assumptions are quite conservative, and as such, the analysis is expected to over-predict the impacts. For example, model inputs do not reflect local conditions at the receptor site that could block shadow flicker, such as trees and neighboring structures. The model also assumes that the receptor always has a window facing the direction of the sun, and that the receptor is occupied at all hours when shadow flicker may occur (i.e., from sunrise and sunset). These highly conservative assumptions over-predict potential impacts. In reality, site-specific factors such as trees, buildings, and window locations could significantly reduce the actual shadow flicker experienced at a given receptor. In addition, many of the modeled shadow flicker hours are expected to be of very low intensity, due to the distance of the

proposed turbines from the affected receptors. Therefore, the first level analysis is expected to be an inclusive and conservative prediction of the shadow flicker effects from the Project.

Because a first level analysis resulted in the identification of 20 residential receptors that could receive annual shadow flicker of greater than 25 hours, a second level analysis was conducted for these receptors to determine if site-specific factors could reduce the actual shadow flicker experience at a given receptor. Based upon reconnaissance level field observation and interpretation of current aerial photography, potential site obstructions were identified and interpreted into the analysis. Using a conservative tree height of 40 feet, it is estimated that a reduction in shadow flicker impacts will occur at 6 of the 20 residential receptors. The results of the second level shadow flicker analysis are presented in Table 2.8-4, below.

**Table 2.8-4. Summary of Shadow Flicker Results
(based upon first and second level analysis)**

Receptor ID	Max Shadow Flicker Hrs/Day (hh:mm/day)	Predicted First Level Shadow Flicker Hrs/Year (hh:mm:ss)	Max Shadow Flicker Hrs/Day w/obstructions (hh:mm/day)	Predicted Second Level Shadow Flicker Hrs/ Year w/obstructions (hh:mm:ss)
H-091	1:02	36:54:00	0:00	0:00:00
H-106*	1:06	36:40:00	0:30	4:08:00
H-108	1:39	25:59:00	1:10	15:07:00
H-120*	0:43	26:01:00	0:43	26:01:00
H-138*	1:00	36:38:00	1:00	36:38:00
H-148	1:12	39:52:00	1:12	39:52:00
H-155	0:54	25:17:00	0:00	0:00:00
H-166	1:01	37:31:00	1:01	37:31:00
H-176*	0:49	35:19:00	0:49	35:19:00
H-185*	1:37	37:56:00	1:37	37:56:00
H-187*	1:36	29:12:00	1:01	18:56:00
H-188*	1:47	53:53:00	1:47	53:53:00
H-189*	1:34	55:18:00	1:34	55:18:00
H-191*	1:43	58:07:00	1:43	58:07:00
H-192*	1:42	63:30:00	1:42	63:30:00
H-196	1:01	33:27:00	1:01	16:09:00
H-200*	1:06	29:37:00	1:06	29:37:00
H-231	1:48	56:14:00	1:48	56:14:00
H-238	1:19	35:49:00	1:19	35:49:00
H-240*	1:53	40:03:00	1:53	40:03:00

* Participating Landowner

Based upon the second level analysis, six of the receptors that were initially modeled greater than 25 hours of flicker annually were also modeled for a reduction of between 34 and 100 percent based upon local site-specific factors. These factors included deciduous or coniferous tall growing vegetation in proximity to the structure that either partially screen or totally obstruct views towards

the Project. Based upon the second level analysis, 14 receptors in the study area will experience shadow flicker hours in excess of 25 hours annually. The second level analysis resulted in no change to the maximum shadow flicker hours per year. When the mitigating effects of vegetation are taken into account, combined with the fact that 10 of the 14 receptors are participating landowners, the increased impact for the Modified Project is considered minor in comparison to the Approved Project. Moreover, as determined in the SEQRA Findings, these residual impacts can be appropriately minimized by the measures identified in the DEIS, SEIS (Section 3.8.3), and Findings Statement (p. 58-59).

2.8.3 Mitigation

Proposed mitigation measures for visual impacts are as described in Section 3.8.3 of the DEIS and SEIS. The mitigation measures for the Approved Project and Modified Project are the same. Although there is an increase in turbine height, there is a decrease in the visible viewshed for the Modified Project. Therefore, no additional mitigation measures are required or proposed.

For the 14 receptors that could receive more than 25 hours of shadow flicker annually, as identified in the second level analysis Marble River will employ the same additional mitigation techniques (land owner agreements, landscape and structural screening) that Lead Agencies found would be appropriate to minimize these residual impacts for the Approved Project. Accordingly, Marble River does not propose any additional mitigation measures than those approved by the Lead Agencies for the Approved Project.

2.9 Climate and Air Quality

2.9.1 Existing Conditions

Climate and air quality are as described in Section 3.9 of the DEIS for the Approved Project.

2.9.2 Comparison of Potential Impacts

2.9.2.1 Construction

Climate and air quality for the Modified Project are as described in Section 3.9 of the DEIS for the Approved Project.

As described in Section 3.9 of the DEIS, short-term impacts to localized air quality during construction were identified for the Approved Project. Temporary minor adverse impacts to air quality were identified from the operation of construction equipment and vehicles during the Site

preparation and construction phases. It is anticipated that an existing local concrete batch plant will be operated for the construction of foundations for the Project. In addition, impacts were identified as a result of emissions from engine exhaust and the generation of fugitive dust during earth-moving activities and travel on unpaved roads. However, these impacts will not significantly impact local air quality. There is the potential for these same types of impacts for the Modified Project; however, it is anticipated that the Modified Project will cause less total impact than the those identified in the DEIS for the Approved Project because site preparation and construction will occur at fewer turbine locations and in a smaller physical land area for the Modified Project

2.9.2.2 Operation

As described in Section 3.9 of the DEIS, it was anticipated for the Approved Project that operation will have positive long-term impacts on air quality based on off-set emissions from fossil fuel-fired power plants in the region. Likewise, the Modified Project will have a significant beneficial impact on air quality by producing up to 222 MW of electricity without any atmospheric emissions.

2.9.3 Mitigation

Mitigation measures for climate and air quality are as described in the DEIS. Because there is likely a decrease in the impacts to air quality as a result of the Modified Project, no additional mitigation is required or proposed.

2.10 Noise

Hessler Associates, Inc. prepared an updated evaluation of the potential sound effects from the operation of the Modified Project (Hessler, 2010). The Updated Noise Modeling Study (Appendix H), reviews the findings of the original field survey of background sound levels carried out in 2005, re-evaluates the impact threshold, and compares the anticipated noise emissions from the Modified Project of 74 Vestas V112 wind turbines to the Approved Project of 109 Suzlon S88 wind turbines.

2.10.1 Existing Conditions

The existing background sound levels for the Approved Project area were used as a baseline to assess potential impacts for the Modified Project area (Section 3.10 and Appendix L of the DEIS). This includes a description of the sound level survey, site description and sound level measurements, and background measurement results. It should be noted that the background sound levels reported in the DEIS and Environmental Sound Survey and Noise Impact Assessment (DEIS Appendix L) were obtained prior to the construction of the neighboring Noble Chateaugay Windpark, Noble Clinton Windpark, and Noble Ellenburg Windpark which closely border the

permitted Marble River Wind Farm to the west and south. Therefore, existing sound levels in the western and southern parts of the Approved Project area may be somewhat higher than previously reported.

2.10.2 Comparison of Potential Impacts

2.10.2.1 Construction

For both the Approved and Modified Project, potential impacts due to noise from construction is as described in Section 3.10 the DEIS and Appendix L of the DEIS. Construction noise is produced primarily by the diesel engines that power the construction equipment and by impact noise from rock drills, jackhammers, and compactors. Noise from the construction-related phases, including clearing, foundations, structure erection and collector cable installation, are expected to be temporary, and therefore; the effect on potential receptors is not anticipated to be significant. The temporary noise will constitute an unavoidable impact at some, but not all, of the homes in the Project area. This impact would be similar to that experienced by road repair or paving that might typically occur on town roads. The work is envisioned as being sequenced; such that, access roads and collector cables will be constructed then followed by foundations. It is anticipated that work will be undertaken at several locations across the Project area simultaneously. Consequently, individual receptors will be exposed to construction noise for relatively short periods of time.

Because the overall footprint of the Modified Project is reduced in comparison the Approved Project, it is anticipated that temporary construction-related noise will be reduced.

2.10.2.2 Operation

Although a different wind turbine model is proposed, operational turbine noise levels are essentially the same as previously described in Section 3.10.3 of the DEIS. The Vestas V112 is a new model; therefore, the manufacturer has provided a preliminary technical specification containing a set of overall A-weighted sound power levels at wind speeds ranging from 3 m/s to 12 m/s, measured per IEC 61400-11. Sound power level is based on the measured sound pressure level at a given point and the effective radiating surface, or wave front area at that point. Knowledge of the sound power level allows the sound pressure level of the source, the quantity perceived by the ear and measured with instruments, to be determined at any point. These sound levels were based on a prototype turbine since very specific wind speeds result in associated sound power levels. These associations are presented in Table 2.10-1.

Table 2.10-1. Vestas V112 Sound Power Levels vs. Wind Speed

Wind Speed at Standardized Height of 10 Meters, m/s	3	4	5	6	7	8	9	10	11	12
Sound Power Level, dBA re: 1pW	95.0	97.7	102.5	105.7	106.5	106.5	106.5	106.5	106.5	106.5

The sound power levels reported for the Vestas V112 are the same as those reported for the previously permitted Suzlon S88 wind turbine, as indicated in Table 2.10-2.

Table 2.10-2. Sound Power Levels for the Suzlon S88-2.1MW, V3 Turbine vs. Wind Speed

Wind Speed at Standardized Height of 10 Meters, m/s	6	7	8	9
Sound Power Level, dBA re: 1pW	105.7	106.5	106.5	106.5

**Note the performance at higher wind speeds is not available.*

As described in Section 3.10 of the DEIS, field surveys determined that the background sound level varies with wind speed. From Table 2.10-1 above, it can be seen that the turbine sound power level and the associated perceived sound also varies with wind speed. The two values must be compared under the same wind conditions to determine the worst-case combination of background and turbine sound power levels and evaluate potential noise impacts. The worst-case combination of background and turbine sound power levels would occur at the wind speed where the background level is lowest relative to the turbine sound power level or where the differential between the background level and turbine sound power level is greatest. Table 2.10-3 shows that the worst-case situation occurs at 6 m/s, which shows a differential of 70dB. Under this particular wind condition, the potential audibility of the turbines would be the greatest. At higher wind speeds, the background level continues to rise rapidly while the turbine sound power level plateaus making the project progressively less audible under higher and noisier wind conditions. At lower wind speeds, the turbine sound level drops off faster than the background level. Since the Vestas V112 wind turbine for the Modified Project has the same sound power level as the Suzlon S88 wind turbine permitted for Approved Project, the results shown in the Table below would be identical for each turbine.

Table 2.10-3. Comparison of Measured Background Levels to V112 Turbine Sound Power Levels to Determine Critical Design Wind Speed

Wind Speed at Standardized Height of 10 Meters, m/s	3	4	5	6	7	8	9	10	11	12
Mean Background Sound Level, L90, dBA	30	32	34	36	38	40	43	46	49	53
Sound Power Level, dBA re 1 pW	95	98	103	106	107	107	107	107	107	107
Differential, dB	65	66	69	70	69	66	64	61	57	54

2.10.2.2.1 Comparative Modeling Results

As discussed in the DEIS Section 3.10, there are several criteria against which to compare the predicted noise from the Project to determine if any significant adverse environmental impacts might result. These include the local regulatory noise limit, the noise assessment guidelines published by NYSDEC, and the Composite Noise Rating (CNR) method. The same assessment criteria described in the DEIS for the Approved Project were applied to the Modified Project. Similarly, the same noise modeling methods were applied and are as described in the DEIS Section 3.10. However, for the Modified Project, an updated version (4.035) of Cadna/A was used. In addition, each turbine is represented as a point noise source at a height of 94 m above the local ground surface, in the Modified Project, as opposed to the Suzlon units which are modeled at a hub height of 84 meters for the Approved Project.

Plot 1 in Appendix H shows the sound contours associated with the previous Approved Project layout using 109 Suzlon S88 wind turbines and setting the design conditions at a critical wind speed of 6 m/s. Plot 2 in Appendix H shows the expected sound contours associated with the Vestas V112 for the Modified Project 74-turbine layout for the same critical design conditions depicted in Plot 1 for the Approved Project (since as noted above the turbines have the same sound characteristics). For both the Approved and Modified Projects, a mean project sound level of 50 dBA occurs well short of any participating or non-participating residences, indicating that the Modified Project will comply with the local ordinance limit during normal conditions. A comparison between the two plots indicates that the critical sound level increases (6dBA or more) for the Modified Project and the Approved Project will be similar in the southern part of the project area and substantially reduced for the Modified Project in the northern part of the site. In summary, no increase in sound impacts are anticipated as a result of the Project modifications.

2.10.3 Mitigation

Mitigation measures for noise are as described in the Approved Project DEIS and the Complaint Resolution Plan provided in Appendix C of the DEIS. No additional mitigation is required or proposed because there is an overall decrease in the potential noise impact footprint of the Project.

2.11 Socioeconomics

This section describes changes between the Modified Project and Approved Project in terms of local socioeconomic conditions in Clinton County and the Towns of Clinton and Ellenburg, and compares the anticipated potential economic and fiscal impacts of development of the Modified Project from the impacts identified for the Approved Project in Section 3.11 of the DEIS. Socioeconomic information is described in terms of population, economy and employment, community facilities and services, and taxes. In sum, the socioeconomic benefits are likely to remain the same despite the reduction in the number of turbines.

2.11.1 Existing Conditions

Socioeconomic conditions of the overall Modified Project area are similar to those provided in the Approved Project Record (or have declined in some cases), and are as described in the DEIS Section 3.11. The vast majority of the Towns of Clinton and Ellenburg, and Clinton County employment is attributed to the agriculture industry, community services (i.e., public schools, town government, county government), or manufacturing. Since the completion of the DEIS, unemployment rates have increased in Clinton County from 5.6% to 9.8% (July 2010, Bureau of Labor Statistics).

As described in the Section 3.11 of the DEIS, tax revenues in the Approved Project area accrue from both sales tax and real property tax. The sales tax rate is still 8%, as was reported in Section 3.11 of the DEIS, which includes 4% state tax and 4% county tax. Revenues from sales tax in 2006, 2007 and 2008 are provided in Table 2.11-1. Revenues from 2009 are not yet available. Significant increases in sales tax revenue during these intervals were realized, largely as a direct result of construction of the Noble Clinton and Ellenburg projects and their associated construction personnel expenditures.

Table 2.11-1. Sales Tax Revenues by Municipality

Municipality	Sales Tax Revenue				
	2006	Change 2006-2007	2007	Change 2007-2008	2008
Clinton County (in millions)	\$27.4	61.3%	\$44.2	9.0%	\$48.2
Town of Clinton	\$4,977	110.0%	\$10,454	-7.6%	\$9,657
Town of Ellenburg	\$12,853	25.8%	\$16,169	88.8%	\$30,522

Office of NYS Comptroller, 2010

2.11.2 Comparison of Potential Impacts

2.11.2.1 Construction

As with the Approved Project, the Modified Project construction will have short-term positive effects on the economy in the region. Project construction benefits include additional employment and income stemming from jobs in the various construction trades that will be required to build the Project. Construction of the Modified Project is anticipated to require up to 250 temporary construction and construction support jobs. The socioeconomic impacts from construction of the Modified Project are similar to those of the Approved Project, including population and housing, employment and income, and community facilities and services, and are as described in the DEIS, Section 3.11.

2.11.2.2 Operation

The Modified Project will provide direct and indirect economic benefits throughout the viable life of the Project. The Modified Project will generate significant additional revenue for affected municipalities and school districts. The overall economic benefit of the Modified Project will be approximately the same as the Approved Project, despite the reduced number of wind turbines proposed. The Project will also likely result in increased visitation to the area by interested individuals, as additional tourism related to the Modified Project could have a minor beneficial effect on local businesses. The socioeconomic impacts from operation of the Modified Project, including population and housing (including property values), employment and income, and community facilities and services, are as described for the Approved Project in the DEIS Section 3.11.

It is estimated that the annual economic impact of the Modified Project, once fully operational, will be approximately \$2.6 million per year, of which approximately \$450,000 per year can be attributed as secondary impact.

Once the Modified Project is operational it is expected to require a full-time staff of approximately 10 employees. Total aggregate annual wages of this local workforce are estimated to be approximately

\$500,000 per year (including an estimated 25% premium on wages for aggregate benefits). During the operations phase, the level of regional earnings not connected with the Modified Project is anticipated to increase by almost \$875,000, on top of the expected \$500,000 total estimated aggregate annual wages and benefits paid to Modified Project employees.

The Marble River Wind Farm annual royalty payments to landowners are expected to be \$1,300,000. As stated above, the overall economic benefit to landowners of the Modified Project will remain the same as the Approved Project, despite the reduced number of wind turbines proposed.

As with the Approved Project, the Modified Project will significantly increase the revenues in each of the taxing jurisdictions in the Project area. Annual Payment in Lieu of Taxes (PILOT) payments of approximately \$1 million are anticipated to be paid annually during the initial 15 years of project operation or as negotiated by the Clinton County IDA. Although the number of wind turbines has been reduced, the anticipated PILOT payment has not been reduced as a result of Project modifications.

2.11.3 Mitigation

The Modified Project will provide a net positive socioeconomic benefit to the Towns of Clinton and Ellenburg in terms of PILOT payments, Host Community Agreements, and Road Use Agreements, which will provide additional revenue or improvements to Town infrastructure such as roads.

2.12 Telecommunications

To determine if the Modified Project impacts existing telecommunication signals, Comsearch conducted a microwave path analysis, a 15-mile AM and FM radio station search, and a 100-mile off-air television analysis (Appendix I). Additionally, Mead & Hunt conducted an Airspace Constraints Study to identify potential interference with military and FAA airspace, as well as airspace of nearby publicly-owned and privately-owned airports, as a result of the Modified Project (Appendix I).

2.12.1 Existing Conditions

2.12.1.1 Microwave Analysis

There are seven microwave paths that intersect the Modified Project area of interest; however, none of the turbines for the Modified Project were found to interfere with microwave paths.

2.12.1.2 Television Analysis

While Comsearch conducted a search of TV stations within 100 miles of the Modified Project, the most likely stations that will produce off-air coverage to the Modified Project area will be those stations at a distance of 40 miles or less. There are a total of 21 database records within 40 miles in the combined U.S. and Canadian database search, none of which operate within the boundaries of the Modified Project area.

2.12.1.3 AM/FM Radio Analysis

While Comsearch conducted a 15-mile AM and FM radio station search, degradation usually only occurs within 2 miles of an AM station and 2.5 miles of an FM station. There are no AM broadcast stations within 2 miles of the Modified Project. One FM station, WYUL, is located within 2.5 miles of the Modified Project.

2.12.1.4 Aeronautical Studies

Mead & Hunt (2010) prepared an Airspace Constraints Study for the Facility. (Appendix I) This investigation included evaluation of potential impacts to government and military radar systems in the vicinity of the Modified Project area. In addition, the study determined there are no private airports within 15 miles of the Modified Project and the closest publicly owned airport is Malone-Durfort Airport (MAL) within 20 miles.

2.12.2 Comparison of Potential Impacts

2.12.2.1 Construction

Potential impacts to telecommunications as a result of construction of the Approved Project are as described in Section 3.12.2.1 of the DEIS. It is anticipated that the impacts of the Modified Project will be similar to those discussed in the DEIS.

2.12.2.2 Operation

2.12.2.2.1 Microwave Analysis

Based upon the updated Comsearch report, none of the turbines for the Modified Project were found to interfere with microwave paths; therefore, no adverse impacts are anticipated.

2.12.2.2.2 Television Analysis

Potential operational impacts to off-air television are as described in DEIS and identified in the Findings Statement. The off-air television available to the local communities comes from stations widely spread across the surrounding communities. Because of this, it is not likely that the reception of all television stations will be affected once the Modified Project is operational. Cable and DBS will be unaffected by the presence of the wind turbines.

2.12.2.2.3 AM/FM Radio Analysis

There are no AM broadcast stations within 2 miles of the Modified Project; therefore no degradation to AM stations is anticipated as a result of the Project. Because one FM broadcast station is located within 2.5 miles of the Modified Project, the station signal could be degraded in the direction of the Modified Project. It is anticipated that there will be no change in impact to the station signal from the Approved Project to the Modified Project.

2.12.2.2.4 Aeronautical Studies

Preliminary review of Department of Defense (DOD) and Department of Homeland Security (DHS) data indicates there are no impacts to military training routes or operations areas within the study boundary conducted by Mead & Hunt (2010) (Appendix I). Due to the lack of military activity in the area, no impacts are anticipated. However, as with the Approved Project, some or the entire Modified Project site may interfere with (DoD)/(DHS) long range radar. In addition, the preliminary screen of the NEXRAD weather radar indicates interference is likely. Marble River has filed an updated FAA 7460-1 with modified turbine locations to allow the FAA to conduct a more thorough investigation of potential impacts on the long-range radar and NEXRAD weather radar.

The Modified Project will not impact any critical airspace surfaces associated with Malone-Dufort Airspace or any other civil aviation airspace.

2.12.3 Mitigation

Proposed mitigation to telecommunications as a result of construction or operation of the Approved Project is as described in Section 3.12.3 of the DEIS. These mitigation measures will be followed for the Modified Project; therefore, no additional mitigation measures are required or proposed. In the event there are individual complaints relating to the Modified Project, the Complaint Resolution Procedure can be found in Appendix C of the DEIS.

As stated earlier, Marble River will submit a FAA 7460-1 to allow the FAA and National Oceanic and Aeronautical Administration (“NOAA”) to conduct a more thorough investigation of potential impacts on the long-range radar and NEXRAD radar. The Marble River commits to working with the FAA and NOAA to place turbines in locations that will not interfere with long range radar and the NEXRAD radar.

2.13 Safety and Security

Public safety concerns associated with the construction of the Approved Project are fairly standard construction-related concerns. These include the potential for injuries to workers and the general public from 1) increased traffic during construction, 2) the movement of construction vehicles, equipment and materials, 3) falling overhead objects, 4) falls into open excavations, and 5) electrocution. These types of incidents are well understood, and generally recognized within the industry.

Public safety concerns associated with the operation of the Approved Project are somewhat more unique, as compared to general construction. In many ways, wind energy facilities are safer than other forms of energy production since combustible fuel source and fuel storage are not required. In addition, use and/or generation of toxic or hazardous materials are minor when compared to other types of generating facilities. However, wind turbines are generally more accessible to the public, and risks to public health and safety can be associated with these facilities. Examples of such safety concerns include ice shedding, tower collapse, blade throw, stray voltage, fire and lightning strikes.

Each of these concerns is discussed in detail in Section 3.13 of the DEIS for the Approved Project. Although a taller turbine is now proposed, this and other Project modifications do not present new or previously undescribed public health and safety issues to the existing permit.

2.13.1 Comparison of Potential Impacts

2.13.1.1 Construction

Potential impacts from construction of the Approved Project are as described in Section 3.13 of the DEIS. It is anticipated that these potential impacts are the nearly identical for the Modified Project. Construction personnel who will be working in close proximity to construction equipment and materials may be exposed to construction related hazards on a daily basis. However, risk of construction related injury will be minimized through regular safety training and use of appropriate safety equipment.

The general public could also be exposed to construction-related hazards due to the passage of large construction equipment on area roads and unauthorized access to the work site. The latter could result in collision with stockpiled materials (soil, rebar, turbine/tower components), as well as falls into open excavations. Because construction activities will occur primarily on private land and well removed from adjacent roads and residences, exposure of the general public to construction-related risks/hazard is expected to be very limited.

There is no overall increase in potential risk to the public or construction personnel as a result of the construction of Modified Project, as compared to the Approved Project.

2.13.1.2 Operation

Potential impacts from operation of the Approved Project are as described in the DEIS and SEIS (Sections 3.13). Operational safety concerns identified in the DEIS and SEIS include ice shedding, tower collapse, blade throw, stray voltage, fire and lightning strikes.

There is likely a decrease in potential risk to the public or construction personnel as a result of the reduced number of turbines that will operate in the Modified Project, as compared to the Approved Project.

2.13.2 Mitigation

Mitigation measures to assure public safety during Project construction, as well as Project operation associated with ice shedding, tower collapse, blade throw, stray voltage, fire, lightning strikes, extreme weather abnormalities, and facility blackout are as described in Section 3.13 the DEIS of the previously Approved Project. To minimize risk to public safety during construction, contractors will comply with all Occupational Safety and Health Administration (OSHA) regulations, in addition to state worker safety regulations, regarding electricity, structural climbing, and other hazards, during construction of the Modified Project. Additionally, all workers will be required to adhere to a safety compliance program protocol. Compliance with required set-backs and measures to control public access (gates, warning signs, etc.) will minimize any public safety risk associated with operational related impacts such as ice throw/ice fall and tower collapse. Other measures to mitigate for potential adverse public safety are described in the DEIS Section 3.13. No additional risk is presented as a result of the Modified Project, and therefore no additional mitigation is required or proposed.

3.0 CONCLUSIONS

This report addresses modifications to the Marble River Wind Farm and describes the potential environmental impacts of those modifications in direct comparison to the Approved Project that was permitted under SEQRA in 2008. Where applicable, conclusions drawn in the Approved Project Record are directly compared to the Modified Project. The predominant modification to the Project is the use of a Vestas V112 turbine rather than the previously permitted Suzlon S88 turbine. The specific changes are:

- A change in the model of turbine from a Suzlon S88 with a capacity of 2.1 MW to a Vestas V112 which has a capacity of 3.0 MW,
- A reduction in the number of turbines from 109 to 74,
- A decrease in the project area from 17,000 acres, to approximately 11,500 acres,
- A decrease in the length of proposed access roads from 48 miles to 19 miles,
- A decrease in the length of underground electrical collection lines and minor modifications in the routing of these lines from 55 miles to 38 miles,
- The removal of all 13.6 miles of overhead electrical collection lines,
- A minor modification of the location of Turbines 91, 96S, 4A, 50, 56, and 161 due to change in turbine model,
- Relocations of 15 turbines to address requirements by the Corps and NYSDEC as a part of wetland and stream disturbance permit review, and
- An increase in the overall height of the turbine from 407 to 492 feet.

This EIAR reviews all resource topic areas addressed for the Approved Project. The Findings Statement for the Approved Project reflects an analysis of potentially significant adverse environmental impacts and measures intended to appropriately mitigate for those impacts. In this report, the quantitative and qualitative changes to resource-based impacts are discussed in comparison to the conclusions drawn in the Findings Statement and other documents in the Approved Project Record.

The potential impacts between the Approved Project and the Modified Project are in many cases reduced or essentially the same. The smaller footprint of the Project results in a reduction of impact to soils, vegetation and water resources. Although there is a reduction in the number of turbines and overall footprint of the Modified Project the power output and the directly corresponding socioeconomic benefits will largely remain the same. Because Modified Project benefits are essentially the same and adverse impacts are essentially the same or reduced as compared to the

Approved Project, no changes to conclusions drawn in the Findings Statement are made herein. Therefore, no additional mitigation measures are anticipated or proposed in this report.

In summary, an overview of comparative analysis between the Approved Project and the Modified Project by benefit or impacted resource type is presented below.

Geology, Soils and Topography: The Modified Project results in a significant overall reduction in temporary and permanent impacts to geology, soils and topography as compared to the Approved Project. The Modified Project results in a significant decrease from 835 acres of total soil disturbance to 453 acres of total soil disturbance. Additionally, a reduction of permanent conversion to built facilities will occur from 133 acres to 88 acres.

Water Resources: The Modified Project results in a significant overall reduction in permanent impacts to wetlands and surface waters as compared to the Approved Project. The Modified Project will result in significantly fewer wetland and surface waterbody crossings. The Modified Project is anticipated to permanently impact approximately 1.5 acres of wetlands as compared to 8.9 acres in the Approved Project. Additionally, TTECI identified 56 surface waterbody crossings within the Modified Project site boundaries, none of which are regulated or protected by NYSDEC. This is a significant reduction from the 65 surface waterbody crossings proposed in the Approved Project, which included one NYSDEC protected stream.

Ecological Resources: Overall, the Modified Project will significantly reduce both temporary and permanent impacts to vegetation and vegetative communities as compared to the Approved Project. The Modified Project will result in disturbance to approximately 251.5 acres of agricultural land, 1 acre of successional old-field, 37.5 acres of successional shrubland, and 160 acres of forest. This compares to disturbance estimates of 266 acres of agricultural land, 5 acres of successional old-field, 73 acres of successional shrubland, and 347 acres of forest for Project construction described in the Approved Project. Additionally, it is anticipated the Modified Project would result in a total of 88 acres of wildlife habitat being permanently lost from the Project site (i.e., converted to built facilities), as compared to 134 acres identified for the Approved Project. Therefore, the Modified Project results in an overall reduction in the amount of habitat loss.

Traffic and Transportation: It is anticipated that the traffic and transportation-related impacts of the Modified Project will be essentially the same as described in the Approved Project Record, and the same general delivery routes, local highways, and roads will be used for turbine component delivery

and construction material delivery. A reduction in construction related traffic trip generation will occur as a result of the reduced number of turbines.

Land Use and Zoning: Marble River will request a height waiver from the Town of Clinton and a height variance from the Town of Ellenburg to exceed the maximum allowable structure height of 400 feet and 440 feet, respectively, as the currently proposed Vestas V112 turbine is 492 feet in height.

As compared with the Approved Project, the Modified Project will have decreases in impacts to land use as a result of a reduction in turbines and consolidation of infrastructure. The 74 turbine sites, substation, and other ancillary facilities represent the cumulative conversion of approximately 88 acres of land from agricultural land, meadow/brushland, or forestland to developed land use. This is a decrease in 45 acres from the Approved Project, which consisted of 134 acres of permanent disturbance. The Modified Project will result in a minor increase in permanent impacts to agricultural land use. This minor 3-acre increase in impacts is largely a result of relocating project infrastructure to avoid forestland or sensitive resources such as wetlands.

Community Facilities and Services: As with the Approved Project, the Modified Project is not expected to result in significant adverse effects on community facilities or services within the Project area, including utilities, provision of emergency services, libraries, park and recreational areas, and health care and public education facilities.

Cultural Resources: Overall, the Modified Project layout represents a significant reduction in the 5-mile-radius Study Area for the Project. Additionally, when compared to the Approved Project, the Modified Project layout reduces the visual effect of the Project on historic properties. The reduced 5-mile Study Area for visual effects on historic properties resulted in 11 NRHP-eligible historic properties identified in the historic-architectural resources survey now being located outside of the Study Area for the Modified Project layout.

Visual Resources: The elimination of 35 proposed wind turbines in the Modified Project reduced the area of the 5-mile-radius visual study by 12,702 acres (from 125,248 acres for the Approved Project to 112,546 acres for the Modified Project). Updated viewshed analysis for the Modified Project results shows an overall reduction in the 5-mile and 10-mile visible viewsheds at both the height of the nacelle and the blade tip height.

Because a first level analysis resulted in the identification of 20 residential receptors that could receive annual shadow flicker of greater than 25 hours, a second level analysis factoring local site-specific conditions was conducted for these receptors to determine if site-specific factors could reduce the actual shadow flicker experience at a given receptor.

Based upon the second level analysis, six of the receptors that were initially modeled greater than 25 hours of flicker annually will no longer experience impacts about the threshold and even experienced a reduction of between 34 and 100 percent. Fourteen (14) receptors in the Modified Project area will experience shadow flicker hours in excess of 25 hours annually. When the mitigating effects of vegetation are taken into account, combined with the fact that 10 of the 14 receptors are participating landowners, the increased impact for the Modified Project is anticipated to be minor in comparison to the Approved Project.

Climate and Air Quality: Temporary minor adverse impacts to air quality from the operation of construction equipment and vehicles will be somewhat reduced with the Modified Project as compared to the Approved Project because site preparation and construction will occur for a reduced number of wind turbines and in a smaller physical land area for the Modified Project. Overall benefits to climate and air quality as a result of the Modified Project are anticipated to be the same as a result as the Approved Project , because a similar overall energy output is anticipated.

Noise: Because the overall footprint of the Modified Project is reduced in comparison the Approved Project, it is anticipated that temporary construction-related noise will be somewhat reduced. From area residences, the operating noise impacts for the Approved Project and the Modified Project are the same and will comply with the local ordinances (not exceed 50 dBA at any residence). Overall, the reduction in the number of turbines from the Approved Project to the Modified Project has reduced the potential noise impact footprint slightly in the southern part of the site and substantially in the northern part of the site. In summary, no increase in sound impacts are anticipated as a result of the Project modifications.

Socioeconomics: The Modified Project will provide a net positive socioeconomic benefit to the Towns of Clinton and Ellenburg in terms of PILOT payments, Host Community Agreements, and Road Use Agreements, which will provide additional revenue or improvements to Town infrastructure such as roads. These are the same benefits as with the Approved Project.

Telecommunications: It is anticipated that the impacts of the Modified Project will be similar to those for the Approved Project.

Safety and Security: There is no overall increase in potential risk to the public or construction personnel as a result of the construction of Modified Project, as compared to the Approved Project.

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