

## **5.0 CUMULATIVE AND GROWTH INDUCING IMPACTS**

### **5.1 Growth Inducing Impacts**

The Marble River Wind Farm will have minimal growth inducing impacts. During the construction of the Project, additional workers may move into the area for the duration of construction and commissioning. The total number of temporary local construction jobs is expected to be approximately 300. These workers will either already be resident in the area, commute to the site from regional centers like Plattsburg and Malone or will utilize local housing and food establishments for the duration. Based on the number of workers, this increased number of temporary or transient workers is not anticipated to be a significant impact.

The number of permanent workers expected at the site to perform routine maintenance and operation activities is 13 to 18 individuals and therefore little to no growth effect on housing, schools, infrastructure or services will occur.

The fact that a wind farm is present may present an opportunity for later expansion of the facility to potentially utilize the existing infrastructure to varying degrees (i.e. substations, access roads,). However, there is unlikely to be any significant expansion other than at the margins of the Towns of Clinton and Ellenburg, as the developments currently being proposed by the Applicant and a competing developer, Noble Environmental Power (Noble) will effectively utilize most, if not all, of the wind and transmission resources in the immediate area where those resources are.

### **5.2 Cumulative Impacts**

The Applicant is aware of two contiguous wind power projects, the Noble Clinton Windpark and Noble Ellenburg Windpark that will be in close proximity to or, in some cases contiguous with, the Marble River project. Given the known facts that Marble River and Noble applied in November 2005 to construct approximately 250 wind turbines within the Towns of Clinton and Ellenburg, consistent with the NYS SEQRA guidelines and based on limited information on Noble's proposals, the Applicant has evaluated the potential cumulative environmental impacts of the Noble Clinton, the Noble Ellenburg Wind Parks and the Marble River Wind Farm. The Applicant is also aware of a third potential project in Clinton County proposed by Noble approximately 13 miles to the east of Ellenburg, the Altona Wind Park, and of an interconnect request made by Noble for the Malone Wind Park in Franklin County approximately 25 miles west of Clinton, and of an interconnect request made by PPM Energy for the Burke Wind Farm, but because these projects are both physically distant from the Project and because few details are known to the Applicant of the nature and timing of either of these projects, they were not included in this analysis.

Based on the layout of each of the projects, cumulative effects will be more pronounced in the Town of Ellenburg. Many of the cumulative impacts will be the simple additive effect of the projects (i.e. each will disturb a certain amount of ground surface, wetlands, or stream crossings). Also each will

provide a certain economic benefit to the host community). These additive impacts can be quantified by simply adding the total impacts quantified found in each project's DEIS, information that is not all available to the Applicant at the time of writing but which will be available to the Towns and other Interested and Involved Agencies upon receipt of all the three DEIS. Certain other cumulative impacts may not simply be additive and therefore need a certain level of further analysis as described below.

### **5.2.1 Transportation**

Given the large scale construction impact of each proposed project, it is reasonable to assume that the cumulative effect on transportation and traffic within the Towns of Ellenburg and Clinton may be more than additive. It is not anticipated that there will be significant cumulative effects in any one year on local transportation routes due to the fact that the Noble Projects in both Ellenburg and Clinton have proposed to complete construction in 2006 whereas the Marble River Wind Farm is projected to commence construction in 2007. However, coordination between the project companies will be required, particularly in Ellenburg, but also for the west side of Clinton, to make sure that responsibilities for road impacts and remediation are properly recognized and assigned.

Potential areas of cumulative traffic impact, should the projects be constructed at the same time, would primarily be confined to traffic along Star Road and Moore Road in Ellenburg. The relatively high existing traffic volume along Star Road (NYS Route 190) would imply minimal cumulative project impact due to the fact that multiple the increase in traffic volume would not be significant compared to current traffic volumes. The increase in cumulative traffic along the Moore Road could be considered significant due to the concentration of construction and delivery traffic running through a light volume traffic Road.

To the extent there is any overlap or a change in project schedules, the Applicant will coordinate transportation activity with the Noble projects and will modify the traffic management plan (See Section 3.4.3) as necessary to minimize any effects on local transportation and minimize redundancy in road construction.

### **5.2.2 Visual**

Construction of the Marble River Wind Farm and the Noble Wind Power Projects in proximity to one another does have the potential to create cumulative visual impacts. There are likely to be numerous locations where turbines from both projects will be visible simultaneously, or in rapid succession while traveling on area roadways. This is the most likely along Whalen and Campbell Roads in the western portion of the Town of Clinton and Bohlen, Tacey, Star, and Harrigan Roads the northwestern portion of the Town of Ellenburg. In these areas, the turbines from each project are either across the road from one another or intermingled.

To illustrate the potential cumulative visual effect of the Marble River Wind Farm and the Noble Clinton and Ellenburg Wind Parks, visual simulations showing both projects were created from the following locations evaluated in the Marble River VIA:

- Viewpoint 8      View from Gagnier Road near the Patnode Road intersection in the Town of Clinton, looking south. This location offers a typical view of the rural/agricultural Landscape Similarity Zone (LSZ) with the Adirondack foothills on the horizon.
- Viewpoint 34      View from Tacey Road near the County Route 54 intersection outside the Hamlet of Harrigan, looking north. This view is within the rural/agricultural LSZ, and offers the best view of the proposed projects in the vicinity of a potential scenic pull-off identified by the Adirondack Park Agency (APA). Panoramic views of Canada to the north and the Adirondack Mountains to the south are also available from this site.
- Viewpoint 74      View from the intersection of State Route 189 and Clinton Mills Road in the Hamlet of Churubusco, looking southwest. This view is typical of open views that may be available at the periphery of the village/hamlet LSZ.

These viewpoints were selected because they included turbines from both projects, represented different landscape similarity zones within the study area, and would show the turbines from varying distances and directions. Coordinates for the proposed Noble turbines, and information on the proposed turbine model and dimensions were obtained from the Towns' engineers (Conestoga Rovers Associates). The cumulative simulations were then developed in the same manner described for the Marble River simulations (see Section 3.8.2.2.4). The Noble turbines were also added to the virtual image from Lyon Mountain to illustrate potential long distance cumulative visual impact.

Using 11 x 17 inch prints of the simulations described above, and simulations of the Marble River project alone, EDR's in-house panel of landscape architects was asked to evaluate the cumulative visual impact of the projects. Results of this evaluation indicated that from Viewpoint 8 (Gagnier Road looking south) and Viewpoint 74 (Intersection of NYS Route 189 and Clinton Mills in Churubusco; see Figure 29), the cumulative visual effect of the two projects is not significantly different than the impact of the Marble River project alone. Although the additional visible turbines suggest a larger project and create some visual congestion, the overall change is relatively minor. In the case of Viewpoint 34 from Ellenburg (Figure 29), the cumulative visual effect of the two projects is much more striking. The turbines are now closer to the viewer and extend across the full field of view (note that turbines even closer to the viewer occur immediately outside the limits of the photo). The view is more cluttered, and the turbines fully dominate the landscape. Land use character is significantly altered (changing from rural to industrial/utility-oriented), and views to the distant horizon are obscured. This viewpoint, with its superior viewer position, lack of foreground screening, and relatively flat topography, is

representative of the "worst case" cumulative visual impact the Marble River and Noble projects would have within the study area.

In the long distance virtual image from the Lyon Mountain lookout tower, with both projects in place, the turbines are denser, extend across a broader expanse of the background, and begin to compete with other landscape features for viewer attention (see Figure 22 in Appendix K). However, from this viewpoint the cumulative visual impact of both projects is reduced by the effects of distance.

Overall, simulations of the Marble River and Noble wind power projects indicate that the potential cumulative visual effect of these projects is variable based on proximity to the turbines, the extent of natural screening, and the number/extent of turbines in the view. In most locations within the study area, only small portions of either project will be visible. However, in some open elevated settings, such as those along Star Road in Ellenburg, large portions of both projects will be visible. The visual effect from such viewpoints will be fairly striking, and night lighting impacts could be significant.

Given the separation of the proposed projects, the relatively flat topography and the nature of shadow flicker to be a close proximity phenomenon, it is not anticipated that there will be a cumulative impact due to shadow flicker.

### **5.2.3 Air Quality**

There is not any anticipated cumulative impact to air quality during construction of the Project due to the differing schedules as described above. There will be a cumulative positive impact from the operation of the Project which will result in the avoidance of the following emission to the air.

**Table 5.2.3-1: Estimated Emissions Reductions Resulting from the Projects**

Compound	Emission Factor (lbs/MW-hr)	Total Annual Reductions (tons/year) <sup>1</sup>		
		Marble River	Noble Projects	Total
Nitrogen oxides (NO <sub>x</sub> )	1.363	375	314	692
Sulfur dioxide (SO <sub>2</sub> )	1.765	485	407	897
Carbon dioxide (CO <sub>2</sub> )	1,274	350,350	293,710	647,251
Particulate matter less than 10 microns in diameter (PM <sub>10</sub> )	0.041	11	9	21
Volatile Organic compounds (VOCs)	0.035	10	8	18
Mercury	2 E-06	0.0005 (1.1 lbs/yr)	0.00046 (0.92 lbs/yr)	0.00096 (2.02 lbs/yr)

<sup>1</sup> Assumes 550,000 MWhrs of electrical power generated by Marble River during an average year for the Marble River Project and 461,000 MWhrs for the Noble Projects (121 - 1.5 MW turbines @ 29% CF).

#### **5.2.4 Noise**

The operational noise of the Marble River and adjacent NEP wind projects were evaluated to determine the magnitude of any cumulative effects. The Noble turbines are generally located to the west and south the Marble River project area. The two projects occupy contiguous areas that in Clinton are separated by one or two miles while in some areas of Ellenburg, such as the vicinity of the intersection of Route 190 (Star Road) and Bohem Road, turbines from both projects are intermingled.

Additional noise modeling was conducted to evaluate any potential noise impacts on residents in the area due to the cumulative noise of both projects. The most current coordinates for the Noble turbines from the applications and the Marble River turbines were used in the model. Plot 3 in Appendix L shows the sound levels out to the 45 dBA "threshold" for both projects. The Noble turbine information indicated that GE Model 1.5sle wind turbines on 80 meter towers are currently planned. Published information by General Electric indicates these wind turbines have a maximum sound power level of 104 dBA re 1 pW. Plot 3 shows that the two projects are sufficiently separated in most areas that they are acoustically independent; i.e. the sound levels produced by one project's turbines have no appreciable effect on the sound levels near the other project's units. Intermixture and cumulative sound levels only occur in the southern part of the Project area and in one small area a few miles west of Churubusco. These areas are shown in greater detail in Plots 3A and 3B.

The residence labeled Receptor 09 (7909 Starr Road) in Plot 3A may experience some effects from cumulative noise. The maximum predicted noise level from the Marble River Project alone at this residence is at the threshold level of 45 dBA. If a number of Noble units (shown in yellow) are erected in the high-density pattern that can be anticipated from the provided coordinates, the total sound noise level at this location could increase to about 47.5 dBA. It is likely at this location that the cumulative noise effect of the combined projects would result in this receptor going from a situation where they were unlikely to experience any noise impact with the Marble River Project alone (i.e. 45 dBA or less), to being more likely to experience noise impact with the combined operating projects (47.5 dBA).

None of the remaining receptors identified as being possibly affected by Marble River noise (see Plots 3A and 3B in Appendix L) are expected to see any significant difference in sound level due to the cumulative effect of the additional turbines proposed for the Noble projects.

#### **5.2.5 Socioeconomics**

It is expected that the cumulative socio-economic benefits to the Towns of Ellenburg and Clinton will be additive. The Marble River Wind Farm is expected to generate approximately \$2,100,000

per year in direct economic benefit from landowner royalties and wages and approximately \$1,300,000 per year in municipal revenues to the Town, School Board and County, it is reasonable to pro-rate the Noble projects' economic benefit accordingly.

The cumulative direct economic benefit from the Marble River Wind Farm combined with the Noble projects in Ellenburg and Clinton to local landowners and wage earners would be approximately \$4,000,000 per year while the increase in local tax revenues to the Towns, County and Schools would also increase to approximately \$2,400,000 per year.