Agricola Wind Project

Case No. 23-00064

1100-2.9 Exhibit 8

Visual Impacts

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EXHIBIT 8 VISUAL IMPACTS

(a) Visual Impact Assessment

On behalf of Agricola Wind LLC, a wholly owned subsidiary of Liberty Renewables Inc. (the Applicant) Environmental Design & Research, Landscape Architecture, Engineering & Environmental Services D.P.C. (EDR) completed a Visual Impact Assessment (VIA; see Appendix 8-A) and a Visual Impact Minimization and Mitigation Plan (VIMMP; see Appendix 8-B) for the Agricola Wind Project (the Facility). The VIA and VIMMP were prepared in support of the Facility's review under Chapter XI, Title 16 of New York Codes, Rules, and Regulations (NYCRR), Section 1100-2.9 and Article VIII of the New York State Public Service Law (hereafter referred to as Article VIII). These reports are intended to assist the Office of Renewable Energy Siting and Electric Transmission (ORES), other state agencies, interested stakeholders, and the public in their review of the proposed Facility in accordance with the requirements of Article VIII. The purpose of the VIA and VIMMP are to describe the appearance of the visible components of the proposed Facility, define the aesthetic character of the visual study area, inventory and evaluate existing visual resources and viewer groups within the 5-mile visual study area (VSA), evaluate potential Facility visibility within the VSA, identify representative views for the visual assessment, assess the visual impacts associated with the proposed Facility, and discuss measures that have been proposed or considered to minimize or mitigate visual impacts.

(1) Character and Visual Quality of the Existing Landscape

The character and visual quality of the existing landscape is described in Section 3 of the VIA (Appendix 8-A). This section of the report provides details on the physiographic/visual setting, distance zones, landscape similarity zones, viewer/user groups, and visually sensitive resources (VSRs) within the VSA.

The VSA is located primarily within the Finger Lakes Uplands and Gorges subregion, which encompasses the northern edge of the Northern Allegheny Plateau where it meets the Ontario. This subregion is defined by the north-south oriented u-shaped valleys surrounding the finger lakes that were formed through glacial action. Land use in the VSA consists primarily of active/inactive agriculture and undeveloped forest land. Development mostly occurs as widely scattered rural homes and farm complexes, with more concentrated settlement along the shoreline of Owasco Lake, in hamlets at the intersections of major roads, and in the Village of Moravia. Agriculture consists of fields managed to produce cultivated row crops, hay, or nursery stock. Forest land occurs primarily as a mix of small, discrete woodlots dispersed between agricultural land. However, large contiguous areas of forest occur on steep hillsides in the southeastern portion of the VSA. The most significant water feature is Owasco Lake, which is the sixth largest of the 11 fingers lakes. This north-south oriented lake is characterized by a steep wooded shoreline interspersed with occasional fields and residences, particularly along the water's edge. The lake receives significant recreational use by boaters, swimmers, and fisherman, and is a character defining feature for adjoining residential areas and roadways where open views are available. Owasco Flats is also a significant water feature within the VSA, and occurs at the southernmost end of the Owasco Lake, where the lake's floodplain extends and creates a large wetland area. For additional information on landform, land use, and water features in the VSA, see Section 3.2 of the VIA.

Distance zones are typically defined in visual studies to divide the VSA into distinct sub-areas based on the various levels of landscape and project detail available to the viewer. Due to the characteristics of the landscape and project being evaluated, EDR defined the following distance zones: foreground (0 feet to 0.5 mile), middle ground (0.5 to 4.0 miles), and background (over 4.0 miles). For additional information on distance zones, see Section 3.1.1 of the VIA.

Landscape similarity zones (LSZs) provide a useful framework for the analysis of a project's potential visual effect and were used to define distinct landscape types within the VSA based on the similarity of various landscape characteristics, including landform, vegetation, water, and land use patterns. Six distinct LSZs were identified within the VSA: Agricultural/Rural Residential, Forest, Owasco Flats, Owasco Lake, Village, and Hamlet. Descriptions of these LSZs, their locations within the VSA, and additional information on data sources used for their delineation are included in Section 3.4 of the VIA. Attachment A of the VIA includes figures showing the extent of each LSZ overlaid with viewpoint locations and the viewshed analysis results at 1:24,000 map scale.

Visually sensitive resources within the VSA are discussed in Section (a)(10) herein and Section 3.5 of the VIA.

(2) Visibility of the Facility

A description of all visible components of the proposed Facility is included in Section 2.2 of the VIA. These components include the wind turbines, Aircraft Detection Lighting System (ADLS) and associated ADLS tower, meteorological (MET) towers, interconnection facility (collection substation, point of interconnection [POI] switchyard, and transmission [gen-tie] line), operations and maintenance (O&M) facility, and access roads. See Section (b) of this exhibit for additional information regarding the methodology and results of the viewshed analyses that were conducted to identify where Facility components could be visible within the VSA. See Section (a)(9) herein for information regarding shadow flicker impacts.

(3) Visibility of all Above-Ground Interconnections and Roadways

See Section (b) for information regarding the methodology and results of the viewshed analysis conducted for the interconnection facility.

As discussed in Section 2.2.6 of the VIA, the proposed Facility includes a network of new or improved access roads to allow for delivery of Facility components during construction and access to the Facility for maintenance purposes during operation. The access roads and their shoulders are anticipated to be surfaced with crushed stone or gravel and will typically be 20 feet wide. Permanent access roads and the interconnection facility are shown in the photosimulations where they will be visible (see Attachment D in the VIA).

(4) Appearance of Facility upon Completion

Representative elevations of Facility components with dimensions are included in Section 2.2 of the VIA. As described in Section (a)(6) of this exhibit and Section 4.2.2 of the VIA, three-dimensional modeling software was used to create realistic photographic simulations to illustrate the appearance of the Facility upon completion.

(5) Proposed Facility Lighting

As discussed in Section 2.2.1 of the VIA, to comply with Federal Aviation Administration (FAA) standards for aviation safety, it is assumed that each of the turbine nacelles will be equipped with two medium intensity flashing red (FAA-L-864) aviation obstruction warning lights (FAA lights). However, as discussed in Section 5.1.1 and 5.2.3 of the VIA, the FAA lights will be screened by vegetation, structures, and/or topography from 68.8% of the VSA. Additionally, in areas of more concentrated human settlement within the VSA, existing light sources will limit the visibility and contrast presented by the FAA lights. Despite the mitigating factors described above, the Applicant recognizes the potential adverse visual impact of the FAA warning lights and is proposing the use of an ADLS. As discussed in Section 2.2.2 of the VIA, ADLS, if approved by the FAA and feasible for the Facility, would significantly reduce the frequency of FAA light activation (which would only occur when aircraft are passing the Facility) and nighttime impacts.

Information on permanent lighting at the interconnection and O&M facilities is included in Appendix 5-B of the Article VIII application. This appendix includes photometric plans showing proposed fixture locations and light levels in the surrounding area, mounting heights and light fixture types in the luminaire schedule, elevation drawings illustrating the mounting heights of the lights, and light fixture manufacturer specification sheets. As shown in this appendix, lighting at these facilities will utilize full cut-off light fixtures with no drop-down optical elements and lighting will be kept to the minimum intensity required to assure safety and security while complying with Occupational Safety and Health Administration (OSHA) limits and applicable state and local standards. Additionally, all lighting will be operated manually or placed on an auto-off switch to further minimize the impacts of off-site light trespass.

(6) Representative Views (Photographic Overlays) of the Facility

To show anticipated visual changes associated with the operational Facility, three-dimensional (3D) modeling software was used to create realistic photographic simulations (photosimulations) of the proposed Facility from 18 views from 17 viewpoints. The model creation and camera alignment process is described in Section 4.2.2 of the VIA. As described in this section of the VIA, a total of 21 candidate viewpoints were initially selected for photosimulation development, but it was determined that Facility components would be substantially screened from four of these viewpoints. For these viewpoints, wireframe renderings were prepared to illustrate the degree of screening provided by existing landscape features. The photosimulations and wireframe renderings prepared are included in Attachment D of the VIA. The viewpoint selection criteria used to determine which viewpoints were

selected for photosimulation and wireframe rendering development is discussed in Section 4.2.1 of the VIA and in Section (b)(4) of this exhibit.

(7) Degree of Visual Change Resulting from Construction of the Facility and Above-Ground Interconnections

Visual impacts associated with the construction of the Facility are described and illustrated with representative photographs in Section 5.2.4 of the VIA. Construction has the potential to result in short-term, intermittent, and transitory adverse visual impacts due to the transportation of Facility components, the presence of large construction equipment, and significant ground disturbance at access roads and turbine positions. However, these impacts are short term/temporary impacts that will last only for the duration of construction. In addition, because the turbines are generally well removed from adjacent public roads and residences, most on-site construction activities will be screened from the majority of viewers. Upon completion of construction, construction vehicles and equipment will depart, and disturbed portions of the site will be restored.

(8) Degree of Visual Change Resulting from Operation of the Facility and Above-Ground Interconnections

To evaluate anticipated visual change associated with the Facility, photosimulations of the operational Facility were compared to photos of existing conditions by a rating panel of visual professionals. The rating process is described in greater detail in Section (c)(3) of this exhibit and Section 4.2.3 of the VIA.

The potential cumulative visual effect of the Agricola Wind Project with other renewable energy projects currently operating or proposed in the surrounding region are evaluated in Section 5.2.5 of the VIA.

(9) Analysis of Related Operational Effects of the Facility

A Shadow Flicker Impact Assessment report, including a full year of hourly potential receptor-specific predicted shadow flicker based on sunshine probabilities, site-specific wind speed and direction data, and facility design, is included as Attachment A of the VIMMP. Based on the assumptions used in the shadow flicker model, up to 13 non-participating year-round residences could receive over 30 hours of shadow flicker per year depending on the wind turbine model ultimately selected for development. The Applicant has been in contact with the non-participating receptors (see Appendix 4-A) and, as discussed in the shadow flicker impact assessment report and Exhibit 24 of the Article VIII application, the Applicant intends to implement curtailment measures and/or execute good neighbor agreements with the owners of any nonparticipating residences that could receive over 30 hours of shadow flicker per year to ensure compliance with the Article VIII regulations.

(10) Visually Sensitive Resources

Visually Sensitive Resources (VSRs) within the VSA were identified in accordance with guidance provided by New York State Department of Environmental Conservation (NYSDEC) Program Policy *DEP-00-2*

Assessing and Mitigating Visual Impacts and the requirements of Article VIII. The categories of VSRs identified and evaluated in the VIA include properties of historic significance, designated scenic resources, public lands and recreational resources, high-use public areas, Indigenous Nation lands, and other resources identified during stakeholder outreach. Sources consulted to identify resources include publicly available geospatial databases, the Historic Resources Survey Report prepared for the Facility (see Exhibit 9 of the Article VIII application), local and regional planning documents, and agency and stakeholder outreach. A total of 200 VSRs were identified in the VSA: 154 properties of historic significance, eight designated scenic resources, 20 public lands and recreational resources, 17 high-use public areas, and one resources identified by stakeholders. See Attachment F of the VIA for a summary of the comments received and actions taken as part of the visual stakeholder outreach process and all associated correspondence with stakeholders. The VSR identification process is described in Section 3.5 of the VIA.

As described in Section 3.5.1 of the VIA, a 10-mile radius study area was defined to identify significant visual resources located outside the 5-mile VSA. A total of 26 significant visual resources were identified within 10 miles of the Facility Site: four National Historic Landmarks, 15 resources listed on the National or State Registers of Historic Places (S/NRHP), one New York State Department of Environmental Conservation (NYSDEC) scenic overlook, one state park, one designated scenic byway, two finger lakes, and two local parks.

The Facility's potential visual effect of the Facility on VSRs with potential wind turbine visibility within the VSA are discussed in Section 5.2.2. This evaluation is based on the results of the viewshed analysis, field review, line-of-sight cross section analysis, and the photosimulation visual contrast evaluation conducted for the Facility. For information on potential visual effects associated with the Facility from VSRs identified in the VSA, see Section 5.2.2 of the VIA.

(b) Viewshed Analysis

An analysis of Facility visibility was undertaken to identify locations within the VSA where there is potential for the proposed Facility to be seen from ground-level vantage points. Separate viewshed analyses were completed for the wind turbine blade tips, wind turbine FAA lights, the interconnection facility, the MET towers, and the ADLS tower. These analyses included the identification of potential areas of visibility based on the results of viewshed analysis, field verification, and line-of-sight cross section analysis. The methodology employed in these analyses is described in detail in Section 4.1 of the VIA and summarized herein.

(1) Viewshed Mapping

Maps with the viewshed results overlaid with VSRs, viewpoint locations, distance zones, and LSZs are presented at 1:24,000 map scale in Attachment A of the VIA and in Section 5.1 of the VIA. Potential visibility of the wind turbines blade tips, wind turbine FAA lights, and interconnection facility for each VSR is also indicated in tabular format in Attachment C of the VIA. As described in Sections 4.1.1 and 5.1 of the VIA, field review largely confirmed the accuracy of the viewshed analysis results. However, it

was observed during field review that visibility was overstated from some locations due to the removal of landscape features in roadway and transmission line corridors that are misinterpreted in the digital surface model as described in the viewshed analysis methodology.

As described in Section 3.5.4 of the VIA, significant visual resources beyond the 5-mile VSA were identified within a 10-mile study area. Potential visibility of the Facility from these resources are discussed in Section 5.1.5 of the VIA.

(2) Viewshed Methodology

The viewshed analysis methodology is described in Section 4.1 of the VIA. Digital Surface Model (DSM) based viewshed analyses, which consider the screening effects of topography, structures, and vegetation, were conducted to identify areas where the wind turbines, wind turbine FAA lights, interconnection facility, and the MET towers and ADLS tower would potentially be visible. Because DSM viewshed analyses account for screening provided by topography, vegetation, and structures, they provide an accurate representation of potential Facility visibility. A viewshed analysis based on a bare earth Digital Elevation Model (DEM) considering topography alone is not provided because the results of such an analysis do not accurately represent areas of potential Facility visibility within the VSA. The analyses were prepared using DEM and DSM data derived from publicly available light detection and ranging system (LIDAR) data, an assumed viewer height of 6 feet, sample points representing the Facility components based upon location and height data provided by the Applicant, and Environmental Systems Research Institute (ESRI) ArcGIS Pro® software with the Spatial Analyst extension.

(3) Viewshed Mapping and Viewpoint Selection

As described in Section (b)(4) of this exhibit and Section 4.2.1 of the VIA, potential visibility of the Facility based on the results of the viewshed analysis were one of many factors considered in the selection of viewpoints for the development of photosimulations and subsequent evaluation by a rating panel of visual professionals. Maps with the viewshed results overlaid with VSRs, viewpoint locations, distance zones, and LSZs are presented at 1:24,000 map scale in Attachment A of the VIA.

(4) Viewpoint Selection and Stakeholder Outreach

As described in Section 4.2.1 of the VIA photosimulations were developed from 18 views from 17 viewpoints based upon the following criteria:

- They provide open views of the wind turbines or ancillary Facility components (the interconnection facility, ADLS tower, or MET towers).
- They illustrate different amounts of wind turbine visibility from a variety of viewing distances and geographic locations to represent the range of visual change that will occur within the VSA with the Facility in place.
- They illustrate views from significant locations including:

- VSRs and LSZs where open views will be available,
- Locations with a high degree of visual exposure, such as densely populated areas, more highly trafficked roadways, or high-use recreation areas, for viewer/user groups where open views will be available, and
- Locations recommended by state agencies, municipal representatives, and/or local stakeholders.

- They illustrate views of the Facility from locations representative of existing and future land uses within the VSA.
- They illustrate views where there is potential for cumulative impacts with other existing or proposed renewable energy facilities.

The viewpoints selected for photosimulation development and subsequent rating panel assessment are listed in Table 4.2-1 of the VIA. The visual outreach process, including an overview of the recommendations received from stakeholders for locations suitable for the development of photosimulations, is included in Attachment F of the VIA.

(i) Representative of typical views or direct line-of-sight views

As discussed in Section 4.2.1 and Section 4.2.2 of the VIA, photograph(s) selected for photosimulation development provided the most open and unobstructed views available toward the Facility from each location.

(ii) Significance of Viewpoint and Designated Scenic Resources

As discussed above, VSRs were one criterion considered during the viewpoint selection process, which is described in Section 4.2.1 of the VIA. Table 4.2-1 of the VIA identifies if the viewpoint is representative of views that are available from identified VSRs. Additional contextual information is also included in the cover sheets for each viewpoint that is included in Attachment D of the VIA.

(iii) Level of Viewer Exposure

Viewer/user groups identified in the VSA are described in Section 3.4 of the VIA based on activity, duration of views, exposure to the Facility, and sensitivity to visual change that individuals are likely to have in common. Viewer/user groups include local residents, through-travelers, and tourists and recreational users. A building density analysis was conducted to determine where viewer exposure is highest for local residents. This analysis indicates that the highest density area occurs within the Village of Moravia. Additional areas of higher density also occur in the Hamlets of Genoa, Scipio Center, Montville, Cascade, and Indian Cove, and in a few locations along the shoreline of Owasco Lake.

To determine which roads are likely to have the highest number of travelers and experience a higher degree of visual exposure, EDR reviewed traffic count data, which indicated that the most heavily

trafficked roads include State Routes 34, 34B, 38, and 34A. State Route 90, which is a designated scenic byway (VSR ID # 24), experiences a lower volume of traffic than other state routes within the VSA.

Tourists and recreational users are assumed to generally be viewing the landscape primarily from publicly accessible recreation areas and tourist destinations, which are identified as VSRs (Section 3.5 of the VIA). However, parks, trails, Owasco Lake, and resources that accommodate recreational activities are assumed to receive the highest visitation. Tourists and recreational users may also occasionally visit other VSRs in the study area, such as rural cemeteries or private historic homes. Visitation at these sites would likely be significantly lower due to limited or lack of accessibility to the public or recreational amenities.

As discussed in Section 4.2.1 of the VIA, the distribution of selected viewpoints also reflects the distribution of potential visibility within the VSA, which is concentrated in undeveloped areas, along local roadways, and lower density residential areas. Areas of high use by residents, and through-travelers are generally not included in the Facility viewshed or the Facility components were determined to be substantially screened from view. This is demonstrated in Figure 4.2-1 of the VIA, which includes the viewshed analysis results overlaid with the viewpoint locations where photosimulations or wireframe renderings were prepared, building density analysis, and traffic count results.

(iv) Proposed Land Uses

As discussed in Section 3.2.4 of the VIA, EDR consulted town planning and zoning documents to define future land use areas within the VSA. Agricultural and agricultural/rural residential are the predominant desired future land uses defined by local zoning regulations within the Facility Site and the VSA. Due to the location of the Facility on agricultural land, potential Facility visibility is anticipated to be concentrated to agriculture/rural residential future land use areas. Consequently, the majority of the viewpoints that were selected for the development of photosimulations fall within these areas as indicated in Table 4.2-1 in the VIA.

(v) Local Laws and Ordinances

As discussed in Section 4.2.4 of the VIA, relevant local laws and ordinances of host communities were reviewed to identify any potential requirements pertaining to the assessment of visual impacts that are applicable to the proposed Facility. Provisions identified in the Local Law 2 of 2024, Wind Energy Facilities Law of the Town of Venice and the Town of Scipio Zoning Ordinance, as amended by Local Law No. 1 of 2024 that relate to the assessment of visual impacts and apply to the Facility are discussed in this Section of the VIA.

(c) Visual Contrast Evaluation

As described in Section (b)(4) and Section 4.2.2 of the VIA, 3D modeling software was used to create realistic photosimulations for 18 views from 17 viewpoints and wireframe renderings from four viewpoints. The

visual contrast evaluation process and results are described in Sections 4.2.3 and 5.2.1 of the VIA and summarized in Section (c)(3). Copies of each panel member's completed rating forms are included in Attachment E.

(1) Photographic Simulations of the Facility and Vegetation Screening

As described in Section (b)(4), photograph(s) selected for photosimulation development from each viewpoint illustrate the most direct and unobstructed view available towards the Facility Site. It should be noted that some of the baseline photography was taken during leaf-on conditions. However, existing vegetation in these photographs would have minimal to negligible effects to Facility visibility, and leaf-off photographs from these vantage points are not expected to affect the results of the VIA.

(2) Additional Revised Simulations illustrating Mitigation Measures

All proposed minimization and/or mitigation measures that are currently proposed for the Facility, where visible, are illustrated in the photosimulations in Attachment D of the VIA. The VIMMP provides additional information on mitigation measures proposed for the Facility (see Appendix 8-B).

(3) Photographic Simulations Visual Impact Rating

To evaluate anticipated visual change associated with the Facility, the photosimulations of the operational Facility were compared to photographs of the 18 selected views by a panel of visual professionals. The methodology utilized in this evaluation was developed by EDR, involves using a short evaluation form and a simple numerical rating process to assign visual contrast ratings on a scale of 0 (insignificant) to 4 (appreciable/strong).

The methodology and results of the visual contrast evaluation conducted for the Facility are discussed in greater detail in Sections 4.2.3 and 5.2 of the VIA. Rating panel results indicated that distance from the viewer, degree of scale contrast and the number of visible wind turbines (i.e., expansiveness of turbine visibility), and perceived change in land use and viewer activity were the primary sources of visual contrast with the existing landscape. Reduced visual contrast can generally be anticipated when views of the multiple wind turbines are available from greater distances (within the middle ground and background distance zones.

The rating panel instructions along with the completed rating forms and resumes of the rating panel members are included in Attachment E of the VIA. Attachment D provides a description of the existing and proposed view at each of the selected viewpoints, and results of the panel's contrast rating for each of the photosimulations. Wireframes renderings for viewpoints meeting a majority of the viewpoint selection criteria but located where turbines were determined to be substantially screened from view, are also provided in Attachment D. However, wireframe renderings were not included in the rating panel evaluation.

(d) Visual Impact Minimization and Mitigation Plan

The VIMMP (Appendix 8-B) outlines the various measures proposed or considered by the Applicant to avoid, minimize, and mitigate potential adverse visual impacts associated with the Facility. The mitigation measures required for consideration in Section 1100-2.9(d) are listed in tabular format and discussed. The shadow flicker impact assessment report is included as Attachment A of the VIMMP.