High Bridge Wind Project

Case No. 18-F-0262

1001.25 Exhibit 25

Effect on Transportation

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EXHIBIT 25 EFFECT ON TRANSPORTATION

(a) Conceptual Site Plan

The Preliminary Design Drawings prepared in association with Exhibit 11 of this Application function as the conceptual site plan. These drawings identify access road locations and widths, the approximate number of turbines to be accessed per road and other access roads associated with staging yards, the operation and maintenance (O&M) facility, concrete batch plant, and substation/switchyard locations. The Route Evaluation Study (see Appendix 25-A) establishes the Route Evaluation Study Area, which is the area within which all potential transportation routes are encompassed, beginning where these routes exit major interstates or state highways and ending at Facility access roads. The Route Evaluation Study identifies and characterizes public road constraints (e.g., inadequate turning radii/intersections, road conditions and widths, culvert, bridge, and road load limitations, and overhead clearance), anticipated haul routes, and road intersection suitability, to the extent possible within the Route Evaluation Study Area. Maps detailing the route characteristics outlined above are provided in the Route Evaluation Study. The final haul routes for the turbines and necessary components will be reviewed in consultation with the Town of Guilford and Chenango County, finalized in coordination with the selected turbine manufacturer, and used in the preparation of the final construction drawings.

(b) Description of the Pre-construction Characteristics of Roads in the Area

The Route Evaluation Study includes an extensive analysis of existing road and traffic conditions near the Facility Site. Data on traffic volumes and accident frequency, school bus routes and emergency service responders, and load-restricted bridges/culverts are presented in Sections VIII, IX, and III of the Route Evaluation Study and summarized below.

(1) Traffic Volume and Accident Data

Traffic volume data within the Route Evaluation Study Area were obtained from the New York State Department of Transportation (NYSDOT) Traffic Data Online Viewer. Traffic volume data is available for the county roads and the state roads. Of these roads, State Route 8 has the highest Annual Average Daily Traffic (AADT), with 3,169 vehicles per day. None of the local town roads have traffic volume data available. Section VIII of the Route Evaluation Study summarizes traffic volumes on the State and County routes within the Route Evaluation Study Area.

Accident data contained in the Accident Location Information System (ALIS) was acquired from the NYSDOT Regional Office in Binghamton. The data in the ALIS included information for nine of the routes proposed for use during Facility construction. The ALIS data is dated from March 12, 2013 to February 28, 2018.

Based on the accident data and AADT for the roadway segments, average accident rates can be established and compared to New York State averages. The NYS average accident rate for undivided two-lane roadways is 2.1 accidents/million vehicle miles (acc/mvm). County Road 37 and Whites Hill Road have average accident rates above the NYS average; the remainder of roads within the Route Evaluation Study Area have accident rates below the NYS average or lack accident rate data. The comparatively high accident rates along County Route 37 and Whites Hill Road are primarily due to deer and/or wet surfaces, which account for 63% and 75%, respectively, of all accidents on these two roads. No accident rate data have been developed for Miller Road and Blower Road, as no AADT data is available for these roads. Appendix B of the Route Evaluation Study provides a table summarizing accident rates within the Route Evaluation Study Area.

(2) School District Bus Routes

Portions of the Bainbridge-Guilford Central School District and the Gilbertsville-Mount Upton Central School District are found within the Route Evaluation Study Area. As per information provided by the Bainbridge-Guilford Central District, the district has buses operating on two routes within the Route Evaluation Study Area. The first is on County Road 37 between 6:47 am and 6:55 am and between 3:45 pm and 4:18 pm. The second is on County Road 36 and Whites Hill Road between 6:30 am and 6:43 am and between 3:45 pm and 4:12 pm. The Gilbertsville-Mount Upton Central School District has been contacted several times, but no response has been received to date. The Applicant will continue to reach out to the district and will update the Exhibit when received. There are no school bus routes operated by the Norwich City School District in the Route Evaluation Study Area.

(3) Emergency Service Providers

Emergency service provider stations near the Facility include:

- Mt. Upton Police Department
- Oxford Village Police Department
- Oxford Fire Department
- Unadilla Fire Department
- Borden Hose Co.
- Guilford Fire Department

- Norwich Fire Department
- Lifenet of NY
- UHS Chenango Memorial Hospital
- Basset Healthcare
- Network A.O. Fox Hospital
- Sidney Police Department
- Village of Sidney Fire Department
- Air Methods Corporation.

Figure 9 of the Route Evaluation Study contains a map that provides the location of these emergency service providers. This map of emergency service provider locations will be posted in the Facility's O&M building (and provided to the emergency service providers) and all turbines will have a unique 911 ID/address.

The Applicant has reached out to the various emergency service providers in the area to determine their preferred routes and any potential impacts, information has not be received from the providers. The Applicant will continue to follow up with the providers and will update the Exhibit.

(4) Available Load Bearing and Structural Rating Information

Load-restricted bridge data within the Route Evaluation Study Area were acquired from the R-Posted Bridge and Posted Bridge listing for Chenango County dated 4/25/2019 on the NYSDOT Posted Bridges online website. In addition, the consultant drove all potential haul routes to identify load-restricted bridges and/or roadways within the Route Evaluation Study Area. Posted bridges have a specific weight limit in tons that is posted on a sign; R-Posted bridges cannot safely carry vehicles over legal weight limits as defined by NYSDOT. No Posted bridges nor R-Posted bridges were identified within the Route Evaluation Study Area.

A map of existing bridges is included as Figure 7 of the Route Evaluation Study and information on these bridges is included in Section III of the Study. Roadway restrictions and deficient intersection radius locations were observed in the field and identified using NYSDOT resources. These restrictions and deficiencies are discussed in Section III of the Route Evaluation Study.

Within the Route Evaluation Study Area, there are 23 small (less than 36-inch diameter) culverts and three large (36-inch diameter or greater) culverts. Based on the Route Evaluation Study, approximately six of these culverts have less than two feet of cover over them. It is assumed that any culvert with less than two feet of cover may be

susceptible to damage from transportation of heavy loads during construction. The large culverts along the potential haul routes have been assigned a condition rating from NYSDOT and Chenango County; smaller culverts under the County roads and all of the culverts under the Town roads were rated by visual inspections consistent with the NYSDOT Culvert Inspection Field Guide.[1] The culvert inspections do not include load ratings or sufficiency ratings, which are typically only available for bridges. These locations will be further analyzed during final engineering to determine if improvements are necessary prior to using the routes for deliveries of construction materials. Any necessary improvements as well as restoration of damaged culverts will be addressed in Road Use Agreements (RUAs)[2] with local municipalities (refer to Appendix 25-B). Figure 5 of the Route Evaluation Study includes a map of culvert locations.

The Applicant has consulted with local and county highway supervisors, including correspondence and meetings (see Exhibit 25(d)(5)). Such consultations will continue throughout the Article 10 process and prior to construction. It is anticipated that town highway supervisors will provide information on the type, thickness, widths, and restrictions of roads within the towns, as well as conditions of town road culverts. All bridges on town roads are under the jurisdiction of the County.

(5) Traffic Volume Counts

The Facility is not within a congested urbanized area. Therefore, 24-hour traffic counts are not applicable and are not included in this Application.

(c) Project Trip Generation Characteristics

(1) Number, Frequency, and Timing of Vehicle Trips

The construction of each wind turbine will require the use of approximately 11 oversize/overweight (OS/OW) trucks. For the purposes of impact calculations, it is assumed that 25 wind turbines will be constructed. The exact construction vehicles have not yet been determined; however, it is known that the transportation of turbine components and associated construction material involves numerous conventional and specialized transportation vehicles. A summary of the types of construction vehicles that will be used to transport the turbine components and construction materials/equipment is provided below.

[1] Available at: https://www.dot.ny.gov/divisions/operating/oom/transportation-maintenance/repository/CULVERT%20INSPECTION%20FIELD%20GUIDE%201-18-06.pdf

[2] For purposes of this Exhibit, the term "Road Use Agreement" (RUA) is intended to refer to proposed agreements with the municipalities regarding the use and restoration of local roads. These agreements may be included in the Host Community Agreement (HCA) or in a separate RUA.

Wind Turbine Equipment

- Blade Sections – Blades are typically transported on trailers with one blade per vehicle. Blades typically control the length of the design vehicle, and the radius of the curve along the travel route to the site. Specialized transport vehicles are designed with articulating (manual or self-steering) rear axles to allow maneuverability through the curves.
- Tower Sections – Towers are typically transported in five to six sections, one per truck, depending on the supplier. Towers generally control the height and width of the design vehicle dimensions.
- Nacelle – The nacelle and related elements are typically the heaviest component transported. Typically, one nacelle is transported per truck.
- Hub and Nose Cone – The hub and nose cone are typically transported with one or more of the same element on a vehicle. These elements are not critical elements related to design vehicle dimensions.
- Escort Vehicles – Typically a car or pick-up truck.

Construction Equipment and Materials

- Gravel trucks with capacity of approximately 10 cubic yards (cy) per truck and estimated gross weight of 75,000 pounds (lbs.) (including anticipated truck weight) will be utilized for access road construction. Currently, the access routes are approximately 58,500 feet long (11 miles), a minimum of 20 feet wide, and have a gravel thickness of 12 inches.
- For assembly of the wind towers, cranes are transported in sections utilizing up to 16 trucks, resulting in multiple trips to the site. Assembled cranes may be crawled between tower sites or disassembled to travel along the local roads to the next site.
- Concrete trucks for construction of turbine foundations and transformer pads with a capacity of approximately 10 cy per truck and an estimated gross weight of 96,000 lbs. (including anticipated truck weight). The total amount of concrete required at each turbine location will be approximately 715 cy depending on model and size of turbine selected. If an on-site concrete batch plant is to be utilized, there will be several large trucks to deliver the equipment, as well as aggregate and cement trucks.
- Variety of conventional semi-trailers for delivery of reinforcing steel (two per turbine foundation) and small substation components and interconnection project material.
- For the O&M building, there will be multiple trailers to bring in the various materials to construct the building.
- Variety of conventional vehicles carrying water, fuels or chemicals for construction of the Facility.

Trucks and cars for transporting construction workers, small equipment, and tools are not included in the above list because of their minimal impact on traffic volume and road integrity.

The following table provides estimates of the total number of trips for all heavy vehicles entering the Facility Site associated with construction of Facility turbines and access roads.

Table 25-1. Estimated Total Number of Heavy Vehicle Trips Required for the Construction of Facility Turbines and Access Roads.

Component/Truck Type	Assumption	Trips
Blades	3 blades per turbine, 1 blade per truck	75
Towers	6 tower sections per turbine, 1 section per truck	150
Nacelle	1 nacelle per truck	25
Hub and Nosecone	Multiple pieces per vehicle, assume 3 per truck for each turbine	25
Road Construction	Gravel trucks, 10 cubic yards per truck, plus other construction equipment	7283
Crane	Several trips per access point depending on the degree of disassembly	88
Concrete	Concrete trucks, 715 cubic yards per turbine foundation, 10 cubic yards per truck. Approximately 72 trips per turbine.	1800
Total Heavy Vehicle Trips		**9,446**

Note: A trip is defined as entry and exit from the Facility Site.

While OS/OW vehicles are traveling along delivery routes within the Facility Site, the existing traffic may experience minor delays as escort vehicles and/or flag persons stop traffic to allow safe passage. The Applicant has identified 11 routes for OS/OW vehicles transporting turbine components and supplies to the Facility Site, identified as Access Routes A through K (see Exhibit 25(c)(4) and 25(d)(2) for a full discussion of roads within the Route Evaluation Study Area and proposed access routes). Maps of the OS/OW access routes can be found in Figure 2 of the Route Evaluation Study. A table of construction vehicle routes/volumes is presented below.

Table 25-2. Construction Vehicle Volumes

Construction Routes	Gravel (Cubic Yards)	Concrete Mix (Cubic Yards)*	Gravel Trucks	Concrete Trucks	Turbines per Access Route	Turbine Delivery Flatbed Trucks	Crane Trucks**
Access Road A	4744	715	474	72	1	11	4
Access Road A1	963	715	96	72	1	11	4
Access Road B	1612	715	161	72	1	11	8
Access Road C	1327	715	134	72	1	11	8
Access Road D	2102	715	210	72	1	11	8
Access Road E	1356	715	136	72	1	11	8
Access Road F	5505	2145	551	216	3	33	8
Access Road G	2879	715	288	72	1	11	4
Access Road G1	898	715	90	72	1	11	4
Access Road H	2326	715	233	72	1	11	4
Access Road H1	2473	715	247	72	1	11	4
Access Road I	1479	715	148	72	1	11	8
Access Road J	2813	715	281	72	1	11	4
Access Road J1	3241	715	324	72	1	11	4
Access Road K	6684	2145	668	216	3	33	4
Access Road K1	8101	2860	810	288	4	44	4
Access Road K2	1252	715	125	72	1	11	0
Access Road K3	710	715	71	72	1	11	0
Brownell to T120	1472	0	147	0	0	0	0
Laydown/O&M	20899	0	2090	0	0	0	0
Volume Totals	**72,835**	**17,880**	**7,283**	**1,800**	**25**	**275**	**88**

* Concrete volume per foundation was determined as an average value of 715 cubic yards per turbine

** Number of crane trucks are 8 per assembly. In some instances, crane walks traverse multiple access roads. These totals have been split between each associated access road.

Exact scheduling of construction work and required vehicles will be determined by the Applicant's contractor. In general terms, the construction process and vehicles required would include the following on a per turbine basis:

1. Clearing and grubbing of access roads, turbine sites, and electrical collection lines – Several flatbed trailers would be used to mobilize equipment. All subsequent work would be off-road, i.e., construction traffic increases would be limited to the mobilization and de-mobilization of the trailers. This would continue throughout the project, as necessary.
2. Grading of access roads and turbine sites – Several flatbed trailers would be used to mobilize equipment. All subsequent work would be off-road, i.e., construction traffic increases would be limited to the mobilization and de-mobilization of the trailers. This would continue throughout the project, as necessary.
3. Access road gravel placement – The number of gravel trucks used for access road gravel placement would vary by road (see Table 25-2). Public roads would likely see a traffic increase of approximately 2-3 vehicles per hour per road during construction.

4. Foundation construction – Seventy-two concrete trucks and three flatbed trailers carrying reinforcing steel would be used per turbine. This would result in a public road traffic increase of up to seven vehicles per hour during construction.
5. Crane pad construction – The delivery of gravel for crane pad construction would result in a public road traffic increase of approximately two to three vehicles per hour.
6. Delivery of turbine components – A total of 11 trucks will be needed for the delivery of the components of a single turbine. These deliveries will likely be spread out over weeks. The maximum impact possible to public roads would be 11 OS/OW vehicles per day per turbine.
7. Crane delivery – Eight flatbed trucks will be needed to deliver the various parts of the crane assembly. This would result in a public road traffic increase of approximately eight vehicles for each mobilization demobilization needed.

Overlap of the tasks above due to concurrent construction activities would compound these construction traffic increases.

(2) Approach and Departure Routes for Trucks Carrying Water, Fuels, or Chemicals

Facility construction will involve relatively few trucks carrying fuel, water, chemicals, or other similar materials, particularly when compared to the construction of conventional power plants. All trucks carrying water, fuels, or chemicals during Facility construction will utilize the same haul routes used by other construction vehicles/component delivery haulers.

Facility operation will not require any significant regular deliveries of fuel, water, chemicals, or other similar materials.

(3) Hauling for Major Cut and Fill Activities

During the preliminary design process, every effort has been made to attempt to balance the earthwork on a per access road basis so that all materials removed during construction are reused on-site and do not need to be transported. As a result, it is not anticipated that the grading to be performed would result in the transport of significant quantities of removed or imported material over roads within the Route Evaluation Study Area.

(4) Conceptual Haul Routes and Approach and Departure Routes

Final haul routes cannot be determined until the turbine manufacturer has been selected. Therefore, the final haul routes will be provided prior to Facility construction. When evaluating viable haul routes for delivery of turbine components and construction materials/equipment to the Facility, several items were considered. These items are:

- The roadway characteristics and condition;
- The number of bridges along a designated route;
- The condition of the bridges and culverts that are along the route;
- The number of intersections needing turning movements;
- Number of sharp curves (to avoid additional mitigation and/or safety issues); and
- Various potential restrictions such as narrow bridges, low overhead clearances and impacts from small intersection radii affecting the turning movements.

The Applicant's consultant drove all roads within the Route Evaluation Study Area and reviewed available data in light of the factors identified. Using that information, an experienced transportation engineer identified conceptual haul routes. The following are recommended routes to various Facility locations that pose particular logistical concerns (see Exhibit 25(d)(2) below for a description of the delivery routes):

Access Route A and Access Route A1 (Turbines 101 and 102) –See Figure 1b in Appendix A of the Route Evaluation Study for the map of access route locations.

The access for these turbines is directly off of County Road 36.

Access Route B (Turbine 103) – See Figure 1b in The Route Evaluation Study for the map of access route location.

The access for these turbines is directly off of County Road 36.

Access Route C, Access Road D, and Access Road E (Turbines 105, 104, and 106) – See Figure 1b in The Route Evaluation Study for the map of access route locations.

Two alternatives are being reviewed and considered to access the turbines off of these access roads (T104, T105 and T106). The only public road access is from Whites Hill Road/Shumway Road. There is a steep portion of Whites Hill east of County Road 36 between Access Road C and Access Road D that may not be suitable for component deliveries in its current condition. There are also challenges with the routing from County Road 36 onto Whites Hill Road due to landowner status and grades at the time of application. If the traffic cannot go from County Road 35 east onto Whites Hill, then all deliveries will have to come from State Route 8 west onto Shumway Hill Road.

Access Route F (Turbines 122, 123, and 124) – See Figure 1b in The Route Evaluation Study for the map of access route location.

The access for these turbines is directly off of County Road 37.

Access Route G and Access Route G1 (Turbines 113 and 112) – See Figure 1b in The Route Evaluation Study for the map of access route location.

The only viable route for access to these turbines is to come from State Route 8, west on Shumway Hill Road and north onto Miller Road. Other routes were investigated, but were dismissed due to lack of room to construct the temporary intersection improvements that would be needed.

Access Route H, Access Route H1, and Access Route I (Turbines 117, 115, and 118) – See Figure 1b in The Route Evaluation Study for the map of access route location.

The only viable route for access to these turbines is to utilize Access Road J from Turbine 120 to get to Brownell Road/Crandall Road. Crandall Road cannot be used from the east due to horizontal and vertical challenges to overcome to meet turbine supplier requirements. Brownell Road is off of County Road 37 is currently a private road and may have a landowner issue to resolve before it could be used.

Access Route J and Access Route J1 (Turbines 120 and 121) – See Figure 1b in The Route Evaluation Study for the map of access route location.

The access for these turbines is directly off of County Road 37.

Access Route K, Access Route K1, Access Route K2 and Access Route K3 (Turbines 126, 127, 128, 129, 131, 134, 135, 130, and 133) – See Figure 1b in The Route Evaluation Study for the map of access route location.

The access for these turbines is directly off of County Road 37.

Any workers and employees in regular vehicles (pick-up truck size and smaller) will access the construction site and worker parking areas through use of whichever public road route is most logical and efficient for the respective individual/vehicle. Employees and workers accessing the site with heavy haul/construction equipment (i.e., dump trucks or larger), or anything that exceeds the posted weight limits on public roads, will follow the final haul routes.

(d) Traffic and Transportation Impacts

(1) Comparison of Traffic with and without the Project

<u>Traffic Without the Project</u>

Roads within the Route Evaluation Study Area carry relatively low levels of traffic. State Route 8, the only state route within the Route Evaluation Study Area, carries an average of 3,169 vehicles per day. County Roads 35, 36 and 37 average 2,478, 1,657 and 559 vehicles per day, respectively. Other county and town roads carry significantly less traffic.

Traffic During Project Construction

The Applicant estimates that during Facility construction the peak traffic level will occur mid-summer, when deliveries for access road aggregate, foundation concrete, turbine components, and main erection crane components are occurring simultaneously. During these peak periods, the Applicant estimates that these deliveries could result in approximately10-20 trucks per hour entering and exiting the Facility Site in a given day. Traffic associated with these deliveries and connected construction activities will occur throughout the roads within the Route Evaluation Study Area but will be concentrated in areas where access roads or foundations are being installed.

Traffic Increases from Project Construction

During the peak construction traffic weeks, traffic levels could increase by approximately 8% on SR 8, by 10% on County Road 35, by 15% on County Road 36 and by 44% on County Road 37 (see Figure 2 of the Route Evaluation Study). This increase in traffic, while potentially noticeable, will be temporary and should not cause more than minor delays for drivers that normally use these roads.

Overall, due to the already low traffic volumes in the Route Evaluation Study Area, and the fact that construction traffic will be spread over a large geographic area, increased traffic volumes associated with Facility construction will not cause a significant impact to the area residents.

Traffic Increases during Project Operation

Traffic associated with the operation of the Facility could increase daily traffic counts in the Route Evaluation Study Area by approximately 5%. Note, however, that the increased traffic will consist almost exclusively of cars and light-duty trucks associated with ongoing operation and maintenance activities and will be concentrated around the O&M building. See the Route Evaluation Study for further details.

Increased Collision Risk

During Facility construction, the increased truck traffic from aggregate trucks, equipment delivery trucks, concrete trucks, and turbine delivery vehicles will present an additional collision risk on the roads within the Route Evaluation Study Area. To minimize the risk of accidents, the Applicant will require contractors to drive at safe speeds and install warning signs for oncoming traffic in areas where construction or local traffic is particularly high (e.g., the entrance to the construction laydown yard). In addition, it may be necessary to provide traffic control (i.e., a contracted flag person or local police) for OS/OW delivery vehicles.

(2) Route Evaluation Study

As previously noted, the Applicant's transportation consultant drove all potential haul routes within the Route Evaluation Study Area to identify road conditions and potential obstacles to delivery of turbine components during construction (e.g., road width, turning radii, overhead clearance, presence of bridges and culverts, presence of steep slopes, etc.). Sections I through V of the Route Evaluation Study detail the field evaluation of the potential delivery and construction vehicle haul routes to and within the Route Evaluation Study Area that was conducted in April 2019. The condition of the roads, roadside features, bridge and roadway horizontal/vertical restrictions, bridge/culvert locations, and possible restricted intersection radii locations were identified in the evaluation. A formal study will be conducted prior to construction and will be coordinated with the local municipalities to confirm that the roads can handle the construction traffic.

State Route 8 provides 12-foot wide road lanes with shoulders that vary in width from 4 feet to 6 feet (see Figure 3). At some culvert locations, the shoulder width is reduced to 3 to 4 feet. The roadway terrain is rolling. There is no load posting on SR 8, so it is assumed that this roadway is adequate to handle the heavy loads associated with delivering WTGs and related construction equipment and supplies.

County Roads (CR) 35, 36, and 37 have widths that vary from 21 to 38 feet wide and shoulders that vary from 1 foot to 6 feet wide. The roadway terrain is rolling with some roads having roadside hazards such as steep slopes and sharp bends. There are no bridges located on the sections of these county roads identified as potential transportation routes. In general, these roads have conditions rated "good" by Fisher and should only require local repairs and tree clearances.

Blower Road, Crandall Road, Miller Road, and Phillips-Odell Road provide 10-foot wide road lanes with shoulders that vary in width from 0 feet to 3 feet (see Figure 3). At some culvert locations, the shoulder width is reduced to 1 to 2 feet. The roadway terrain is rolling. Because there is no load posting on these roads, it is recommended that they be tested prior to construction to determine if improvements need to be made to accommodate the heavy loads associated with delivering WTGs and related construction equipment and supplies.

State roads and county roads will be utilized as much as possible for construction traffic within the Route Evaluation Study Area. Where necessary, town roads will be used as the last point of access to the wind turbine locations.

Below is a description of the condition of the specific road segments analyzed in Route Evaluation Study.

State Route 8, Interstate 88 to Shumway Hill Road – The length of this segment is 12.2 miles. The asphalt pavement condition is rated good. The speed limit for this segment is generally 55 miles per hour (mph) with a speed reduction to 35 mph around various sharp bends. The road width is 24 feet and shoulder widths range from 2 to 6 feet. Most bridges and large culverts along this route have conforming bridge/culvert rails. The minimum width between any bridge/culvert rails along this route is 25 feet at a location 1 mile north of State Route 7. Culverts on the State Roads are regularly inspected and rated by the State. Therefore, it is assumed that there are no issues with any of the culverts along this segment. During the OS/OW permitting process, the State will analyze the route and provide information on any culverts needing attention. There are traffic signals along this segment.

Blower Road, County Road 37 to Shumway Hill Road – The length of this segment is 1.8 miles. The asphalt pavement condition is rated fair. The speed limit for this segment is generally 35 miles per hour (mph). The road width is 20 feet and shoulder widths range from 0 to 2 feet. There is one 12" culvert along this route, and it is rated as Poor (totally deteriorated or in failed condition) and has only shallow cover over it. There are no traffic signals along this segment.

CR 35, SR 8 to CR 36 – The length of this segment is 5.6 miles. The asphalt pavement condition is rated good. The speed limit for this segment is unknown but assumed to be 55 mph based on road characteristics. The road width is 38 feet and shoulder widths range from 3 to 6 feet. There is one culvert on this section of road. It is a 30" culvert that is rated as Good (minor deterioration but functioning as originally designed) and has only shallow cover over it. There are traffic signals along this segment.

CR 36, CR 35 to Whites Hill Road – The length of this segment is 3.5 miles. The asphalt pavement condition is rated good. The speed limit for this segment is unknown, but is assumed to be generally 45 mph. The road width is 21 feet and shoulder widths range from 2 to 4 feet. The one culvert along this route is 24" in size and rated as Poor. There is one flashing red traffic signal at the intersection of CR 36 and CR 37.

CR 37, CR 35 to SR 8 – The length of this segment is 5.0 miles. The asphalt pavement condition is rated good. The speed limit for this segment is unknown, but is assumed to be generally 45 mph. The road width is 21 feet and shoulder widths range from 1 to 3 feet. The large culverts along this route have conforming bridge/culvert rails. There are several small and large culverts along this segment, and all of the culverts are rated in poor to good

condition. There are two vertical curves that may need to be adjusted to accommodate turbine component traffic. There are traffic signals at the beginning and end of this segment of road.

Crandall Road, SR 8 to Brownell Road – The length of this segment is 1.6 miles. The asphalt pavement condition is rated poor. The speed limit for this segment is unknown but assumed to be 30 miles per hour (mph) based on road conditions. The road width is 16 feet and composed of dirt. There is one culvert located near State Route 8 that is rated as good. There are no traffic signals along this segment.

Miller Road, County Road 37 to Shumway Hill Road – The length of this segment is 1.3 miles. The asphalt pavement condition is rated good. The speed limit for this segment is unknown but assumed to be 35 miles per hour (mph) based on roadway conditions. The road width is 19.5 feet and shoulder widths range from 2 to 6 feet. No culverts were found during the field investigation of this segment. There are no traffic signals along this segment.

Phillips Odell Road, County Road 35 to County Road 37 – The length of this segment is 2.8 miles. The asphalt pavement condition is rated good. The speed limit for this segment is not posted but assumed to be 45 miles per hour (mph) based on roadway conditions. The road width is 21 feet. There are three culverts on this section of road rated in good condition with 1 foot of cover. There are no traffic signals along this segment.

Shumway Hill Road, Blower Road to SR 8 – The length of this segment is 2.3 miles. The asphalt pavement condition is rated good. The speed limit for this segment is unknown but assumed to be 35 miles per hour (mph). The road width is 19 feet and shoulder widths range from 0 to 3 feet. Large culverts along this route have conforming bridge/culvert rails. There are two culverts along this route, one is rated as good, the other fair. There are no traffic signals along this segment.

Whites Hill Road, County Road 36 to Blower Road – The length of this segment is 2.1 miles. The asphalt pavement condition is rated good. The speed limit for this segment is generally 55 miles per hour (mph) with a speed reduction to 35 mph around various sharp bends. The road width is 20 feet and shoulder widths range from 0 to 3 feet. There is one culvert on this segment of road, it is in good condition and has 1 foot of cover. There are areas of steeper terrain that will require additional investigation. There are no traffic signals along this segment.

Local road information is summarized in Appendix A, Figure 3 of the Route Evaluation Study.

(3) Operational Traffic

Once the Facility is commissioned and construction activities are officially concluded, traffic will be negligible. All traffic will be associated with Facility employees traveling to and from the O&M building and the individual turbines. Each turbine typically requires routine maintenance visits once every three months. Turbines or other Facility components will require periods of more frequent service if maintenance issues arise. Service visits typically involve one to two pick-up trucks. However, because all turbines and associated access road are located on and accessed from private land, public road use associated with routine maintenance will be limited. If major maintenance is needed (e.g., maintenance involving a crane), the RUA between the Applicant and the host communities will dictate the procedures followed by the Applicant to ensure that any impacts to public roads are avoided or mitigated.

(4) Over-sized Deliveries

Existing roadway restrictions (height, width, weight) and deficient intersection radius locations were observed in the field, researched from NYSDOT resources, and evaluated based on aerial imagery during the preparation of the Route Evaluation Study (see Figure 8 of the Route Evaluation Study). As previously noted, the Applicant's transportation consultant drove all potentially impacted roads to identify physical restrictions/hazards. The results of this field evaluation are summarized in Section (d)(2). Detailed maps of intersection turning movements on aerial imagery are included in Figures 8a-8g of the Route Evaluation Study.

As discussed in the Route Evaluation Study, transportation of the turbine blades will require use of a 155-foot trailer having up to a 200-foot turning radius. Several general concerns relating to the transportation of this and other OS/OW loads were identified during the above-referenced field evaluation. Height restrictions such as vertical clearances under overhead wires at one location along Phillip Odell Road (see Figure 6 of the Route Evaluation Study), will prevent or make it difficult for OS/OW vehicles to access certain sites. The owners of the overhead wires that have insufficient clearance for OS/OW traffic will be contacted prior to construction to determine the appropriate course of action for providing the appropriate clearance. All clearance issues will be reviewed by the Applicant's contractor.

As discussed in Section (d)(2) above, a portion of Crandall Road within the Route Evaluation Study Area is narrow and has only one lane. Some wind turbine access roads are located along these narrow roads, so it may be necessary to either widen the road or provide traffic control (i.e., a contracted flag person or a local police agency) for the OS/OW delivery vehicles. In addition, tight curves exist on some roadways. Additional widening with gravel

may be needed in these locations to accommodate up to a 200-foot turn radius for the OS/OW delivery vehicles. Large culverts along the potential construction routes appear to have sufficient width to accommodate the OS/OW vehicles but will need to be checked during the Special Hauling Permit Application process.

There are no weight restrictions along State and County roads, and the Town of Guilford does not currently have local roads with load postings identified. Specific local concerns will be addressed with the Town Highway Superintendent at the time the road is needed as a haul route, in line with the RUAs to be executed with Chenango County and/or the Town of Guilford. Any damage caused by construction activities will be repaired as per the RUA.

For deficient intersections, the path of the 155-foot turbine blade delivery vehicle was evaluated along the potential travel routes to the wind turbine sites to identify temporary intersection improvements that may be required. The turbine blades might extend beyond the rear trailer of the delivery vehicle and may require additional mitigation (e.g., tree removal, sign relocation, utility pole/box relocation, or removal/relocation of other tall objects).

Figure 8 of the Route Evaluation Study provides tables of proposed roadway and intersection improvements, a map showing the location of these improvements, and detailed figures showing anticipated intersection turning movements. All improvements identified in this Exhibit will require verification and/or update after the final turbine supplier is identified.

(5) Measures to Mitigate for Impacts to Traffic and Transportation

Measures to mitigate impacts to traffic and transportation are presented in the Route Evaluation Study and are summarized below.

(i) Roads

Construction of the Facility may necessitate road improvements to accommodate OS/OW vehicles. Along the potential access routes, pavement widths vary from approximately 12 feet to 38 feet. In addition, there are two roads (Crandall and Brownell) with a “poor” condition rating due to rutting and narrow conditions requiring significant tree clearing. The remainder of the local roads are in fair condition and should require only minor local repairs and tree clearing. All State and County roads are rated in good condition and likely will not require significant repairs. Any roadway that is less than 20 feet wide will require widening to accommodate the OS/OW vehicles. Figure 3 of the Route Evaluation Study highlights the roadways that are less than 20 feet wide. Radii of typical intersections (to the edge of pavement) along the potential access routes vary from approximately 25 to 100 feet. A radius of approximately 180 to 200 feet is typically necessary to accommodate

the wheel paths of turbine delivery vehicles; 200 feet or more may be needed for the load clearance of these vehicles. Temporary widening of the road with an aggregate roadway surface will be required to accommodate the turning movements of turbine delivery vehicles in some locations. Further mitigation may be needed if the turbine blade extends beyond the outer trailer of the delivery vehicle. Figure 8 of the Route Evaluation Study identifies locations where these road improvements, turning improvements, and other mitigation measures will likely be necessary.

These road improvements will be made at the Applicant's expense prior to the arrival of OS/OW vehicles. Final transportation routing will ultimately be designed in consultation with the Town and County to avoid/minimize, to the extent practical, safety issues associated with the use of the approved haul routes, which will confine the heavy truck travel to a few select roads.

In accordance with the RUAs to be executed prior to the start of construction, he Applicant will repair damage done to roads affected by construction within the approved haul route at no expense to the Town, County, or State, restoring the affected roads to equal to or better than pre-construction conditions. Asphalt and gravel roads rated "Fair" to "Good" will be monitored during construction for deterioration to ensure safety for general construction and local traffic.

The volume and weight of both the general construction traffic and turbine delivery (OS/OW) vehicles may cause accelerated distress that could require temporary repair. These temporary repairs/improvements could include repaving with asphalt, adding gravel stone, and/or temporary traffic signs, and may be stipulated as a condition of a RUA with local municipalities.

After completion of construction activities, permanent road improvements may be needed to address damage caused by the heavy construction vehicle traffic; roads needing temporary repairs during construction are most likely to need permanent repairs. RUAs may require contractors to repair the roadways to pre-construction conditions using appropriate treatments (e.g., oil and stone, hot or cold mix asphalt, and/or additional gravel). Once a formal study is conducted, details regarding the temporary repairs, permanent road improvements, and/or mitigation measures anticipated for specific road segments will be provided in order to complete this agreement.

The Applicant anticipates complying with the substantive requirements of the local laws related to road use. Time restrictions on delivery of Facility components will be addressed in the HCA and/or RUA between the Applicant and Town and County or during construction based on input from the Town and County.

No damage to roads due to normal operation of the built Facility is expected to occur. If any damage to local, county, or state roads is caused directly by operation of the Facility, repairs will be dictated by the RUAs executed prior to the start of construction.

(ii) Culverts and Bridges

As discussed in Section (d)(2), a preliminary assessment of culverts, including the amount of cover under the roadway and over the culvert, was conducted as part of the review of all potentially impacted roadways. In addition to this preliminary review, each culvert/drainage pipe will be analyzed during the final design of the roadway improvements to determine whether the amount of cover over the pipe is adequate and identify any improvements needed to accommodate construction traffic. Necessary improvements will be addressed in the RUA executed with local municipalities.

Preferred access routes have been selected to bypass deficient bridges and large culverts where possible to avoid additional mitigation. During the Special Hauling Permit application process, the NYSDOT and Chenango County Public Works Department will be required to review and approve all bridges and culverts to be traversed along the access routes in the construction phase.

(iii) Utilities and Traffic Control Devices

Along construction access routes, there are low overhead wires present that will likely need to be raised to accommodate the transport material heights of OS/OW delivery vehicles. If necessary, permits to raise the wires will be obtained through coordination with local utility companies.

No new traffic control devices are anticipated to be necessary. As previously noted, it may be necessary to provide traffic control (i.e., a contracted flag person or a local police agency) for OS/OW delivery vehicles during construction.

(6) Road Use and Restoration Agreements

In conjunction with this Application, the Applicant and/or its transportation consultant have met with the Highway Superintendent from Chenango County. During these meetings, the Applicant and/or its transportation consultant discussed the proposed Facility, the Article 10 process and general construction and transportation processes when constructing a wind energy generating facility. No major issues, road projects, or conflicting plans were identified. In addition, all anticipated local permits required were identified. The Town and County have been

provided with a draft copy of the Road Use Agreement (RUA), which contains road use and restoration language. The Applicant intends to consult with the Highway Superintendents from the Town of Guilford to discuss the proposed RUA, as well as share preliminary site plans and improvement designs for local roads affected by the Facility.

A variety of special hauling permits will be required due to the large dimensions of the wind turbine components and construction cranes. The types of permits required will depend on the characteristics of the vehicle and its cargo, the number of trips, the distance traveled, and the duration. The NYSDOT Central Permit Office stipulates that when any vehicle exceeds 16 feet in width, 15'-11" in height, 160 feet in length, or 200,000 pounds in gross weight, or any combination of those, a Type 1S – Superload Trip Permit is required from NYSDOT.

As some of the OS/OW vehicles used in the installation of the Facility will likely exceed these metrics, the Applicant will fill out and submit a PERM 12 Form – Special Hauling Pre-Approval Form for a future Type 1S – Superload Trip Permit. The NYSDOT website, www.dot.ny.gov/nypermits, outlines the guidelines, types and fees for various special hauling permits. Referring to the website, additional Permit Forms potentially required for the Project are:

- PERM 39 – Application for Special Hauling Permit,
- PERM 39-1VC – Vehicle Configuration Attachment,
- PERM 39-4 – Additional Trailer Attachment (Option 1),
- PERM 99 – Additional Trailer Attachment (Option 2),
- PERM 85 – Special Hauling Route Survey.

A Special Hauling Customer Guide is available under the PERM 30 form. The Applicant or other responsible party, such as the BOP Contractor or turbine supplier, will need to set up an account to complete the permit process. Highway Work Permits will be required from the respective municipalities for intersection and roadway improvements within the NYSDOT (PERM 33 Form), County, and Town rights-of-way.

Table 25-3 lists roadway agreements and permits required by the Town of Guilford, Chenango County, and NYSDOT. The Applicant is requesting that the Siting Board not preempt these requirements, and allow the State, County, and Town to approve the listed road or highway work permits. See Exhibits 31 and 32 for additional information about local/State transportation-related permit requirements.

Table 25-3. Roadway Agreement and Permit Requirements for the Town of Guilford, Chenango County, and the New York State Department of Transportation.

Agency	Road Use Agreement	Highway Work Permit to Work Within ROW	Highway Utility Permit to Work Within ROW	Special Haul Permit for Oversized/Overweight Vehicles	Permit to Exceed Posted Weight Limit Roads	Divisible Load Overweight Permit	Contact Information
Town of Guilford	✓	✓					Highway Supervisor Bob Fleming 607-895-6816
Chenango County	✓	✓	✓	✓			Director of Highways Susan Brown 607-778-2228 bcdpwhighways @co.Chenango.ny.us
NYSDOT		✓	✓	✓	✓	✓	NYSDOT Transportation Maintenance 112 Barlow Road Binghamton NY 13904 607-775-0522

Additionally, for the County and Town where the local roads are being used for delivery and construction vehicle transport routes, RUAs with the affected municipalities are anticipated to be signed to memorialize the Applicant's rights and obligations for road use and repair either as a separate agreement or as part of the HCA.

The Applicant has not entered into any private road use and/or restoration agreements with landowners. All use of private property adjacent to public roads will be allowed through its standard lease or similar easement agreement with the landowner, as opposed to a RUA.

(e) Impact of the Project on Mass Transit Systems

There are two public airports and three private landing strips located within a 12-mile radius the Facility Site, as described in Table 25-4.

Table 25-4. Airports within a 12-mile radius of the Facility Site.

Airport	Airport Classification	Distance from Closest Turbine (Nautical Miles)	Runway Length (Feet)
Sidney Municipal Airport	Public	5.6	4,201
Lt. Warren E. Eaton Airport	Public	6.6	4,727
Olmstead Landing Strip	Private	9.2	1,500
Miller Field Airport	Private	9.2	2,500
North Fork Airport	Private	9.8	1,800

As discussed in Section (f) below, the impact of the Facility on military and civilian air space, including military training and operations and other airport/heliport operations, are addressed by the Federal Aviation Administration (FAA) as part of its hazard review process. This process includes outreach through the U.S. Department of Defense's Siting Clearinghouse to evaluate the impact of potential aviation obstructions on military readiness.

There is also the Chenango First Transit bus services that operating in the project area throughout the day. Coordination with the service will occur prior to construction, and will continue through construction, particularly during times of hauling.

(f) Federal Aviation Administration Review

The FAA is responsible for air traffic control and for evaluating and issuing determinations on petitions for objects that penetrate the nation's airspace. The submission of a wind energy project to the FAA for review initiates aeronautical studies of the location of each proposed turbine and permanent meteorological tower that includes outreach to other agencies. These studies are conducted under the provisions of 49 USC § 44718. The FAA can issue two types of determinations, one that identifies a potential hazard and another that identifies no hazard. If the proposed structure is over 499 feet or if a potential hazard to air navigation is identified based on the structure's location and/or height, then a Notice of Presumed Hazard (NPH) is issued that must be publicly circulated prior to a final FAA determination. This notification identifies a potential hazard that must be further studied and/or mitigated in some manner. A Determination of No Hazard (DNH) will be issued if the FAA determines that the planned project will not pose a risk to aviation, including a review of potential aviation impacts to local airports.

The Applicant submitted a Notice of Proposed Construction along with the proposed Facility layout to the FAA on June 17, 2019 for hazard determinations for each of the 25 turbines proposed to be constructed. This submission initiated formal consultation and the aeronautical studies described above. The FAA has not yet issued hazard determinations for the turbines based on aeronautical studies performed by the agency. The Applicant will provide FAA Determinations of No Hazard as part of its Compliance Filings.

Lighting of the turbine nacelles will be implemented as per the requirements and determinations of the FAA. Specifications for anticipated turbine lights in accordance with the FAA's December 4, 2015 Advisory Circular 70/7460-1L, specifically Chapter 13 (Marking and Lighting Wind Turbines), which requires the use of FAA L-864 aviation lights (Chapter 13 of the FAA Circular is included in Appendix 25-C). See Exhibit 18(b) and the lighting plans appended to Exhibit 18 for additional information about Facility lighting.

(1) Department of Defense Review

The Applicant has submitted a request for a formal hazard determination to the FAA. As part of that determination, the FAA will contact the U.S. Department of Defense (DoD) Siting Clearinghouse, which is responsible for evaluating the "mission compatibility" of proposed energy projects—a concept that encompasses all types of military facilities and activities, including interference with flight paths, other aviation operations, and radar function.[3] The results of that assessment will be incorporated into the hazard determination issued by the FAA as outlined above.

The Applicant also has submitted a request for review to the National Telecommunications and Information Administration (NTIA). The NTIA oversees administration of the nation's radio frequency spectrum. Sponsors of projects that could interfere with radio signals, including radar, can submit a request to the NTIA to review the project to determine whether such interference may, in fact, occur and, if so, whether the interference poses a hazard. The request is submitted to the NTIA, which circulates the project information to the many agencies that are part of the Interdepartmental Radio Advisory Committee (IRAC). The IRAC includes the FAA and various DoD entities, among numerous other agencies. The NTIA assembles the responses from these agencies and informs the sponsor of the result. See Exhibit 26(a)(9) and (11) for a description of the Applicant's consultation with the NTIA. Copies of correspondence with the NTIA are found in Appendix 25-D.

(2) Consultation with Nearby Airports/Heliports

The regulations require the Applicant to consult with: 1) the operators of airports within twelve miles that have runways exceeding 3200 feet; 2) the operators of airports within 6 miles with runways less than 3200 feet; and 3) the operators of heliports within 3 miles. Of the airports and landing strips in the vicinity of the Facility, only the Lt. Warren E. Eaton Airport and Sidney Municipal Airport meet these criteria. There are no heliports within 3 miles of the Facility.

[3] The mission compatibility evaluation process is addressed in 32 CFR Part 211, which establishes procedures for both formal and informal reviews of projects subject to the FAA's review process.

The Applicant has worked to meet or otherwise consult with the managers of these airports. These airports were identified in the Public Involvement Program (PIP) Plan as stakeholders and have been provided all notices and documents afforded to stakeholders to this point in the process. In addition, on February 15, 2019, the Applicant sent a letter to the managers of these airports to further explain the Article 10 process and the steps the Applicant was taking to coordinate with the FAA, NTIA, and other federal agencies. The letter included a description of the Project and requested review of and comment on the Project by the operators (See Appendix 25-D). The Lt. Warren E. Eaton airport responded informally to the Applicant's letter and on May 31, 2019 the Applicant held a conference call with representatives from the Lt. Warren E. Eaton Airport and the Chenango County Planning Department to discuss the status of the Project and explain the steps the Applicant was taking to ensure impacts to the Lt. Warren E. Eaton Airport were avoided or minimized to the extent practicable. No response to the Applicant's letter has been received from the Sidney Airport.

The nearest military airport is located over 50 miles from the Facility, well outside the 12-mile threshold for outreach set forth in the applicable regulations. As a result, the Applicant did not reach out directly to any military airports/heliports. As previously noted, however, an assessment of the impact of the Project on military readiness (including aviation operations) will be made as part of the FAA review process through outreach to the DoD Siting Clearinghouse.

(3) Responses from the FAA and DoD

See Exhibit 25(f) and (f)(1) for a discussion of the responses to date from the FAA and DoD.