EIGHT POINT WIND ENERGY CENTER

Case No. 16-F-0062

1001.25 Exhibit 25

Effect on Transportation

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Exhibit 25: Effect on Transportation

25(a) Conceptual Site Plan

The conceptual site plan is included in Exhibit 11 and the associated appendices. That Exhibit includes the preliminary design drawings including wind turbine locations, access roads, road widths, staging yards and other related facility plans and details.

Specific to public road intersections, the conceptual site plans and details rely primarily upon the Turbine Delivery Route Analysis (prepared by Logisticus, and included as Appendix 25-1) and the Public Road Study prepared by Fisher Associates (Fisher) to identify constraints along planned haul routes. The Logisticus Analysis is primarily focused on delivery of turbine components from the delivery point (i.e., Port of Oswego, Port of Albany, etc.) to the Project Area, while the Fisher Report is focused more on roads within the Project Area. See the Logisticus and Fisher reports for additional detail (Appendices 25-1 and 25-2, respectively).

Turbine haul routes have not been finalized as it is not yet known where the components will be delivered from (i.e., Port of Oswego, Port of Albany, etc.). The preliminary turbine delivery haul routes are contingent upon delivery confirmation and consultations (including Road Use Agreements) between NextEra and the municipalities.

Road improvements may be required at three intersections outside of the Project Area for turbine component delivery. These locations include:

1. Intersection of NY417 North and NY36 South in Jasper, turn measured 115 feet
    - GPS Location - 42° 7'32.03"N 77°30'27.34"W
2. Intersection of NY36 South and NY417 West in Jasper, turn measured 130 feet
    - GPS Location - 42° 7'5.47"N 77°31'38.56"W
3. Intersection of NY417 and NY248 in Greenwood, turn measured 135 feet
    - GPS Location - 42° 8'36.29"N 77°38'40.24"W

Based on the Logisticus and Fisher reports, the following public road intersections within the Project Area may require improvements for oversize/overweight vehicles:

1. Intersection of NY417 and County Road 61
2. Intersection of County Road 61 and Pease Road
3. Intersection of County Road 61 and Flynn Road
4. Intersection of Flynn Road and Cemetery Road
5. Intersection of Cemetery Road and Town Line Road
6. Intersection of County Road 117 and Harkenrider Road
7. Intersection of Harkenrider Road and McDonald Road
8. Intersection of McDonald Road and Osmin Road
9. Intersection of Keenan Road and Mahoney Road
10. Intersection of Keenan Road and Irish Hill Road
11. Intersection of Irish Hill Road and Birmingham Road
12. Intersection of Birmingham Road and Shamrock Road

13. Intersection of Shamrock Road and Coleman Road
14. Intersection of Coleman Road and Frost Road
15. Intersection of County Road 98 and County Road 84
16. Intersection of County Road 98 and Lewis Road
17. Intersection of County Road 84 and Kelly Road
18. Intersection of NY248 and County Road 98
19. Intersection of Irish Hill Road and Keenan Road
20. Intersection of County Road 98 and Saunders Road

However, approximately thirteen out of the nineteen proposed intersection improvements already have established radius improvements. These existing radius disturbances will have to be further tested, but have the potential to decrease the amount of work necessary in the area.

All bridges within the Project Area appear to have sufficient width; however, three bridges within the Project Area along County Road 98 were also identified by Steuben County as of concern because they are constructed with timber decks:

i. Bridge 1 – 42° 4'37.63"N 77°40'14.96"W
ii. Bridge 2 – 42° 4'16.64"N 77°40'30.51"W
iii. Bridge 3 - 42° 4'10.68"N 77°40'33.92"W

Preliminary Project planning includes reinforcing these bridges with dunnage and steel plates during turbine delivery (if necessary). Based on initial analysis of the delivery and construction route and further consultation with the Towns and County, these bridges may be avoidable.

See the Logisticus and Fisher reports for additional detail (Appendices 25-1 and 25-2, respectively). Appendix D of the Fisher Report contains the NYSDOT Bridge Identification information for each of the bridges, as well as existing bridge condition summary information. Note that NYSDOT will review and approve all bridges proposed to be used during the Special Hauling Permit application process.

25(b) Description of the Pre-construction Characteristics of Roadways in the Vicinity of the Facility

(1) Traffic Volumes and Accident Data

Existing traffic volume data was obtained from the New York State Department of Transportation (NYSDOT) Traffic Viewer and NYSDOT Highway Data Services Bureau, where historical traffic count data is available for downloading. Average Annual Daily Traffic (AADT) volumes are provided by route name for a majority of the County and State Routes in the area. Traffic count data was sporadically available for many of the local roads within the Project Area. Since traffic volumes are not available for many of the local roadways in the Project Area, an average AADT was calculated from the adjacent county roadways (excluding State Route 248 and State Route 417) that will be used for analysis. It is assumed that the local roads will have similar or lesser volumes than the existing county roads.

Existing accident data for the Study Area was obtained from NYSDOT through a Freedom of Information Law (FOIL) Request. Accident data was obtained for a three year period from 2014 – 2016 and is

summarized in Appendix 25-3 by case number. During that three year period, there were a total of 38 crashes within the limits of the Project Area, with 15 of the 38 accidents (40%) occurring with a deer or other animal. Of the 23 remaining accidents, 11 accidents were with roadside fixed objects (guardrail, embankment, etc.), six angle crashes at intersections, two rear-end accidents, two overtaking crashes, one head on crash and one pedestrian crash. The 38 accidents resulted in 10 crashes involving an injury, eight property damage only crashes, three fixed object crashes that did not report injury or property damage and two fatal crashes. Both fatal crashes were at the State Route 417/State Route 248 intersection.

Transit and School Bus Routes

Requests to attain school bus route information were sent to Canisteo-Greenwood Central and Whitesville Central school districts asking for identification of school bus routes, number of buses and pickup/drop off times along the possible haul roads needed for delivery trucks and construction vehicles. Both school districts have responded back with basic route information. The exact number of school buses involved in morning and afternoon pick-ups was not provided, but it is likely that the buses operate between 6:30 am and 8:30 am in the morning, and between 2:30 pm and 4:00 pm in the afternoon. A map of school bus routes is included as Appendix 25-4, and the table below details the existing school bus routes along the proposed transportation route.

Table 25-1. Existing School Bus Routes Along the Proposed Transportation Route

Route	From	To	Town(s)	School District	Stops
RT 417	Alvord Hill Rd	Dennison Rd	Jasper/Greenwood	Canisteo-Greenwood	5
RT 248	RT 417	Loomis Rd	Greenwood/West Union	Canisteo-Greenwood	10
King Hill Rd	Cemetery Hill Rd	T11	Greenwood	Canisteo-Greenwood	0
Cemetery Hill Rd	Town Line Rd	T14	West Union	Canisteo-Greenwood	0
CR 61	Lane School Rd	Pease Rd	Greenwood	Canisteo-Greenwood	1
CR 61	Dryden Hill Rd	Flynn Rd	Greenwood	Canisteo-Greenwood	2
Flynn Rd	RT 61	Cemetery Rd	Greenwood	Canisteo-Greenwood	0
CR 98	Saunders Rd	T22	West Union	Whitesville	Unknown
Saunders Rd	CR 98	Boucher Rd	West Union	Whitesville	Unknown
Squab Hollow-Wileyville Rd	Saunders Rd	Downey Rd	West Union	Whitesville	Unknown

The number of stops and buses within the project area are limited due to the low density of houses within and adjacent to the project area. In addition, the majority of the construction activities for the project will likely occur during the summer months and through the middle of the day, therefore, the impacts to the local school bus routes should be minimal. The Applicant will continue to coordinate with local school districts to avoid impacts and delays to bus routes throughout the construction process.

(2) Emergency Service Approach and Departure Routes

To obtain information on emergency service routes to and from the Facility Site the Greenwood Fire Department, West Union Fire Department, Hornell Fire Department and Ambulance, Hornell Police Department, Steuben County Sheriff's Office, Steuben County Office of Emergency Services, and Allegany County Office of Emergency Services were contacted and asked to provide details of the routes they would take in the event of an emergency on or near the Facility Site. Many of the existing emergency service providers do not have set routes to locations but rather take the most direct available route, as their origin points may change due to other emergencies. An Emergency Action Plan will be shared with all local emergency responders so that the Applicant can address any comments they have.

Additionally, to date, the Applicant has consulted with the following emergency service providers:

- Greenwood Fire Department
- West Union Fire Department
- Hornell Fire Department and Ambulance
- Hornell Police Department
- Steuben County Sheriff's Office
- Steuben County Office of Emergency Services
- Allegany County Office of Emergency Services

The Applicant will continue to coordinate with local emergency service providers throughout the development and construction process, so that they are aware of any sporadic road closures that may impact their routing decisions. They will also be kept informed of expected site work and number of workers so they can plan accordingly.

(3) Load Bearing Structural Rating Information

With the exception of Frost Law restrictions and the three bridges identified above in Section 25(a), no load bearing concerns have been identified.

(4) Urbanized areas Traffic Volume Summary

The Project is not within a congested urbanized area, therefore 24-hour traffic volume counts and peak turning movement counts for typical weekday morning, weekday afternoon, and Saturday peaks, at representative critical intersections are not applicable and are not included in the Application.

25(c) Facility Trip Generation

(1) Number, Frequency and Timing of Vehicle Trips

To better understand how the construction of the turbines will potentially impact the adjacent roadway system, trips were generated for each site based on the strategies for delivering the oversized turbine equipment and the site work required to facilitate the delivery and construction of the turbines. Appendix 25-5 provides a detailed summary of the expected construction and turbine delivery vehicles and a brief overview is provided below. Additionally, a summary and description of vehicles associated with other required construction activities is also provided. Based on these summaries, trips were generated on a per site basis.

At this time it is anticipated that wind turbine component delivery vehicles and construction traffic will only be on the roads during the daylight hours, and only on days of the week that are agreed upon by the Towns and the Applicant.

Wind Turbine Equipment

Blades – There will be three blades per turbine and each blade will be delivered separately. Blades are transported on specialized blade trailers which are built to extend and support both the root and tip ends of the turbine blade. Due to the size of the blade and possible rear overhang, while these trucks are making turns the counter swing needs to be analyzed to ensure no contact with the tip of the blade is made with obstructions, such as signage or utility poles. The blades will be the longest equipment delivered to the sites at approximately 215 feet in total length. Blade transport trailers will weigh approximately 90,000 lbs.

Tower Sections – It is expected that the tower sections will be delivered separately in four sections, the base section, two middle sections and the top section. Typically, tower sections are transported on Schnabel-type trailers. Base and all middle sections will most likely be transported on Double-Schnabels and the top section will most likely be transported on a Schnabel-dolly configuration to save in overall length of the vehicle. The tower sections will be the tallest equipment delivered to the sites at approximately 15 feet 9 inches for the base section. Tower transport vehicles carrying the base and the middle section will weigh approximately 225,000 lbs. and the top section will weigh approximately 165,000 lbs.

Nacelle – The nacelle will be delivered as a single unit on a single trailer. Nacelles are typically transported via multi-axle trailer setups. The nacelle will be the widest and heaviest piece of equipment delivered to the site with an expected width of 15 feet 5 inches and a weight of 250,000 lbs.

Hub – The hub will be delivered as a single unit on a single trailer. Hubs are typically transported via multi-axle trailer setups. Typically, they are loaded on double-drop trailers to keep the overall height at its lowest point. These range from three to four-axle double-drop configurations. The overall dimensions of the hub make it the smallest piece of equipment that will be delivered to the site. Hub transport trailers will weigh approximately 100,000 lbs.

Escort Vehicles – In order to maintain safe transportation of the turbine equipment, oversized loads will be accompanied by escort vehicles that will warn other roadway users of the size and varying speed of the semi-trailers. It is expected that two escort vehicles will accompany each semi-trailer.

Construction Equipment and Materials

Construction Crane – It is expected that a Lattice Crawler Crane will be used to construct the turbines. Typical transportation of these cranes requires disassembly and placement on a trailer. It is expected that each crane set up will require approximately seven trailer loads with the main transport load weighing approximately 120,000 lbs.

Aggregate Trucks – Temporary access roads will be constructed at each site to provide access from the existing roadway network to the construction location of the turbines. It is expected that these access roads will be constructed out of aggregate. Articulated, off-road large dump trucks with an approximate capacity of 22 cubic yards and a weight of 80,000 lbs. will be used to deliver the materials to the site.

Concrete Trucks – Each proposed wind turbine will have a concrete foundation that will require approximately 400 cubic yards of concrete to construct. Trucks with an approximate capacity of 8 cubic yards and a weight of 70,000 lbs. will be used to deliver the materials to the site.

Conventional Semi-Trailers – In addition to the semi-trailers required for the turbine and crane delivery, it is expected that additional semi-trailers will be used to transport other various turbine components and equipment associated with the construction of the on-site substations. It is expected that these vehicles will be of legal size and weight, not exceeding 80,000 lbs. load limits.

Based on the expected transportation methods and work described, the following table summarizes the expected number of loaded trips generated entering each turbine site.

Table 25-2. Expected Number of Loaded Trips for Each Turbine Site

Equipment/Activity	Transport Strategy	Trips per Turbine
Blade Delivery	3 blades with 1 blade per truck	3
Tower Delivery	GE 3.4 MW - 4 sections with 1 section /truck	4
	GE 2.3 MW - 3 sections with 1 section /truck	3
Nacelle Delivery	1 nacelle per truck	1
Hub Delivery	1 hub per truck	1
Crane Delivery	1 crane per site with 7 trucks per crane	7
Haul Road Construction	1,200 CY aggregate per site/10 CY truck	120
Foundation Construction	400 CY concrete per site/8 CY truck	50
Various other Deliveries	Component delivery	6
TOTAL		**2.3 MW = 191 trips / turbine**
		3.4 MW = 192 trips / turbine

Each of these vehicles will also leave the construction site unloaded and in many cases in a smaller form. For example, the trailer used to transport the turbine blades can be expanded and contracted to facilitate carrying equipment of different lengths. As the blade transport trailer leaves the site it will be contracted to its smallest form. It is expected that a majority of these site generated trips will occur during off peak hours and the additional traffic volumes will have negligible impacts to the performance of the adjacent roadway network. Delays along the adjacent roadway network will primarily be due to maneuvering the oversized vehicles where a transport team will be available to assist in maintaining traffic and minimizing delays.

In addition to the heavy equipment that will be entering and exiting the Facility Site, the construction of the turbines will also create additional trips associated with the site workers and other various site deliveries. Typically these trips would be calculated using the Institute of Transportation Engineers (ITE) Trip Generation Manual, where data from similar sites has been collected and aggregated to provide estimates for peak hour and daily site traffic volumes. However, due to the specific nature of the work, there are no published trip generation rates for wind turbine construction or similar type construction.

To further understand the potential impacts the construction of the turbines may potentially have on the adjacent roadway system, a literature review was conducted to determine if other agencies have studied trip generation for wind turbine construction. In 2012, San Diego County published its Wind Energy Ordinance that outlined a case study similar in size to the proposed Eight Point Wind Energy Center:

"To determine whether a future large wind turbine project would have the potential to impact existing traffic loads or exceed LOS [level of service], a review of two sample projects was conducted. The first sample project would construct and operate 33 large wind turbines with a 2.3- to 3.0-megawatt (MW) capacity range and would reach a total capacity of approximately 90 MW…Construction schedules can vary greatly depending on a number of factors. The first sample project anticipates a 12-month construction schedule and the following assumptions. Project construction would typically occur Monday through Friday between 7:00 a.m. and 4:00 p.m. The construction phase would generate traffic from construction worker travel and the arrival/departure of trucks delivering construction materials and equipment. The sample project anticipates 75 construction workers during a typical day during the peak of the construction period and 2.5 employees per vehicle. Assuming all these factors, the peak a.m. and p.m. total is estimated to add approximately 50 ADT [average daily traffic] to associated road segments" (San Diego County Planning and Development Services, 2012).

For the purposes of this document and the analysis of the impacts to the adjacent roadway system a value of 50 ADT will be used per site for workers and deliveries. It is expected that there will be a 50% entering and exiting distribution between AM and PM peak hours, resulting in 25 additional trips during both the AM and PM peak hour per turbine facility (when workers are arriving to work in the morning, and leaving work in the evening).

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

During Project construction, all trucks carrying water, fuels, or chemicals will utilize the same delivery routes used by other construction vehicles/component delivery haulers. Detailed routing descriptions are provided in the following sections.

(3) Cut and Fill Activity

Estimates using the preliminary design drawings (Exhibit 11) indicate approximately 789,000 cubic yards of material will be excavated during the facility construction. In addition, approximately 786,000 cubic yards of fill will be placed, of which approximately 47,300 cubic yards is gravel fill which will be imported to the site. The remainder of the fill is derived from excavations associated with the wind turbine construction. Excess material from excavations will be distributed across the disturbed sites and blended into existing topography to return each construction site to its approximate original condition. Please see Exhibit 11 for the Preliminary Design Drawings and Exhibit 21 for additional information on cut and fill activity.

Please note that at this time it is anticipated that construction traffic will only be on the roads during the daylight hours, and only on days of the week that are agreed upon by the Towns and the Applicant.

(4) Conceptual Haul Route and Employee Approach and Departure Routes

The Applicant has conducted and is continuing to conduct extensive evaluation for the haul routes that will be used to deliver the material and supplies necessary for the construction of the proposed facilities. Several factors were considered when selecting the routes including bridge load ratings, roadway widths, intersection geometry, average daily traffic and overall impacts to the traveling public.

Worker and Employee Approach and Departure Routes

To Wind Turbine Sites – WTG 1, WTG 2, WTG 3, WTG 5, WTG 6, WTG 7 & WTG 8 – Use Exit 33 from I-86 and proceed south along NY 36 (West Main Street). In the Village of Canisteo make a right turn onto NY 248 (Greenwood Street) and proceed south. Prior to the Town of Greenwood make a right turn onto NY 417 and proceed west:

> WTG 1, WTG 2, WTG 3, WTG 5, WTG 6, WTG 7 & WTG 8: Continue west along NY 417 to CR 61 (Ridge Road) and make a left turn. Continue south along CR 61 (Ridge Road). Continuing south along CR 61 (Ridge Road), WTG 2 will be on the east side of CR 61 (Ridge Road). Continuing south along CR 61 (Ridge Road), WTG 1 will be on the west side of CR 61 (Ridge Road). Continuing south along CR 61 (Ridge Road), WTG 3 will be on the east side of CR 61 (Ridge Road). Continuing south along CR 61 (Ridge Road), WTG 5 will be on the west side of CR 61 (Ridge Road) at the Dennison Road intersection. Continuing south along CR 61 (Ridge Road), WTG 6, WTG 7, and WTG 8 will be on the east side of CR 61 (Ridge Road).

To Wind Turbine Sites – WTG 4, WTG 9, WTG 10, WTG 11, WTG 12, WTG 13, WTG 14 & Alternate WTG 1 – Use Exit 33 from I-86 and proceed south along NY 36 (West Main Street). In the Village of Canisteo

make a right turn onto NY 248 (Greenwood Street) and proceed south. Continue along NY 248 though the town of Greenwood to King Hill Road and make a right turn.

WTG 11, WTG 12 & WTG 13: Continue west along King Hill Road. Past York Road and prior to Cemetery Hill Road, WTG 11, WTG 12 & WTG 13 will be on the north side of King Hill Road.

WTG 14: Continue west along King Hill Road to Cemetery Hill Road and make a left turn. WTG 14 will be on the south side of Cemetery Hill Road.

Alternate WTG 1 & WTG 9: Continue west along King Hill Road past Cemetery Hill Road. Continuing west along King Hill Road, Alternate WTG 1 will be on the north side of King Hill Road past Friar Road. Continuing west along King Hill Road, WTG 9 will be on the south side of King Hill Road past Friar Road.

WTG 4 & WTG 10: Continue west along King Hill Road to Cemetery Road and make a right turn. Continue north along Cemetery Road to Flynn Road and make a left turn. WTG 4 will be on the north side of Flynn Road. Continuing east on Flynn Road to CR 61 (Ridge Road). WTG 10 will be on the east side of CR 61 (Ridge Road) at the intersection with Flynn Road.

To Wind Turbine Sites – Alternate WTG 4, WTG 15, WTG 16, WTG 17, WTG 18, WTG 19, WTG 20, WTG 21, WTG 22, WTG 23, WTG 24, WTG 25, WTG 26, WTG 27, WTG 28, WTG 29, WTG 30 & WTG 31 – Use Exit 33 from I-86 and proceed south along NY 36 (West Main Street). In the Village of Canisteo make a right turn onto NY 248 (Greenwood Street) and proceed south. Continue along NY 248 through the town of Greenwood and the Town of Rexville to CR 98 (Rexville Wileyville Road) and make a left turn.

WTG 17: Continue south along CR 98 (Rexville Wileyville Road) to Irish Hill Road and make a right turn. Continue west along Irish Hill Road, past Shamrock Road, and WTG 17 will be on the north side of Irish Hill Road.

WTG 15 & WTG 16: Continue south along CR 98 (Rexville Wileyville Road) to Irish Hill Road and make a right turn. Continue west along Irish Hill Road to Keenan Road and make a right turn. Continue north along Keenan Road to Mahoney Road and make a left turn. WTG 15 and WTG 16 will be on the north side of Mahoney Road.

WTG 18 & WTG 19: Continue south along CR 98 (Rexville Wileyville Road) to Irish Hill Road and make a right turn. Continue west along Irish Hill Road to Shamrock Road and stay to the left. Continue southwest along Shamrock Road to Coleman Road and make a left turn. Continue south along Coleman Road and WTG 19 will be on the east side of Coleman Road and WTG 18 will be on the west side of Coleman Road.

WTG 20: Continue south along CR 98 (Rexville Wileyville Road), past Saunders Road, and WTG 20 will be on the east side of CR 98.

WTG 21: Continue south along CR 98 (Rexville Wileyville Road) to Irish Hill Road and make a right turn. Continue west along Irish Hill Road to Shamrock Road and stay to the left. Continue southwest along Shamrock Road to Coleman Road and make a left turn. Continue south along

Coleman Road to Frost Road and make a right turn. Continue west along Frost Road and WTG 21 will be on the south side of Coleman Road.

WTG 22: Continue south along CR 98 (Rexville Wileyville Road), staying right at Downey Road, and WTG 22 will be on the west side of CR 98.

WTG 23: Continue south along CR 98 (Rexville Wileyville Road) to Saunders Road and make a left. Continue south along Saunders Road and WTG 23 will be on the west side of Saunders Road.

Alternate WTG 4, WTG 24 & WTG 25: Continue south along CR 98 (Rexville Wileyville Road) to Downey Road and stay to the left. Continue south along Downey Road and Alternate WTG 4 and WTG 24 will be on the east side of Downey Road, north of CR 84 (Squab Hollow Road). Continue south along Downey Road and WTG 25 will be on the west side of Downey Road, south of CR 84 (Squab Hollow Road).

WTG 26, WTG 27 & WTG 30: Continue south along CR 98 (Rexville Wileyville Road) to Downey Road and stay to the left. Continue south along Downey Road to King Hill Road and turn left. Continue east along King Hill Road and WTG 26 and WTG 24 will be on the north side and WTG 30 will be on the south side of King Hill Road, west of Saunders Road.

WTG 28: Continue south along CR 98 (Rexville Wileyville Road) to Downey Road and stay to the left. Continue south along Downey Road to CR 84 (Squab Hollow Road) and turn left. Continue east along CR 84 (Squab Hollow Road), past Kelly Road, and WTG 28 will be on the north side of CR 84 (Squab Hollow Road).

WTG 29: Continue south along CR 98 (Rexville Wileyville Road) to Downey Road and stay to the left. Continue south along Downey Road to King Hill Road and turn right to continue on Downey Road. Continue south along Downey Road and WTG 29 will be on the west side of Downey Road.

WTG 31: Continue south along CR 98 (Rexville Wileyville Road) to Downey Road and stay to the left. Continue south along Downey Road to CR 84 (Squab Hollow Road) and turn left. Continue east along CR 84 (Squab Hollow Road) to Kelly Road and turn right. Head south along Kelly road and WTG 31 will be on the east side of Kelly Road.

To Wind Turbine Sites – Alternate WTG 2 & Alternate WTG 3 – Use Exit 33 from I-86 and proceed south along NY 36 (West Main Street). In the Village of Canisteo make a right turn onto NY 248 (Greenwood Street) and proceed south. Continue along NY 248 though the town of Greenwood and the town of Rexville to CR 98 (Rexville Wileyville Road) and make a left turn.

Alternate WTG 2 & Alternate WTG 3: Continue south along CR 98 (Rexville Wileyville Road) to Osmin Hill Road and make a left turn. Continue southeast Osmin Hill Road to Mc Donald Road and make a right turn. Continue south along Mc Donald Road and Alternate WTG 2 and Alternate WTG 3 will be on the west side of McDonald Road.

25(d) Traffic and Transportation Impacts

(1) Analysis of Future Traffic Conditions

The Project will have no significant impact on traffic following the construction phase (during operations). Each turbine typically requires routine maintenance visits once every 3 months, but certain turbines or other project improvements may require periods of more frequent service visits should a problem arise. Such service visits typically involve 1 to 2 pick-up trucks. Therefore, no analysis of future traffic conditions with or without the Project will be prepared.

(2) Evaluation of the Road System to Accommodate the Projected Traffic

With additional trips generated by the construction of the turbines, the construction level of service (LOS) will be evaluated for both the existing traffic volumes and construction level traffic volumes to express the performance of the existing roadway facilities.

Existing Traffic Data

Existing traffic volume data was obtained from the NYSDOT Traffic Viewer and NYSDOT Highway Data Services Bureau, where historical traffic count data is available for downloading. AADT volumes are provided by route for a majority of the County and State Routes in the area. Traffic count data was sporadically available for many of the local roads within the Project Area. The table below summarizes the available traffic data within the Project Area:

Table 25-3. Available Traffic Data within the Project Area

ROUTE/ROAD NAME	FROM	TO	AADT VOLUME	COUNT STATION	COUNT YEAR
NY 248/Main St	CR 117 Rexville	CR 60/Christian Hollow	600	2	2010
	CR 60/Christian Hollow	NY 417	1067	172	2010
CR 98/Rexville Wileyville	CR 84/Squab Hollow	NY 248	197	6812	2009
Downy Road	Lewis	CR 98/Rexville Wileyville	71	5013	2014
Birmingham Road	Irish Hill	Shamrock	6	5012	2014
Cemetery Hill Road	Town Line	Sand	149	6809	2010
CR 60/Christian Hollow	Town Line	CR 61	70	8093	2009
NY 417	County Line	NY 248	856	137	2010
CR 61/Ridge Road	CR 60-Christian Hollow	Pease	51	8094	2009
	Pease Road	NY 417	184	8095	2006
	NY 417	Town Line	78	8096	2006
Brewster Road	CR 61/Ridge Road	End	40	2119	2009
Average Local Road	Various	Various	94	N/A	N/A

Since traffic volumes are not available for many of the local roadways in the Project Area, an average AADT was calculated from the adjacent county roadways (excluding NY 248 and NY 417) that will be used for analysis. It is assume that the local roads will have similar or lesser volumes than the existing county roads.

Roadway Characteristics

Existing roadways within the Project Area fall into four functional classifications as defined by NYSDOT Office of Technical Services and FHWA.

Minor Arterial – The only Minor Arterial found within the Project Area is NY 417. Minor Arterials are often moderate length and usually provide a connection to a higher level roadway, such as a Principal Arterial. In rural areas, such as the Project Area, Minor Arterials provide high travel speeds with minimal disruption to the through traveling vehicles.

Major Collector – The only Major Collector found within the Project Area is NY 248/Main St. Major collectors generally have few driveways and also allow for minimal disruption to the through traveling vehicles. Major Collectors can be shorter in length and have fewer daily traffic than Minor Arterials.

Minor Collector – Two Minor Collectors were found in the Project Area CR 60/Christian Hollow and CR 98/Rexville Wileyville. Minor Collectors have more numerous drive access and generally operate at lower operating speeds.

Local Road – The remaining roadways within the Project Area are classified as Local Roads. These roads account for the largest percentage of total roadway miles. These roadways are short and are intended for specific local access. Local roads primarily facilitate direct access to adjacent property owners with many driveways and access points.

In addition to the classifications, roadways in the Project Area are rural in nature and generally provide one travel lane in each direction with limited shoulder and roadside treatments. A majority of the existing intersections are stop controlled.

Performance Methodology

Based on the functional classifications of the roadways in the Project Area, roadway performance was analyzed by methods described in Chapter 15 of the 2010 Highway Capacity Manual (HCM). This Chapter of the HCM provides guidance for determining the performance of Two-Lane Highways, defined as roadways where passing maneuvers take place in the opposing lane of traffic and where segments are in excess of two miles from the nearest signalized intersection.

This section of the HCM describes three classifications of two-lane highways:

Class I – Motorists expect to be traveling at high speeds for long-distance trips. These highways provide connections to major transportation facilities and often serve as intercity routes or major links in state or national highway networks.

Class II – Motorists expectations are not to be traveling at high speeds and trips are generally shorter or the beginning or ending portion of a longer trip. Often these routes are scenic or recreational or pass through rugged terrain that limits overall speed.

Class III – these roads serve moderately developed areas where through traffic mixes with local traffic and generally consist of portions of Class I and Class II two-lane highways. The most defining character of these roadways is increased roadside densities.

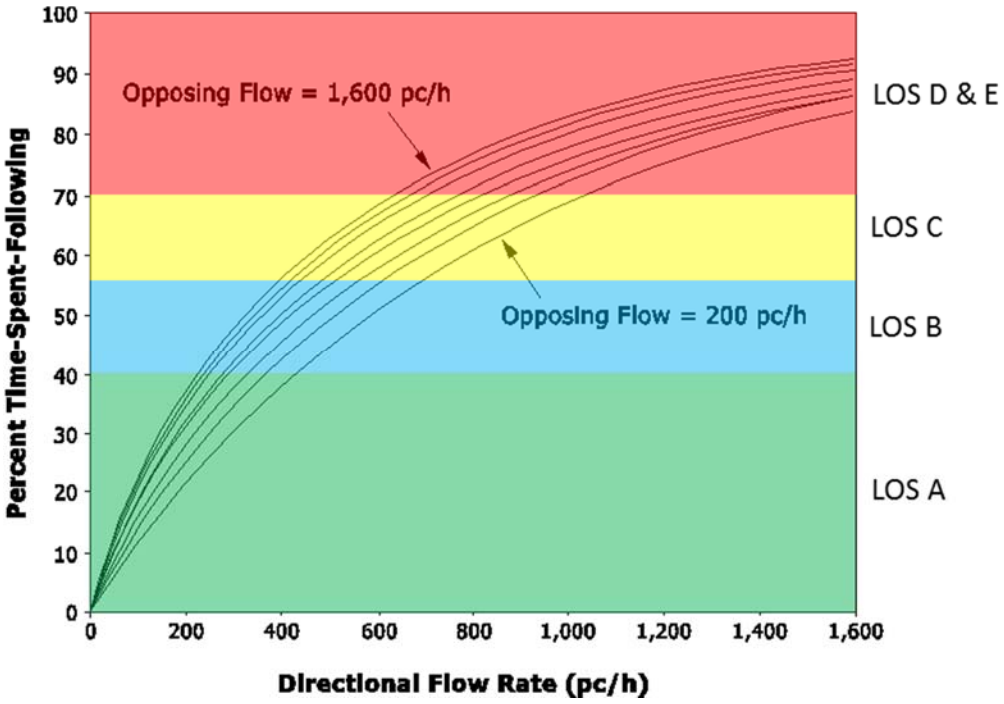
Based on the HCM classification and the functional classification, roadways within the Project Area will be analyzed as Class II two-lane highways, due to their rural nature, generally short distances and low ADT. On Class II two-lane highways operational LOS is defined by Percent Time Spent Following (PTSF) which is the average percent of the total travel time where vehicles are forced to travel in platoons behind slower vehicles due to the inability to pass. The following table describes LOS criteria for Class II two-lane highways, where LOS is described as less as less than or equal to 40% PTSF and LOS E is described as greater than 85% PTSF.

Table 25-4. [Taken from Chapter 15 of the 2010 Highway Capacity Manual (HCM)]

LOS	Class I Highways		Class II Highways	Class III Highways
	ATS (mi/h)	PTSF (%)	PTSF (%)	PFFS (%)
A	>55	≤35	≤40	>91.7
B	>50–55	>35–50	>40–55	>83.3–91.7
C	>45–50	>50–65	>55–70	>75.0–83.3
D	>40–45	>65–80	>70–85	>66.7–75.0
E	≤40	>80	>85	≤66.7

Automobile LOS for Two-Lane Highways

To determine PTSF the relationship between directional and opposing flow rates is used, as seen on the following exhibit. LOS limits on this exhibit match the previously described LOS limits on Table 25-4. Due to the numerous roadways within the Project Area, the lack of specific hourly traffic count data and extremely low traffic volumes, base conditions for two-lane highways were used to evaluate overall operational performance and for comparison purposes. Actual PTSF is likely to be higher in areas where there are narrow lanes, lack of shoulders, passing restrictions and heavy vehicles.



Graphic 25-1. [Figure from Chapter 15 of the 2010 Highway Capacity Manual (HCM)]

Existing Level of Service

Based on the existing traffic volumes and existing roadway characteristics, existing LOS was calculated. It was assumed that the peak hour of the roadway accounts for 10% of the AADT and that the directional distribution is 50%.

As shown in Table 25-5 below, under base conditions all roadways within the Project Area are currently operating as LOS A during the peak hour.

Table 25-5. Existing Traffic Volumes and Characteristics

ROUTE/ROAD NAME	AADT VOLUME	PEAK HOUR % OF AADT	DIRECTIONAL DISTRIBUTION %	PEAK HOUR VOLUME (PC/H)	OPPOSING FLOW (PC/H)	PTSF %	LOS
NY 248/Main St	600	10	50	30	30	<5	A
	1067	10	50	54	54	<5	A
CR 98/Rexville Wileyville	197	10	50	10	10	<5	A
Downy Road	71	10	50	4	4	<5	A
Birmingham Road	6	10	50	1	1	<5	A
Cemetery Hill Road	149	10	50	8	8	<5	A
CR 60/Christian Hollow	70	10	50	4	4	<5	A
NY 417	856	10	50	43	43	<5	A
CR 61/Ridge Road	51	10	50	3	3	<5	A
	184	10	50	10	10	<5	A
	78	10	50	4	4	<5	A
Brewster Road	40	10	50	2	2	<5	A
Average Local Road	94	10	50	5	5	<5	A

Construction Level of Service

To evaluate the impacts that the construction of the turbines will have on the roadway system, LOS was evaluated to include construction traffic, which can then be compared to the existing roadway LOS. The previously developed 25 peak hour trips was used in combination with the total number of turbines each roadway serves to determine a total number of additional trips. The additional trips were then added to the existing peak hour volumes resulting in a peak hour construction volume. It was assumed that all turbines served by a particular roadway are under construction at the same time, resulting in a worst case scenario (since turbines will be constructed in a sequence, not all at the same time).

Table 25-6. Traffic Volumes and Characteristics During Construction

ROUTE/ROAD NAME	PEAK HOUR VOLUME (PC/H)	# TURBINE SITES SERVED	TOTAL TRIPS (25/SITE)	CONST. PEAK HOUR VOLUME (PH/H)	OPPOSING FLOW (PC/H)	PTSF %	LOS
NY 248/Main St	30	31	775	805	30	<65	C
	54	31	775	829	54	<65	C
CR 98/Rexville Wileyville	10	17	425	435	10	<40	A
Downy Road	4	6	150	154	4	<15	A
Birmingham Road	1	0	0	1	1	<5	A
Cemetery Hill Road	8	1	25	33	8	<5	A
CR 60/Christian Hollow	4	0	0	4	4	<5	A
NY 417	43	6	150	193	43	<20	A
CR 61/Ridge Road	3	0	0	3	3	<5	A
	10	6	150	160	10	<15	A
	4	4	100	104	4	<15	A
Brewster Road	2	0	0	2	2	<5	A
Average Local Road	5	3	75	80	5	<10	A

It is expected that all roadways will operate at LOS A within the Project Area with the exception of NY 248 which will operate at LOS C during the peak hour of the day. Although the analysis indicates that NY 248 will have a decrease in LOS from LOS A to LOS C it is unlikely that all 31 turbines accessed from NY 248 will be built at the same time. However, the highest volumes were used to indicate a worst case scenario. The 829 passenger cars per hour in one direction is still far below the maximum capacity of 1,700 passenger cars per hour for a two-lane highway.

(3) Route Evaluation - Over-Size Load Deliveries and Roadway Restrictions

An initial project delivery route was proposed and evaluated by Logisticus Group. The Logisticus report includes evaluation of existing roadway restrictions along that concept delivery route. The Logisticus route analysis is presented in Appendix 25-1. As mentioned at the beginning of this Exhibit, this report noted several deficient intersections and three bridges of concern.

The delivery route within the Project Area has been modified by the Applicant based on other project considerations. The revised, proposed haul route is presented in Exhibit 11. Preliminary review of the revised project route was conducted during the spring/summer of 2017 and found 16 intersections where upgrades may be necessary, including three located outside the designated Project Area. Although not specifically addressed in the preliminary route review, upgrade of the identified

intersections may require relocation of existing electric distribution circuits, easements on private property and temporary moves of traffic signs.

As mentioned above, review of the potential haul routes for the Project development is on-going and further revisions may be necessary. Upon completion of the haul route evaluation an informed review of the potential routes can be conducted and discussion with the Towns and affected land owners initiated. The outcome of that review and land owner discussions will lead to the final haul route selection and a supplemental permit filing.

Based on the studies conducted to date, there are very few local roads within the Project Area that are considered narrow with only one lane. Some wind turbine access roads are located along these narrow roads, so it will be necessary to either widen the road or provide traffic control (contractor flag person or local police agency) for the overwidth/overweight delivery vehicles.

The bridges along the potential construction routes appear to have sufficient width to accommodate the overwidth vehicles, but will be checked during the haul route evaluation. Steuben County officials expressed concern for two bridges on County Route 98 and one on NY Route 248. Each of the three structures are paved, timber deck bridges in the same general vicinity along the primary haul route in this part of the development. The condition and load rating of these bridges will be checked during the during the haul route evaluation. Should the permit review find reason for concern, the bridge structures will be temporarily reinforced for the turbine component delivery or the haul route will be modified.

It is anticipated that a combination of widening on the inside and the outside of the curve of certain intersections, and some widening of local town roads along the delivery routes will be necessary. The following construction activities will likely be required at the locations of road width and turning radii improvements:

- Load bearing surface widening
- Temporary removal of solid objects projecting above the road surface including those projecting more than 6 inches on the inside of bends, and over 5 feet on the outside of bends.
- Relocation of existing utility poles
- Temporary reinforcement of ground surfaces covering underground utilities
- Temporary removal of street and traffic signs
- Temporary removal or raising of existing overhead electrical, telephone and cable TV conductors.

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

Transit and School Busing – The Applicant will continue to coordinate with local school districts to avoid impacts and delays to bus routes throughout the construction process. Local school districts will be advised in advance of any road closures so that alternatives routes can be developed. It is expected that overall impacts to the local school districts busing program will be minimal and no signification mitigation exceeding ongoing coordination is recommended.

Emergency Response – The Applicant will continue to coordinate with local emergency service providers throughout the construction process, so that they are aware of any sporadic road closures that may impact their routing decisions during the duration of the closure. They will also be kept informed on expected site work and number of workers so that emergency response can be planned for in advance. It is expected that overall impacts to the local emergency service providers will be minimal and no signification mitigation exceeding ongoing coordination is recommended.

Traffic Impacts – It is expected that all roadways will operate at LOS A within the Project Area with the exception of NY 248 which will operate at LOS C during the peak hour of the day. Although the analysis indicates that NY 248 will have a decrease in LOS from LOS A to LOS C it is unlikely that all 31 turbines accessed from NY 248 will be built at the same time. However, the highest volumes were used to indicate a worst case scenario. The 829 passenger cars per hour in one direction is still far below the maximum capacity of 1,700 passenger cars per hour for a two-lane highway. The results of the traffic analysis indicate that no new traffic control devices are required and that there will be minimal impacts to the traveling public during the AM and PM peak periods and virtually no impact to the traveling public during no peak periods. No capacity improvements are required to accommodate the construction of the proposed facilities.

Upgrades to Deficient Roadways – It is expected that temporary widening of the travel surface with an aggregate roadway surface will be required to accommodate the turning movements of delivery vehicles at the locations previously listed. These widened areas will be temporary and removed and restored to pre-construction state upon completion of construction.

At the completion of construction, the existing roadway network will be evaluated for areas where permanent improvements are needed after completion due to any damage caused by the heavy construction vehicle traffic. The contractor will repair the roadways to pre-construction conditions as per the Road Use Agreements.

Bridge structures identified to be deficient for the loading required to deliver the site materials will be avoided as per the proposed haul routes. Prior to any delivery, the structures along the actual haul route will be identified and approval will be requested from the New York State Department of Transportation and all applicable counties.

(5) Road Use and Restoration Agreements

The Applicant has met with representatives from the Towns of Greenwood and West Union, New York as well as officials from Steuben County. During these meetings the Applicant has briefed the town and county representatives about the Project, construction operations, the application process, and discussed road use agreements/permits. No major road projects or future plans were identified by any of the above municipalities.

The Applicant anticipates the large dimension and weight of the wind turbine components, cranes, and trenching equipment may require special hauling permits, road use agreements and/or traffic controls along the project haul routes. The types of permits required depend on the characteristics of the vehicle and its cargo, number of trips, distance traveled, and duration. NYSDOT defines oversize/overweight

vehicles as those exceeding the dimensions provided in the table below (e.g., overall, inclusive of load, bumpers, etc.).

Any vehicle exceeding 16 feet wide, 160 feet long, 15 feet 11 inches high or 199,999 lbs will require a superload permit. The application/permit process can be done on-line through the NYSDOT website. The fee structure for the superload permit is also published on-line and are cumulative based on load configuration and weight. Additionally, Highway Work Permits will be required from the respective municipalities for intersection and roadway improvements within the NYSDOT (PERM 33 Form), County and Town right-of-ways.

Prior to construction, the Applicant and/or contractor will obtain all necessary permits from the Towns and County highway departments and the NYSDOT, for activities including new access roads, improving existing roadways, crossing highways with buried electrical interconnects, and operating oversized vehicles on the highways. The final transportation plan will be provided prior to construction, and will specify the local, County, and State roads to be used as delivery routes (both within and outside of the Project area) by construction/transportation vehicles. All public road upgrades that may be required to accommodate construction vehicles will be identified, including shoring up bridge abutments, adding steel plates or gravel to road surfaces, widening roadways, reconfiguring intersection geometry to accommodate the turning radius of large construction vehicles, and identifying the bridges, pipes, and culverts that will not accommodate the construction related traffic.

Additionally, for the Towns where the local roads are being used for delivery and construction vehicle transport routes, Road Use Agreements with the affected municipalities are being worked on currently and are anticipated to be signed to memorialize the Applicant's rights and obligations for road use and repair. The Applicant is requesting that the Siting Board not supplant these procedural requirements, and authorize the State, County and Towns to approve the listed road or highway work permits.

In accordance with the anticipated Towns' Road Use Agreements, directly prior to construction, a survey of the agreed delivery route will be carried out by appropriately qualified engineers (and NYSDOT, County Highway, and Town Highway Departments as available) to assess and document current existing road conditions. Any extraordinary damage or over-run caused by vehicles during the construction period is to be repaired to agreeable standards under a Road Use Agreement with the relevant authority (State, County, or Town). The Applicant will repair damage done to roads affected by construction within the approved delivery route, thereby restoring the affected roads to a condition equal to or better than documented by the pre-construction survey. Roads will also be maintained in good working order during construction. The Project Sponsor will establish a road use reparation fund or purchase a reparation bond as financial assurance that the roads damaged by the activities of the Project's construction will be repaired to the standards required by the Road Use Agreement.

(6) Potential Cumulative Traffic and Transportation Impacts within the Study Area

Construction of the proposed Project is not anticipated to result in significant cumulative traffic/transportation impacts when considered in tandem with construction of the associated 16.5-mile 115 kV transmission line that will be permitted through the Article VII process. The construction contractors and teams associated with the transmission line and the wind farm may be comprised by

personnel from the same companies, and there may be some overlap of laydown yards within the wind farm and the transmission line, but this is not anticipated to result in significant cumulative impacts to traffic or transportation routes. Most of the transmission line is situated north of the Project, thus traffic overlap will be limited. Vehicles used for the construction of the transmission line will generally be legal load and legal sized vehicles, not oversized vehicles such as those used to deliver wind turbines to the Project site, thus the impact on transportation infrastructure from construction of the transmission line is projected to be small and to have no greater impact on infrastructure than other normal construction-related activity might have.

Construction of the Eight Point Wind Project and other projects proposed in the region (i.e., Canisteo Wind Energy Center or Baron Winds Project) is not anticipated to result in any significant cumulative traffic/transportation impacts. The Canisteo project, if constructed, will not be constructed at the same time as the Applicant's Project thus there will be no cumulative traffic impacts. If the Canisteo project is built, it will likely be required to sign road use agreements with the towns to ensure that any transportation infrastructure impacts are mitigated. The Canisteo project, if built, will need to receive Determinations of No Hazard from the FAA, which is responsible for analyzing aeronautical impacts of wind projects. The Baron project is proposed to be relatively far away from the Eight Point Wind Project and thus, if built, should not have any cumulative impacts to roads or traffic. The Baron project, too, would need to receive Determinations of No Hazard from the FAA. There is no way for the Applicant to assess cumulative aeronautical impacts because information on important and relevant aspects of the Canisteo and Baron projects is not available, thus an attempt to assess any potentially significant cumulative impacts would be speculative and non-meaningful.

25(e) Aeronautical and Military Operations

The Project is designed to avoid and mitigate impacts to aeronautical and military operations. Airports within the vicinity of the Study Area have been identified as stakeholders in the PIP and have been notified through the Federal Aviation Administration's (FAA's) public circularization that includes the location of the wind turbines and the possible impacts on aviation. The nearest military airbase to the Project Area is the Niagara Falls Air Reserve Station approximately 90 miles to the Northwest in Niagara Falls, New York. The Application includes a predictive obstruction evaluation and airspace analysis from the Capitol Airspace Group (CAG). The purpose of the analysis, which is included in this Application as Appendix 25-6, is to identify obstacle clearance surfaces established by the FAA in order to insure that the siting of turbines will not adversely impact aviation safety. The analysis is a tool to evaluate the existing conditions in the Project Area and serves as a starting point for the Applicant to evaluate, avoid and mitigate potential airspace issues. Communications with the FAA and the Department of Defense (DoD) are ongoing as described in more detail below. Ultimately, aeronautical and military operations impacts are evaluated and determined through the FAA's Form 7460-1 process, which is described in more detail below.

25(f) Federal Aviation Administration Review

The Applicant has filed FAA Form 7460-1 Notice of Proposed Construction or Alteration for each of the proposed wind turbine locations, which initiated aeronautical studies by the FAA, including outreach to the DoD for their input, in order to make a determination as to whether or not the proposed structures

present a hazard to air navigation. Aeronautical studies are underway. Notices of Presumed Hazard (NPH) which were issued on October 20, 2017 for all turbines and a Public Notice circularization which was also issued on October 20, 2017, are included in this Application as Appendix 25-7. Any proposed structure over 499 feet automatically receives a presumed hazard notice and a public notice of the structure is required, thus a NPH should not necessarily be construed as a denial by the FAA. In fact, based on conversations with the FAA and the DoD, the Applicant expects to receive Determinations of No Hazard in early 2018.

Chapter 13 of the FAA's December 4, 2015 Advisory Circular 70/7460-1L, outlines marking and lighting requirements for wind turbines. The Project will comply with all FAA marking and lighting requirements and requests. In addition, the Applicant is evaluating the feasibility of using an Aircraft Detection Lighting System (ADLS) in order to mitigate the visual impact of lighting on the community. If feasible and approved by the FAA, the Applicant will use ADLS.

i. Statement the Applicant has Consulted with the DoD

According to the DoD's website, the DoD's mission compatibility evaluation process provides a timely, transparent, and science-based analysis to identify the mission impacts from energy development projects in order to prevent, minimize, or mitigate adverse impacts on military readiness and operations, including test and evaluation activities. Established in June 2010, the Clearinghouse acts as a single point of contact for Federal agencies (including the Army, Navy, Air Force, Marines, Joint Staff, NORAD, and other critical offices), State, Indian tribal, and local governments, developers, and landowners, and provides a central forum for internal staffing.

The Applicant has consulted with the DoD on the Project and no concerns have been identified, except for the following request from the Air Force and the DOD Energy Siting Clearinghouse: *Please advise proponent the structure will be located within the confines of a military training route and the Air Force requests utilization of Night Vision Goggle compatible lighting*. The Applicant will utilize lighting that is compatible with night vision goggles.

ii. Correspondence with Airports, Heliports, if any

Except for the formal notice through the FAA by which local airports, heliports, etc., receive public notice and an opportunity to comment on the Project, the Applicant has not additional correspondence.

iii. Statement that Hazards to Navigation Identified will be Mitigated or Avoided

As explained above, the Applicant, through its consultant, CAG, is working with the FAA and DoD to ensure that any hazards to navigation that are identified by the FAA and/or the DoD will be mitigated or avoided.

iv. Responses from the DoD and FAA, if any

The Applicant sent written notification of the proposed Facility to National Telecommunications and Information Administration (NTIA) on February 6, 2017 and to the FAA in March 2017. In response, NTIA provided plans for the proposed Facility to the federal agencies represented in the Interdepartment

Radio Advisory Committee (IRAC), which includes the Department of Homeland Security, the United States Air Force, United States Army, United States Navy, United State Coast Guard, and the Department of Veteran Affairs. A response was received on April, 10 2017 indicating none of the agencies had radio or communications-related issues with the turbine placement in this area (see Appendix 26-7). As discussed above, Notices of Presumed Hazard for all turbines (which includes comments from the FAA and DoD) and a Public Notice circularization are included in this Application as Appendix 25-7. Once Determinations of No Hazard are received for the Project, they will be submitted in a supplemental filing to this Application.

References

San Diego County Planning and Development Services (2012). *Wind Energy Ordinance*. Retrieved from: http://www.sandiegocounty.gov/pds/advance/POD10007DEIR.html Accessed 2017.

Transportation Research Board (2010). *Highway Capacity Manual, Chapter 15.* Washington, D.C.